

Revision 1

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HYDROGEOLOGIC INVESTIGATION REPORT

FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Prepared For: Exelon Generation Company, LLC

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#### EXECUTIVE SUMMARY

This Hydrogeologic Investigation Report (HIR) documents the results of Conestoga-Rovers & Associates' (CRA's) May 2006 Hydrogeologic Investigation Work Plan (Work Plan) and associated correspondence pertaining to the Braidwood Generating Station in Braceville, Illinois. CRA prepared this HIR for Exelon as part of its Fleetwide Program to determine whether groundwater at and in the vicinity of its nuclear power generating facilities has been adversely impacted by any releases of radionuclides.

CRA collected and analyzed information on any historical releases, the structures, components, and areas of the Station that have the potential to release tritium or other radioactive liquids to the environment and past hydrogeologic investigations at the Station. CRA used this information, combined with its understanding of groundwater flow and sample locations at the Station to identify the Areas for Further Evaluation (AFEs) for the Station.

CRA collected 45 groundwater samples and six surface water samples at the Station. CRA also collected a full round of water levels on two occasions from the newly installed and existing wells and measured surface water levels. All groundwater and surface water samples were analyzed for tritium, strontium-89/90, and gamma-emitting radionuclides.

This HIR does not discuss the investigations of tritium in groundwater along the Braidwood Station Blowdown Line. This report focuses on the groundwater conditions in and near the Protected Area (PA). The results of this hydrogeologic investigation are:

- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Lower Limits of Detection (LLDs) in any of the groundwater or surface water samples obtained and analyzed during the course of this investigation;
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 picoCuries per liter (pCi/L) in any of the groundwater or surface water samples obtained and analyzed during the course of this investigation;
- Tritium was not detected in any of the groundwater or surface water samples obtained during the course of this investigation at concentrations greater than the United States Environmental Protection Agency drinking water standard of 20,000 pCi/L;

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- Low levels of tritium were detected at concentrations greater than the LLD of 200 pCi/L in 15 of 45 groundwater monitoring locations. These tritium concentrations ranged from 204 (± 112 pCi/L) to 1,040 (± 172 pCi/L);
- Most of the tritium that was detected in groundwater at the Station is on the west side of the Turbine building and is believed to be the result of isolated historical releases;
- Based on the results of this investigation, tritium is not migrating off the Station property at detectable concentrations;
- Based on the results of this investigation, there is no current risk from exposure to radionuclides associated with licensed plant operations through any of the identified potential exposure pathways; and
- Based on the results of this investigation, there are no known active releases into the groundwater at the Station.

Based upon the information collected to date, CRA recommends that Exelon conduct periodic monitoring of selected locations.

#### 1.0 <u>INTRODUCTION</u>

Conestoga-Rovers & Associates (CRA) has prepared this Hydrogeologic Investigation Report (HIR) for Exelon Generating Company, LLC (Exelon) as part of its fleetwide program to determine whether groundwater at and near its nuclear power generating facilities has been adversely impacted by any releases of radionuclides. This report documents the results of CRA's May 2006 Hydrogeologic Investigation Work Plan (Work Plan), as well as, several other investigative tasks recommended by CRA during the course of the investigation. These investigations pertain to Exelon's Braidwood Nuclear Power Station in Braceville, Illinois (Station) (see Figure 1.1).

The Station is defined as all property, structures, systems, and components owned and operated by Exelon LLC located at 35100 South Route 53, Braceville, Illinois. The Station boundaries for all areas of the Station are depicted on Figure 1.2 and Figure 1.3.

Pursuant to the Work Plan, CRA assessed groundwater quality at the Station in locations designated as areas for further evaluation (AFEs). The process by which CRA identified AFEs is discussed in Section 3.0 of this report.

Since the spring of 2005, Exelon has performed investigations into the occurrence of tritium along the blowdown line, as discussed in the following Section 2.0. This report does not include discussions of hydrogeologic investigations related to the Braidwood Station's Cooling Lake blowdown line.

The objectives of the Work Plan were to:

- characterize the geologic and hydrogeologic conditions at the Station including subsurface soil types, the presence or absence of confining layers, and the direction and rate of groundwater flow;
- characterize the groundwater/surface water interaction at the Station, including a determination of the surface water flow regime;
- evaluate groundwater quality at the Station including the vertical and horizontal extent, quantity, concentrations, and potential sources of tritium and other radionuclides in the groundwater, if any;
- define the probable sources of any radionuclides released at the Station;
- evaluate potential human, ecological, or environmental receptors of any radionuclides that might have been released to the groundwater; and
- evaluate whether interim response activities are warranted.

#### 2.0 STATION DESCRIPTION

The following section presents a general summary of the Station location and definition, overview of Station operations, surrounding land use, and an overview of both regional and Station-specific topography, surface water features, geology, hydrogeology, and groundwater flow conditions. This section also presents an overview of groundwater use in the area.

# 2.1 <u>STATION LOCATION</u>

The Station property consists of approximately 4,450 acres, of which approximately 52 acres are used for the generating facilities. The other approximately 4,400 acres of property encompasses an approximately 2,500-acre Cooling Lake and the land associated with the blowdown line. The Station address is 35100 South Route 53, Braceville, Illinois. The Station is owned and operated by Exelon. Figure 2.1 presents the Station Base Map, which includes the key features.

This HIR excludes land associated with the Cooling Lake and as discussed in Section 1.0, excludes the land associated with the blowdown line and the blowdown line's vacuum breakers. As such, this HIR does not discuss the groundwater investigations performed recently along the Station's blowdown line. These are discussed further in Section 2.5.

#### 2.2 OVERVIEW OF COOLING WATER OPERATIONS

The Station contains a two-unit nuclear generating facility capable of generating 1,120 net megawatts of electricity per unit. Units 1 and 2 are pressurized water reactors (PWRs) designed by Westinghouse and began commercial operation in July and October 1988, respectively. A PWR plant consists of three separate loops of fluids. Each loop is designed to avoid mixing the fluids of one loop with the fluids of another. The three loops are called the primary loop, the secondary loop, and the tertiary loop.

The main purpose of the primary loop is to transfer the energy generated from fission in the fuel to the secondary loop steam generators. It is a closed loop system. Nuclear fission creates heat in the fuel. This heat is removed by the flow of reactor coolant water through the reactor vessel and into the steam generators. The heat is transferred to the secondary side where steam is generated. The water is then pumped back to the reactor vessel to cool the fuel again. The main purpose of the secondary loop is to use the steam generated in the steam generators to turn the turbine generator, which makes electricity. It is also a closed system.

The main purpose of the tertiary loop is to use cooler lake water to condense the steam in the condenser and transfer the heat to the atmosphere. The lake loop needs makeup water to operate properly. Makeup water comes from the Kankakee River.

As the steam is condensed in the condenser, the circulating water becomes hotter. The circulating water is discharged to the Cooling Lake where it loses some of its heat through evaporation. The now cooler water is then pumped back to the condenser to start the loop over again.

The Braidwood Station employs a blowdown line to return water from the Cooling Lake back to the Kankakee River for the purposes of reducing the dissolved mineral concentration in the lake water. This blowdown line also serves as a permitted discharge point for the site's sewage treatment plant and the liquid Radwaste system. The discharge is approved under the Station's National Pollutant Discharge Elimination System (NPDES) Permit IL 0048321 and Nuclear Regulatory Commission (NRC) Operating Licenses NPF-72 and NPF-77 for Units 1 and 2, respectively.

#### 2.3 <u>SURROUNDING LAND USE</u>

To the north, south, east, and west, land surrounding the Station is primarily for agricultural, residential, and recreational use. Residential lots surround the Station to the north and to the east along Smiley Road and Center Street. Further to the north, there are several ponds or small lakes. The center of the Village of Braidwood is approximately 1.5 miles north of Braidwood Station measured from Smiley Road. To the northwest of the site, there are two main highways (Illinois State Highway 53 and Illinois Route 129) running parallel to each other with a railroad (Southern Pacific Railroad) between them. Within the southern portion of the Station is the Cooling Lake that is designated as a recreational area in the summer for boating and fishing under the auspices of the Illinois Department of Natural Resources (IDNR) (Refer to Figures 1.2 and 1.3). The town of Godley is located west and southwest of the PA.

# 2.4 <u>STATION SETTING</u>

The following sections present a summary of the topography, surface water features, geology, hydrogeology, and groundwater flow conditions in the region surrounding the Station. The information was primarily gathered from Sections 2.1 and 2.5 of the Braidwood Station Updated Final Safety Analysis Report (UFSAR) Revision 10, dated December 2004. The main references the UFSAR relies upon are listed in Section 10.0 of this HIR. CRA checked and verified all UFSAR references that apply to this HIR.

# 2.4.1 <u>TOPOGRAPHY AND SURFACE WATER FEATURES</u>

In general, the topography of the area slopes gently downward to the north toward the Illinois River and is relatively flat (see Figure 1.1 and United States Geological Topographic Quadrangle Map – Essex – 1973, Photo revised 1980).

The Cooling Lake was formed from former coal strip mining operations discussed further in Section 2.4.2. The average depth of the Cooling Lake is about 8 feet (UFSAR, 1994). It is isolated from the adjacent upper water bearing aquifer by a slurry wall constructed during building construction at the PA. The lake bottom consists of mine spoils left behind after strip-mining operations.

There are also remnants of former coal strip mining operations to the north of the PA (ISGS March 2005 and October 2003). There are also a number of ponds located northeast of the PA that were dug originally as sand borrow pits (for highway construction materials) that have subsequently filled with groundwater. These include the ponds located near Center Street and Smiley Road (Figures 1.1 and 2.2). The ponds are evident on the aerial photo presented on Figure 2.2.

Figure 2.3 presents portions of some of the relevant surface water features at the Station such as the Cooling Lake, pond, and perimeter ditch. Surface water drains via the storm water drainage system and man-made ditches (e.g., the perimeter ditch) and flows generally to the north within the PA. Surface water is conveyed away from the Cooling Lake via the perimeter ditch (Figure 2.3). This ditch eventually flows west and south past the PA and past the Village of Godley. This ditch intercepts the shallow groundwater table (CRA, September 2003).

The PA and surrounding land is generally flat and covered by paved areas, roadways, and parking lots. These areas are drained by a storm water drainage system that drains to the northwest corner of the PA (Figure 2.3). The storm water drainage system drains

to an Oil/Water Separator at the north end of the PA. The outfall from the Oil/Water Separator discharges to a small east-west ditch and flows west to the perimeter ditch.

Previous studies have documented that the storm water drainage system intercepts groundwater on the west side of the Turbine Building. These same studies have indicated that the perimeter ditch (Figure 2.3), which flows from the north to the south along the western Station property line, also intercepts the groundwater (CRA, September 2003). Hydrogeologic profiles of the storm water drainage system, Oil/Water Separator, and the perimeter ditch are provided on Figures 2.4 to 2.7. These figures are from the CRA September 2003 report.

# 2.4.2 <u>GEOLOGY</u>

The Natural Resource Conservation Service (NRCS) classifies the shallow soils surrounding the site as primarily fine sands and silt loams; typical soils of an outwash plain. The NRCS classified the soils around the Station in groups that primarily include the following soils: Oakville fine sand, Wateska loamy fine sand, Markham silt loam, and Orthents loamy soil. These soil groups all have similar characteristics and vary by the amount of silt in the material. These soils are moderately to well drained, have moderate to rapid permeability from 0 to 60 inches below ground surface (bgs), and contain 0.5 to 2 percent organic matter.

The local geology is composed of a relatively thin overburden layer overlying the bedrock. Figure 2.8 presents a stratigraphic cross-section of the local geology.

The overburden consists of the Equality Formation (silty sand) and the Wedron Clay Till Formation (glacial outwash and till) (UFSAR, 1994). The Equality Formation is Quaternary age and primarily consists of eolian and lacustrine sands and at the Station it is described as a homogenous, loose, gray to brown sand. This formation is approximately 20 feet thick at the site (Arnold et al., 1999). The Wedron Clay Till consists of glacial till and interbedded discontinuous glacial outwash deposits. At the site, the Wedron Clay Till is predominantly a silty clay. The Wedron Clay Till ranges from 15 to 20 feet thick at the site (Willman et al., 1975). A contour map of the top of the Wedron Clay Till around the Turbine Building and Reactors from the UFSAR is included on Figure 2.9 (UFSAR, 1994).

The important bedrock units in the site area can be divided into these three general sections (Willman and Frye, 1970):

- Pennsylvanian age siltstone, shale, and coal;
- Ordovician shale; and
- Cambrian- Ordovician sandstone and limestone/dolostone.

The Pennsylvanian age units are generally horizontal strata that act as an aquitard and barriers to vertical flow. The coal-bearing Carbondale Formation (Colchester Member) within this group was previously strip-mined in the area of the Station (Figure 2.8). The strip mining removed the overlying units to the bottom of this coal seam (Chapter 2.5.1.2.7, UFSAR, 1994; and ISGS, October 2003). The Carbondale Formation includes the Francis Creek Shale Member and the Colchester Coal Member. It is underlain by the Spoon Formation (Figure 2.8).

Coal was discovered in Braidwood in 1854. Underground mining began in the 1870s. Strip-mining began in the 1920s. Total production of coal is estimated at over 26 million tons. Approximately 6.2 million tons was produced from underground mines, and about 20.5 million tons from strip mines. Coal was produced mainly from the No. 2 Coal Seam (Figure 2.8). The coal seam is approximately 100 feet bgs. Overlaying the coal is 30 or more feet of the Francis Creek Shale Member of the Pennsylvanian Carbondale Formation. This seam is also known as the Colchester Coal No. 2, which has an average thickness of 3 feet. In the southwestern part of the area thin seams of coal lie closely above and below the Colchester No. 2 seam.

As a result of coal mining, there are several small lakes near the site, which formed when abandoned open-pit mines subsequently filled with groundwater and precipitation. The Cooling Lake south of the facility is one of these lakes (Figure 1.2). The Cooling Lake is filled with mine spoils consisting of fractured, fragmented deposits of clay shale and other excavated material.

The Ordovician shale is the Maquoketa Shale Group of varying thickness but generally at least 70 feet thick. The Maquoketa Shale separates upper shallower bedrock formations (limestone and dolomite) from the deep sandstone bedrock of Cambrian-Ordovician-Glenwood-St. Peter Formations and the Ironton-Galesville Formations (Figure 2.8).

# 2.4.3 <u>HYDROGEOLOGY</u>

Groundwater in the site area is mainly extracted from two primary aquifers:

- the upper sand aquifer; and
- the deep Cambrian and Ordovician age sandstone formations.

There is some indication, however, based upon well logs from private residences that water supply wells are sometimes completed in the sandstone and limestone of the Carbondale Formation and the Spoon Formation (Figures 2.2 and 2.10). The Carbondale Formation includes the Francis Creek Shale Member, an aquitard, siltstones, conglomerates, shale, and the Colchester No. 2 coal. Beneath the Carbondale Formation is the limestone of the Spoon Formation. Apparently some private wells are installed into the Carbondale Formation above the coal or into the underlying Spoon Formation based upon well depth. Figure 2.10 presents wells completed in the 80- to 120-foot depth that may represent the Spoon Formation.

The upper sand aquifer comprises Quaternary age eolian and lacustrine sands (20 to 30 feet deep) (UFSAR, 1994). There are numerous private wells screened within the surficial sand unit where well yields are highly variable. In general, on a regional scale, well yields range from 20 gallons per minute (gpm) to 100 gpm; the higher yields are in areas where the sand and gravel deposits are thickest. The shallow groundwater flow direction is typically north-northeast but is influenced by surface water bodies.

The deeper bedrock formations used regionally for municipal and private water supplies (depths of 600 to 1,600 feet) are separated from the shallow system by a number of regional aquitards (Visocky, 1985). These barriers include the Wedron Clay Till (located just beneath the shallow sands) and various shale formations including the Scales Shale, which is over 70 feet thick at the Station and found at depths of 400 feet. Groundwater flow in these deep bedrock formations is expected to be toward the northeast in response to regional pumping centers near Joliet, Illinois (Visocky, 1985).

The groundwater system of most interest at the Station is the upper sand aquifer. This is the zone where previous studies of tritium occurrence have indicated its migration on and off the Braidwood Station property (CRA, March 2006).

The groundwater in the upper sand aquifer occurs under unconfined (water table) conditions and the saturated thickness ranges from 20 to 22 feet. The groundwater in this aquifer is recharged by local precipitation and discharges to local ponds and streams, and to the bedrock near the Kankakee River.

Recently, over 300 permanent and temporary monitoring wells have been installed into the deep and shallow zones (as described in Section 4.0) of the upper sand aquifer at Braidwood Station along the blowdown line (refer to Figure 2.11). Several well nests have been installed in the upper sand aquifer to determine the vertical distribution of impacted groundwater, and also the vertical hydraulic gradient within the aquifer.

Previous investigations along the blowdown line did not indicate a systematic pattern of vertical hydraulic gradients within the upper sand aquifer. The data recently collected as part of the fleetwide investigation has indicated similar vertical hydraulic gradients with one area of exception. Monitoring well clusters located just west of the Turbine Building indicate a downward vertical hydraulic gradient.

Data collected from CRA's previous investigations (CRA, September 2003 and March 2006) indicate there is a significant interaction between the groundwater in the overburden and the surface water bodies such as the perimeter ditch and the ponds to the northeast of the Station (refer to Figures 2.6 and 2.7).

The results from single-well response tests performed as part of the blowdown line investigation indicate that the hydraulic conductivity of the overburden aquifer is in the range of  $2.5 \times 10^{-2}$  centimeters/second (cm/sec) to  $3.7 \times 10^{-2}$  cm/sec (CRA, March 2006). Average groundwater velocity in the overburden aquifer is 80 feet/year (ft/yr) to 170 ft/yr in the area of the blowdown line.

The Cooling Lake, which is on the upgradient side of the Station, is not in direct contact with the upper sand aquifer, but rather is separated by a slurry wall (a low permeability barrier) that was installed at the time the Station was built. The slurry wall was installed or keyed into the Wedron Clay Till. The Cooling Lake is surrounded by this slurry wall and is, therefore, isolated from the upper sand aquifer at the site.

The Cooling Lake, although on the average is only 8 feet deep, is underlain by mine spoils left over from the coal-strip mining activities discussed previously. These mine spoils typically contain shales, clays, and siltstones that have been excavated and re-deposited. The mine spoil permeability is expected to be extremely low based upon CRA experience with mine spoils in the region. Consequently, the vertical seepage out of the Cooling Lake should not be significant when compared to evaporation losses or the amount of water blown down to the Kankakee River. Finally, although the Colchester Coal No. 2 was mined in this area, the Maquoketa Shale was not disturbed and remains a barrier to vertical flow beneath the Cooling Lake.

Approximately 140 feet of relatively impermeable shale separate the overburden aquifer from the deep bedrock aquifer. The shale units act as aquitards, limiting the hydraulic communication between the groundwater in the overburden and the bedrock aquifer (Visocky, 1985). Most domestic wells in the area are completed within the Glenwood-St. Peter Formation, which is approximately 600 feet bgs.

The Station does not rely on groundwater for any of its water supplies; consequently, there is little information on the deeper groundwater bearing zones at the Station property. However, a review of the water well logs (Appendix A) for private and public supply wells in the area indicate similar groundwater conditions as discussed previously in Section 2.0. Water supply wells in the Station area are completed to depths of approximately 100 feet, 600 feet, and 1,600 feet in order to tap bedrock water bearing formations (refer to Figure 2.10).

Figure 2.12 presents the locations of a local regional cross-section presenting the regional geology, the location of the PA and deeper private and public water supply wells. Figure 2.13 is a regional cross-section in a southwest to northeast direction. Figure 2.14 is a regional cross-section in a more northerly direction. Both Figures 2.13 and 2.14 indicate the relative depths of PA features, the bedrock aquifers, aquitards and private and public water supply wells.

A former construction water supply well is located in the northeast area of the PA, just east of the Condensate Storage Tanks (Figure 2.1). This well was drilled to a depth of approximately 1,750 feet and is cased to approximately 260 feet bgs. The Braidwood Station does not use this former supply well and there are plans to plug and abandon the well in the near future. The pump inside the well casing restricts access to this well.

#### 2.5 <u>AREA GROUNDWATER USE</u>

The groundwater beneath the Station is not used as a potable resource for its operations. The Station obtains its water from the Kankakee River. There are a number of domestic wells near the Station (see Figures 2.2 and 2.10 for private well locations) that obtain their water from the upper sand aquifer. The groundwater within this upper sand aquifer is under water table conditions with the depth to water ranging from 5 to 15 feet bgs. The shallow aquifer is recharged by precipitation and the shallow aquifer discharges to nearby surface streams and strip mines.

The upper sand aquifer is underlain by Pennsylvanian bedrock composed of siltstone, shale, sandstone, clay, limestone, and coal (Carbondale and Spoon Formations). The Pennsylvanian strata may locally yield up to 20 gpm from the interbedded sandstones.

The Cambrian and Ordovician aquifers in the Station area comprise the Mt. Simon, the Ironton Galesville and the Glenwood-St. Peter Sandstones. These deeper Cambrian and Ordovician aquifers consist of sandstones in contrast to the shallow Pennsylvanian formations, which consist mainly of shale and limestone (Visocky et al, 1985). Water supply wells completed in this aquifer are at depths of over 600 feet (Figures 2.10, 2.13, and 2.14). Most of the groundwater supply wells within the surrounding area of the Braidwood Station are finished within these deeper aquifers (depths of 100 feet, and 600 to 1,600 feet) (Figure 2.10).

The Village of Braidwood, which is approximately 1.5 miles north of the site, provides municipal water via at least one deep bedrock water supply well that has a depth of over 1,600 feet (Figure 2.14). The homeowners and businesses in the Village of Godley generally rely upon shallow sand-point type wells that are constructed into the upper sand aquifer. The Godley Park District uses a deeper bedrock well for its purposes.

#### 2.6 BRAIDWOOD STATION BLOWDOWN LINE INVESTIGATIONS

Since the spring of 2005, Exelon has undertaken extensive efforts to investigate tritium impact in areas outside and east of the PA and along the Station's blowdown lines, including extensive sampling of groundwater, surface water, and private wells. The results are presented as follows:

- Tritium Investigation Report (CRA, March 2006);
- Investigation of Tritium in the Groundwater in the Vicinity of VB-4 (CRA, April 2006);
- Investigation of Tritium in the Groundwater in the Vicinity of VB-6 (CRA, April 2006);
- Investigation of Tritium in the Groundwater in the Vicinity of VB-7 (CRA, April 2006);
- Technical memorandum, "Evaluation of the Source of Tritium in Two Private Wells located Along the Kankakee River and Illinois Route 113" (CRA, June 2006); and
- Hydrogeologic investigation Turbine Building/Protected Area (CRA, June 2006).

The above documents have been submitted to the Illinois EPA.

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#### 3.0 AREAS FOR FURTHER EVALUATION

CRA considered all Station operations in assessing groundwater quality at the Station. During this process, CRA identified areas at the Station that warranted further evaluation or "AFEs". This section discusses the process by which AFEs were selected.

CRA's identification of AFEs involved the following components:

- Station inspection on March 24, 2006;
- interviews with Station personnel;
- evaluation of Station systems;
- investigation of confirmed and unconfirmed releases of radionuclides; and
- review of previous Station investigations.

CRA analyzed the information collected from these components combined with information obtained from CRA's study of hydrogeologic conditions at the Station to identify those areas where groundwater potentially could be impacted from operations at the Station.

CRA then designed an investigation to determine whether any confirmed or potential releases or any other release of radionuclides adversely affected groundwater. This entailed evaluating whether existing Station groundwater monitoring systems were sufficient to assess the groundwater quality at the AFEs. If the systems were not sufficient to adequately investigate groundwater quality associated with any AFE, additional monitoring wells were installed by CRA.

The following sections describe the above considerations and the identification of AFEs. The results of CRA's investigation are discussed in Section 5.0.

# 3.1 <u>SYSTEMS EVALUATIONS</u>

Exelon launched an initiative to systematically assess the structures, systems and components that store, use, or convey potentially radioactively contaminated liquids. Maps depicting each of these systems were developed and provided to CRA for review. The locations of these systems are presented on Figures 3.1 and 3.2. The Station identified a total of 21 systems that contain or could contain potentially radioactively contaminated liquids. The following presents a list of these systems.

System Identification	Description
AB	Boric Acid Process
AS	Auxiliary System Steam
CD	Condensate
СР	Condensate Cleanup
CW	Circulation Water Blowdown and Treated Runoff Return Portions
FC	Fuel Pool Cooling
HD	Feedwater Drains
OG	Off Gas
OD	Equipment/Floor Oil Drain
PW	Primary Water
RF	Reactor Building Floor Drains
SH	Station Heating
ST	Sewage Treatment
SX	Essential Service Water
TE	Turbine Building Floor Drains
TF	Turbine Building Floor Drains
TR	Treated Runoff
VF	Filtered Vents
WE	Auxiliary Building Equipment Drain
WF	Auxiliary Building Floor Drain
WX	Radwaste Disposal

After these systems were identified, Exelon developed a list of the various structures, components and areas of the systems (e.g., piping, tanks, process equipment) that handle or could potentially handle any radioactively contaminated liquids. The structures, components, and areas may include:

- aboveground storage tanks;
- condensate vents;
- areas where confirmed or potential historical releases, spills, or accidental discharges may have occurred;
- pipes;
- pools;
- sumps;
- surface water bodies (i.e., basins, pits, ponds, or lagoons);
- trenches;
- underground storage tanks; and
- vaults.

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The Station then individually evaluated the various system components to determine the potential for any release of radioactively contaminated liquid to enter the environment. Each structure or identified component was evaluated against the following seven primary criteria:

- location of the component (i.e., basement or second floor of building);
- component construction material (i.e., stainless steel or steel tanks);
- construction methodologies (i.e., welded or mechanical pipe joints);
- concentration of radioactively contaminated liquid stored or conveyed;
- amount of radioactively contaminated liquid stored or conveyed;
- existing controls (i.e., containment and detection); and
- maintenance history.

System components, which were located inside a building or that otherwise had some form of secondary containment, such that a release of radioactively contaminated liquid would not be discharged directly to the environment, were eliminated from further evaluation. System components that are not located within buildings or did not have some other form of secondary containment were retained for further qualitative evaluation of the risk of a release of radioactively contaminated liquid to the environment and the potential magnitude of any release.

Exelon's risk evaluation took into consideration factors such as:

- the potential concentration of radionuclides;
- the volume of liquid stored or managed;
- the probabilities of the systems actually containing radioactively contaminated liquid; and
- the potential for a release of radioactively contaminated liquid from the system component.

These factors were then used to rank the systems and system components according to the risk for a potential release of a radioactively contaminated liquid to the environment. The evaluation process resulted in the identification of structures, components, and areas to be considered for further evaluation.

#### 3.2 <u>HISTORICAL RELEASES</u>

CRA also reviewed information concerning confirmed or potential historical releases of radionuclides at the Station, including reports and documents previously prepared by Exelon and compiled for CRA's review. CRA evaluated this information in identifying the AFEs. Any historical releases identified during the course of this assessment that may have a current impact on Station conditions are further discussed in Section 3.4.

# 3.3 STATION INVESTIGATIONS

CRA also considered previous Station investigations in the process of selecting the AFEs for the Station. This section presents a summary of the pre-operational radiological environmental monitoring program, past station investigations, and the radiological environmental monitoring program.

#### 3.3.1 PRE-OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for Braidwood Nuclear Power Station, Commonwealth Edison Company, Annual Report 1986, May 1987.

The pre-operational REMP at Braidwood commenced in July 1983. The fourth annual report in 1986 presented data acquired during the period from January through December 1985. Atmospheric radiation monitoring consisted of gas and air particulate radioactivity measurements; fall-out monitoring consisted of radioactivity measurements of soil, vegetation, and rain water; domestic water monitoring consisted of well water sample analysis; surface water samples were collected from the two Kankakee River locations and two cooling water locations. Foodstuffs were monitored by analyzing samples of cow's milk and vegetables from nearby farms.

The pre-operational REMP contained analytical results from samples collected from the surface water and groundwater. The samples were analyzed for gross beta content and were averaged for each quarter.

Surface water at the Kankakee River downstream collection point, BD-10, had gross beta concentrations that ranged from  $2.8 \pm 0.9$  picoCuries per liter (pCi/L) to  $3.2 \pm 1.4$  pCi/L. At the upstream Kankakee River collection point, BD-7, the average gross beta concentrations for the second and fourth quarters was 3.6 pCi/L and the average gross beta concentration during the third quarter was 18.8 pCi/L. Gross beta concentrations from the cooling water sample points ranged from unspecified LLDs to a maximum detection of  $4.9 \pm 1.0$  pCi/L.

Monthly composites of weekly sample collections from all surface water locations indicated tritium concentrations were non detect at the LLD (200 pCi/L). Monthly composites of weekly sample collections from all surface water locations indicate (strontium-89, strontium-90, cesium-134, and cesium-137) concentrations less than their specified LLDs.

Groundwater was collected from one off-site well on a quarterly basis. Gross beta, gamma isotopic, radiostrontium, and tritium analyses were performed on all samples. Strontium-89, strontium-90, tritium and gamma emitters were below their respective LLDs. Gross beta activity was within the expected levels and ranged from  $3.7 \pm 1.7$  pCi/L to  $37.9 \pm 3.2$  pCi/L.

# 3.3.2 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

As part of its NRC operating license, Braidwood Station conducts a REMP. The REMP includes the collection of multi-media samples including air, surface water, groundwater, fish, sediment, and vegetation. The samples are analyzed for beta and gamma emitting radionuclides, tritium, iodine-131, and/or strontium as established in the procedures developed for the REMP. The samples are collected at established locations, identified as stations, so that trends in the data can be monitored.

An annual report is prepared providing a description of the activities performed and the results of the analysis of the samples collected from the various media. The latest report generated was prepared by Station personnel and is entitled Annual Radiological Environmental Operating Report for the Braidwood Station (period from January 1 to December 31, 2005), May 2006. This report concluded that the operation of the Braidwood Station had no adverse radiological impact on the environment.

As part of REMP, surface water samples are collected at two locations and groundwater samples are collected at six locations.

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#### 3.3.3 <u>HISTORIC SITE INVESTIGATIONS</u>

This section summarizes historic site investigations completed at the Station in regard to releases of radioactively contaminated liquid to the subsurface.

#### 3.3.3.1 <u>POWER PLANT DOCUMENTS-UFSAR REPORT</u>

During the construction of the Station, a series of comprehensive investigations of regional and local geology, surface water, and groundwater conditions were conducted. These studies are documented in the UFSAR Rev. 10, December 2004.

#### 3.3.3.2 <u>BLOWDOWN LINE INVESTIGATION</u>

The blowdown line, which runs from the PA and east to the Kankakee River, was previously evaluated by CRA. The results are presented in a series of reports listed in Section 2.6 and Section 10.0. Figure 2.11 presents locations of monitoring wells installed as of May 2006 along the blowdown line and in the PA as part of these previous studies.

#### 3.4 IDENTIFIED AREAS FOR FURTHER EVALUATION

CRA used the information presented in the above sections along with its understanding of the hydrogeology at the Station to identify AFEs, which were a primary consideration in the development of the scope of work in the Work Plan. The establishment of AFEs is a standard planning practice in hydrogeologic investigations to focus the investigation activities at areas where there is the greatest potential for impact to groundwater.

Specifically, AFEs were identified based on these six considerations:

- systems evaluations;
- risk evaluations;
- review of confirmed and/or potential releases;
- review of documents;
- review of the hydrogeologic conditions; and
- Station inspection completed on March 24, 2006.

Prior to CRA completing its analysis and determination of AFEs, Station personnel completed an exhaustive review of all historic and current management of systems that may contain potentially radioactively contaminated liquids.

CRA reviewed the systems identified by the Station, which have the potential for the release of radioactively contaminated liquids to the environment, and groundwater flow at the Station. This evaluation allowed CRA to become familiar with Station operations and potential systems that may impact groundwater. CRA then evaluated information concerning historic releases as provided by the Station. This information, along with a review of the results from historic investigations, was used to refine CRA's understanding of areas likely to have the highest possibility of impacting groundwater. Where at risk systems or identified historical releases were located in close proximity or were located in areas which could not be evaluated separately, the systems and historical releases were combined into a single AFE. At times, during the Station investigation, separate AFEs were combined into one or were otherwise altered based on additional information and consideration.

Finally, CRA used its understanding of known hydrogeologic conditions (prior to this investigation) to identify AFEs. Groundwater flow was an important factor in deciding whether to combine systems or historical releases into a single AFE or create separate AFEs. For example, groundwater beneath several systems that contain radioactively contaminated liquids that flows toward a common discharge point were likely combined into a single AFE. The AFEs were created based on known groundwater flow conditions prior to the work completed during this investigation.

Based upon its review of information concerning confirmed or potential historical releases, historic investigations, and the systems at the Station that have the potential for release of radioactively contaminated liquids to the environment combined with its understanding of groundwater flow at the Station, CRA identified four AFEs (see Figures 3.1 and 3.2).

#### AFE-Braidwood-1- North of the Slurry Wall

This area was identified as an AFE to investigate the possibility that the slurry wall (slurry trench) is not providing sufficient hydraulic control to prevent tritium (if present) from migrating off the site property. Tritium has been detected in the groundwater within the slurry wall on the west side of the Turbine Building. It was necessary to assess if this tritium or other groundwater impacts had the potential to migrate north of the slurry wall and outside the PA.

On March 13, 2006, rain accumulated and mixed with tritiated water within the bermed area surrounding the Frac Tank storage area located on a concrete pad (Refer to Figure 3.2). The berm surrounding the tanks was breached and allowed water to spill over the berm and seep into soils near the pad. Most of the water was recovered.

#### AFE-Braidwood-2 - North/Northeast of Units 1 and 2

This area was identified as an AFE due to its proximity to Units 1 and 2 and the systems near these two units. More specifically, this area was identified as an AFE to monitor groundwater quality on the northeast of the reactors, the fuel handling building, and other systems.

#### AFE-Braidwood-3 - Auxiliary Construction Storage Tank

This area comprises the Auxiliary Construction Storage Tank, the blowdown line as it exits the PA, and the sewage treatment plant. This area was selected for groundwater monitoring to evaluate the quality of groundwater in this area of the PA and the potential impacts of historical releases documented by Exelon.

#### AFE-Braidwood-4 - West Side of Turbine Building

This area comprises the west side of the Turbine Building. The following five pieces of information provide support to this area being identified as an AFE:

- existing monitoring well data from the Winter of 2006 had indicated tritium impacts in wells located adjacent to the west side of the Turbine Building foundation;
- a seep, occurring intermittently, into the basement of the Turbine Building had indicated concentrations of tritium over the LLD of 200 pCi/L;
- prior to 1992, effluent from Turbine Building Fire and Oil Sump was released to the storm water drainage system;
- in December 1990, some tritiated water may have been periodically discharging to the storm sewer system through a heating system relief valve. The valves discharge to the Oil/Water Separator on the north end of the property. The separator then discharges into the drainage ditch; and
- on April 6, 2006, a release of steam (location is presented on Figure 3.2) from the west side of the Turbine Building discharged onto the ground surface near the waste treatment lagoons and north of the waste treatment plant. The release was partially remediated by collecting all available standing water, pumping water from the storm water drainage system, and blocking drainage paths for some site drainage ditches.

#### 4.0 <u>FIELD METHODS</u>

The field investigations completed for this HIR were completed in April, May, and July 2006. CRA supervised the installation of monitoring wells and staff gauges, collected samples from the newly-installed and existing monitoring wells and from surface water locations, and collected a round of groundwater and surface water measurements. The field investigations were completed in accordance with the methodologies presented in the Work Plan (CRA, 2006).

#### 4.1 STAFF GAUGES INSTALLATION

Figure 4.1 presents the location of the four new staff gauges and two surface water monitoring points installed as part of this investigation. CRA installed staff gauges at four locations (SG-BW-101 to 104) within the perimeter ditch and established two monitoring points (SG-105 and 106) on the Cooling Lake.

# 4.2 <u>GROUNDWATER MONITORING WELL INSTALLATION</u>

Twelve new monitoring wells were installed for the fleetwide hydrogeologic investigation. Monitoring well construction logs are provided in Appendix A. This included ten wells completed within the upper sand aquifer and two completed within the shallow bedrock. Figure 4.2 presents the location of the new monitoring wells. These locations were selected based on a review of all data provided, the hydrogeology at the Station, and current understanding of identified AFEs. Table 4.1 summarizes the well completion details.

Prior to completing any ground penetration activities, CRA completed subsurface utility clearance procedures to minimize the potential of injury to workers and/or damage to subsurface utility structures. The subsurface clearance procedures consisted of completing an electronic survey within a minimum of 10-foot radius of the proposed location utilizing electromagnetic and ground penetrating radar technology. Additionally, an air knife was utilized to verify utilities were not present at the proposed location to a depth to 10 feet bgs.

Specific installation protocols for the ten shallow monitoring wells are described below:

• the borehole was advanced to the target depth using 4.25-inch inside diameter hollow-stem augers (HSA) or Rotosonic techniques;

- a nominal 2-inch diameter (No. 10 slot) PVC screen, 10 feet in length, attached to a sufficient length of 2-inch diameter schedule 40 PVC riser pipe to extend to the surface, was placed into the borehole through the augers;
- a filter sand pack consisting of silica sand was installed to a minimum height of 2 feet above the top of the screen as the augers are removed;
- a minimum 2-foot thick seal consisting of 3/8-inch diameter bentonite pellets or chips was placed on top of the sand pack and hydrated using potable water;
- the remaining borehole annulus was sealed to within 3 feet of the surface using pure bentonite chips;
- the remaining portion of the annulus was filled with concrete and a 6-inch diameter protective above-grade casing. The well head will be fitted with a water-tight, lockable cap; and
- cement-filled bollard posts were installed around selected monitoring well locations.

Shallow monitoring wells included two types of wells completed within the upper sand aquifer. A shallow zone well was completed at depths of approximately 15 feet bgs into the upper sand zone and at the water table. The deep zone wells were completed at depths of approximately 25 to 30 feet bgs and into the lower portions of sand found on top of the Wedron Clay Till.

Specific installation protocols for the two bedrock monitoring wells are described below.

Each shallow bedrock well was drilled to and completed within the first water bearing zone encountered beneath the Francis Creek Shale Member. A sandstone was encountered below these shales and the screened interval for both MW-BW-201BD and MW-BW-208BD was set into this sandstone layer at a depth of approximately 80 to 95 feet bgs at MW-BW-201BD and from 85 to 100 feet bgs at MW-BW-208BD. This sandstone is expected to be part of the underlying Spoon Formation.

MW-BW-201D was installed using 8-inch HSA drilled to a depth of 39 feet bgs. A 6-inch protective casing was then installed through the augers and pushed to a depth of 40 feet bgs to ensure a proper seal into the till. A HQ coring bit was used to drill through the shale and siltstone formations to a depth of 100 feet bgs. Ten-foot core samples were recovered between 70 and 100 feet bgs. The core sample recovered in MW-BW-201BD between 84 and 91 feet bgs appeared to contain highly fractured and weathered sandstone, therefore the monitoring well screen was installed to straddle that zone (i.e., from 80 to 95 feet bgs) as shown on the well construction log. Similar conditions were encountered at MW-BW-208BD. At this location the well screen was

installed between 80 to 100 feet bgs. The monitoring well MW-BW-208BD was installed in July 2006 using Rotosonic drilling techniques.

Sand was installed in the borehole from the bottom of the hole to the bottom of the well screen to provide a base for the 2-inch monitoring well. A sand pack was then installed up to a depth of 2 feet above the top of the screen. Bentonite chips were installed to ensure a hydraulic seal above the sand pack. The protective casing and either the 8-inch augers (in the case of the HSA) or the drill steel (in the case of the Rotosonic) were then removed from the borehole. A bentonite gel and Portland cement slurry was then mixed and added to the borehole to 2 feet bgs. The monitoring wells were then finished with a Pro-cover protective casing.

# 4.3 <u>GROUNDWATER MONITORING WELL DEVELOPMENT</u>

In order to establish good hydraulic communication with the aquifer and reduce the volume of sediment in the monitoring well, monitoring well development was performed in accordance with the procedure outlined below:

- Monitoring wells were surged using a pre-cleaned surge block for a period of at least 20 minutes.
- Water was purged from the monitoring well using a pneumatic submersible pump.
- Groundwater was collected at regular intervals with the pH, temperature, and conductivity measured using field instruments. These instruments were calibrated daily according to the manufacturer's specifications. Additional observations such as color, odor, and turbidity of the purged water were recorded in the field book.
- Development continued until the turbidity and silt content of the monitoring wells was significantly reduced and three consistent readings of pH, temperature, and conductivity were recorded, or a minimum of ten well volumes were purged.

A summary of the well development parameters is provided in Table 4.2.

# 4.4 <u>WELL INVENTORY</u>

CRA performed a comprehensive private well survey/inventory along the length of the blowdown line and in areas north and west of the site. This well inventory was presented in the reports discussed in Section 2.6. The private well logs for wells near and surrounding the Site are provided in Appendix B. These wells are a subset of the

water supply wells sampled by Exelon. Figure 2.15 presents the locations and results for private wells, public wells, and monitoring wells.

#### 4.5 <u>SURVEY</u>

The new monitoring wells and staff gauges were surveyed to establish reference elevations relative to mean sea level. The top of each well casing was surveyed to the nearest 0.01 feet relative to the National Geodetic Vertical Datum (NGVD), and the survey point was marked on the well casing. The survey included the ground elevation at each well to the nearest 0.10 feet relative to the NGVD, and the well location to the nearest 1.0 foot. A reference point was also marked on each staff gauge.

#### 4.6 GROUNDWATER AND SURFACE WATER ELEVATION MEASUREMENTS

From May 9 to 11, 2006, CRA collected water level measurements from both existing monitoring wells, new monitoring wells, and from surface water locations in accordance with the Work Plan. CRA collected a second round of water levels from both existing and new monitoring wells on July 31, 2006. Based on the measured depth to water from the reference point and the surveyed elevation of the reference point, the groundwater or surface water elevation was calculated. A summary of groundwater elevations for the events is provided in Table 4.3.

Prior to the water level measurements, the wells were correctly identified and located. Once the well was identified, a thorough inspection of each well was conducted, and any deficiencies were noted. Water level measurements were collected using an electronic depth-to-water probe accurate to +/-0.01 feet. The measurements were made from the designated location on each of the monitoring wells inner riser or steel casing. The water level measurements were obtained using the following procedures:

- The proper elevation of the meter was checked by inserting the tip into water and noting if the contact was registering correctly.
- The tip was dried, and then slowly lowered into the well until contact with the water was indicated.
- The tip was slowly raised until the light and/or buzzer just began to activate. This indicated the static water level.
- The reading at the reference point was noted to the nearest hundredth of a foot.

- The reading was then re-checked.
- The water level was then recorded, and the water level meter decontaminated prior to use at the next well location.

In early May 2006, as part of the fleetwide investigation, CRA collected a round of water level measurements from 43 of the Station monitoring wells and six surface water locations on the Station. On July 31, 2006, CRA collected a second round of water level measurements from 45 of the Station monitoring wells (including the two newly installed monitoring wells, MW-BW-207I and MW-BW-208BD). A summary of groundwater elevations for the two events is provided in Table 4.3.

During the May 2006 groundwater sampling program, the following monitoring wells (MW-4, MW-5, TB-1-3D, TW-6, and TW-8) were not measured for depth to water due to problems with the water level indicator meter. CRA subsequently has gone back at a later date to get these water levels. Also, water levels were not measured at TW-8 because TW-8 had broken riser.

Surface water elevations were measured at the four staff gages installed within the perimeter ditch (Figure 4.1) and at two locations on the north side of the Cooling Lake (Figure 4.1). The data from these measurements are provided in Table 4.4.

A pressure transducer was installed by CRA at TB-1-4D for approximately 6 weeks to evaluate water level changes near the Turbine Building close to where leaks have occurred within the basement. The purpose of the continuous monitoring was to determine if the system (pipe) water leaks were creating this basement seep, or, if precipitation/storm water system leaks were affecting flow into the basement.

Water level data were recorded for the period from June 6 to July 21, 2006. Precipitation data were also reviewed for this same period for the Village of Braidwood. Figure 4.3 presents a graphical presentation of the relative head (feet above the transducer) measurements from the transducer. Figure 4.3 also presents the precipitation (inches) for the monitored period. The pressure transducer was set at 10 feet below the top of the well casing. At the time of installation, the water table was 6.9 feet below the top of the well casing.

#### 4.7 GROUNDWATER AND SURFACE WATER SAMPLE COLLECTION

CRA conducted two rounds of groundwater sampling during the completion of the Work Plan for these hydrogeologic investigations. A total of 43 monitoring wells were sampled between May 9 and May 22, 2006 and two monitoring wells were sampled on July 28, 2006. Of the 45 monitoring wells sampled, 12 were newly installed. The sampling was scheduled to allow for two weeks to elapse between well development and groundwater sample collection. The existing wells were selected for inclusion in this monitoring program based on their proximity to the AFEs. The new wells were installed to complete the monitoring network near the AFEs.

At the monitoring locations, CRA conducted the sampling using dedicated tubing and peristaltic pumps and employed low-flow purging techniques as described in Puls and Barcelona (1996).

The groundwater in the monitoring wells was sampled by the following low-flow procedures:

- The wells were located and the well identification numbers were verified.
- A water level measurement was taken.
- The well was sounded by carefully lowering the water level tape to the bottom of the well (so as to minimize penetration and disturbance of the well bottom sediment), and comparing the sounded depth to the installed depth to assess the presence of any excess sediment or drill cuttings.
- The pump or tubing was lowered slowly into the well and fixed into place such that the intake was located at the mid-point of the well screen, or a minimum of 2 feet above the well bottom/sediment level.
- The purging was conducted using a pumping rate between 100 to 500 milliliters per minute (mL/min). Initial purging began using the lower end of this range. The groundwater level was monitored to ensure that a drawdown of less than 0.3 feet occurred. If this criterion was met, the pumping rate was increased dependent on the behavior of the well. During purging, the pumping rate and groundwater level were measured and recorded every 10 minutes.
- The field parameters (pH, temperature, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity) were monitored during the purging to evaluate the stabilization of the purged groundwater. Stabilization was considered to be achieved when three consecutive readings for each parameter, taken at 5-minute intervals, were within the following limits:

pН	$\pm$ 0.1 pH units of the average value of the three readings;	
Temperature	± 3 percent of the average value of the three readings;	
Conductivity	±0.005 milliSiemen per centimeter (mS/cm) of the average value of the three readings for conductivity <1 mS/cm and ±0.01 mS/cm of the average value of the three readings for conductivity >1 mS/cm;	
ORP	± 10 millivolts (mV) of the average value of the three readings;	
DO	± 10 percent of the average value of the three readings; and	
Turbidity	$\pm$ 10 percent of the average value of the three readings, or a final value of less than 5 nephelometric turbidity units (NTU).	

• Once purging was complete, the groundwater samples were collected directly from the pump/tubing directly into the sample containers.

All groundwater samples were labeled with a unique sample number, the date and time, the parameters to be analyzed, the job number, and the sampler's initials. The samples were then screened by the Station for shipment to Teledyne Brown Engineering, Inc. (Teledyne Brown).

A sample key is presented in Table 4.5; purging parameters for the fleetwide event are presented in Table 4.6.

CRA containerized the water purged from the monitoring wells during the sampling, as well as the water purged from all of the wells during the hydrogeologic investigation. The water was placed into 55-gallon drums, which will be processed by the Station in accordance with its NPDES permit.

Surface water samples were collected on May 17, 2006 a few days after a storm event. The surface water samples were collected under dry conditions in order to avoid dilution by rainwater. Six surface water samples were collected, four at staff gauges located on the perimeter ditch and locations on the north end of the Cooling Lake. The surface water sampling locations are presented on Figure 4.1.

The surface water samples were collected by submerging the sample container at the determined sample locations until completely filled. All samples were shipped to Teledyne Brown for analysis.

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#### 4.8 DATA QUALITY OBJECTIVES

CRA has validated the analytical data to establish the accuracy and completeness of the data reported. Teledyne Brown provided the analytical services. The Quality Assurance Programs for the laboratory is described in Appendix E. Analytical data for groundwater and surface water samples collected in accordance with the Work Plan are presented in Appendix F. Data validation reports are presented in Appendix G. The data validation included the following information and evaluations:

- sample preservation;
- sample holding times;
- laboratory method blanks;
- laboratory control samples;
- laboratory duplicates;
- verification of laboratory qualifiers; and
- field quality control (field blanks and duplicates).

Following the completion of field activities, CRA compiled and reviewed the geologic, hydrogeologic, and analytical data.

The data were reviewed using the following techniques:

- data tables and databox figures;
- hydrogeologic cross-sections; and
- hydraulic analyses.

#### 4.9 <u>SAMPLE IDENTIFICATION</u>

Systematic sample identification codes were used to uniquely identify all samples. The identification code format used in the field was: WG - BW – 050806 - MB - 001. A summary of sample identification numbers is presented in Table 4.5.

- WG Sample matrix -groundwater
- SW Sample matrix surface water
- BW Station code
- 050806 Date
- MB Sampler initial
- 001 Sample number
### 4.10 <u>CHAIN-OF-CUSTODY RECORD</u>

The samples were delivered to Station personnel under chain-of-custody protocol. Subsequently, the Station shipped the samples under chain-of-custody protocol to Teledyne Brown for analyses.

### 4.11 <u>QUALITY CONTROL SAMPLES</u>

Quality control samples were collected to evaluate the sampling and analysis process.

#### Field Duplicates

Field duplicates were collected to verify the accuracy of the analytical laboratory by providing two samples collected at the same location and then comparing the analytical results for consistency. Field duplicate samples were collected at a frequency of one duplicate for every ten samples collected. A total of seven duplicate samples were collected. The locations of duplicate samples were selected in the field during the performance of sample collection activities. The duplicate samples were collected simultaneously with the actual sample and were analyzed for the same parameters as the actual samples.

## Split Samples

Split samples were collected for the NRC for tritium simultaneously with the actual sample at every sample location. Split samples were delivered to the Station personnel and made available to the NRC.

## 4.12 <u>ANALYSES</u>

Groundwater and surface water samples were analyzed for tritium and gamma-emitting radionuclides as listed in NUREG-1301 and strontium-89/90 as listed in 40 CFR 141.25.

#### 5.0 <u>RESULTS SUMMARY</u>

This section provides a summary of Station-specific geology and hydrogeology, along with a discussion of hydraulic gradients, groundwater elevations, and flow directions in the vicinity of the Station. This section also presents and evaluates the analytical results obtained from activities performed in accordance with the Work Plan.

### 5.1 <u>STATION GEOLOGY</u>

The geology encountered during monitoring well installation is consistent with the geology described in Section 2.4.2 and the geology within areas to the east and along the blowdown line as described in the CRA reports previously listed (refer to Section 2.5). The geology beneath the site consists of overburden deposits of sand (Equality Formation) and clay (Wedron Clay Till) that overlies alternating layers of shale/siltstone and dolostone (Carbondale Formation) (refer to the site specific stratigraphic column on Figure 2.8). South-north and east-west hydrogeologic profiles (profiles) are presented on Figures 5.1 to 5.5. These profile locations were chosen because of their close proximity to structures potentially influencing groundwater flow patterns.

The three new shallow and seven intermediate depth wells (MW-BW-201S, MW-BW-201I, MW-BW-202S, MW-BW-202I, MW-BW-203S, MW-BW-203I, MW-BW-204I, MW-BW-205I, MW-BW-206I, and MW-BW-207I) were installed within the Equality Formation. The Equality Formation is primarily uniform fine-grained sand. The monitoring well logs for the new monitoring wells are presented in Appendix A.

The two bedrock wells, MW-BW-201BD and MW-BW-208BD, were installed through the Equality Formation, the Wedron Clay Till, the Francis Creek Shale Member of the Carbondale Formation and into the lower portion of the Francis Creek Shale Member. Refer to Figure 2.8 for the sequence of formations beneath the site. The top of the Wedron Clay Till was encountered at approximately 24 feet bgs, which is consistent with previous geological investigations. The bottom of the clay was approximately 54 feet bgs where shale bedrock was encountered and is considered to be the Francis Creek Shale Member. At a depth of approximately 85 feet bgs, a sandstone was encountered that was weathered. From 90 to 100 feet, the material included a conglomerate, sandstone, and shale. MW-BW-201BD and MW-BW-208BD were both completed in this lower zone from 80 to 95 feet bgs and 85 to 100 feet bgs, respectively. This is expected to be the bottom of the Francis Creek Shale Member of the Carbondale Formation and it is located just above the Colchester Coal (Figure 2.8).

Profile A-A' (Figure 5.2) is a west-east profile through the middle of the Station. It begins at the western fence line bordering the Station and terminates near the eastern perimeter ditch approximately 1,200 feet east of the eastern fence line of the site. The profile A-A' presents the relative elevations of the perimeter ditch water levels with groundwater levels on both sides of the PA. Higher water levels are measured in the eastern stretch of the perimeter ditch. The profile also indicates that the buildings extend to the top of the Francis Creek Shale Member (through the Wedron Clay Till) and will act as barriers to lateral flow. The backfilled area around the building is also indicated on this profile. Finally, the slurry wall is projected on this figure based upon information gathered from Station documents. The top of the slurry wall appears to be close to the current water table elevation.

Profile B-B' (Figure 5.3) is a north-south profile and parallels the storm sewer line that runs south-north. The profile B-B' indicates the relative elevation of the groundwater table and the approximate depth of the storm water drainage system. This figure clearly indicates that the storm water drainage system intercepts the water table as reported previously (CRA, August 2002 and September 2003). The limits of the construction excavation are also depicted on this profile along with the expected condition of the slurry wall. During drilling of the intermediate monitoring well MW-BW-207I on July 13, 2006, the Wedron Clay Till was not encountered. The material encountered included sands and other fill type material such as gravels and concrete. These observations indicate that the Station construction excavation went to a depth of approximately 44 to 45 feet bgs at this location. This depth of the excavation is indicated on Figure 5.3. Although the clay was missing in the location of MW-BW-207I, the top of the Francis Creek Shale Member was encountered where expected (45 feet bgs).

Profile C-C (Figure 5.4) is a north-south profile down the center of the PA area to the Cooling Lake. The bedrock well (MW-BW-201BD) is displayed on this figure, as well as the building foundation. The profile C-C' presents a more regional depiction of subsurface conditions from the Cooling Lake in the south to the north end of the PA. The slurry wall associated with the Cooling Lake and the slurry wall associated with the building construction are depicted on this profile. The depths of the various facility buildings are shown to extend down through the Wedron Clay Till and to the top of the Francis Creek Shale Member. As such, these buildings are barriers to lateral groundwater flow. The shallow bedrock monitoring well (MW-BW-201BD) is presented on this figure and indicates the bottom of the Francis Creek Shale Member.

Profile D-D' (Figure 5.5) is a west-east profile in the northern portion of the PA that transects the CST area. Hydrogeologic profile D-D' presents the locations and relative elevations of the groundwater, storm water drainage system, slurry wall, and

excavation/fill material. This profile is north of the Turbine Building and as such does not present subsurface building structures. The water levels on each side of the slurry wall on the west do indicate a slight difference in elevation. However, this is not as apparent in other areas in the PA.

## 5.2 <u>SITE HYDROGEOLOGY</u>

This section describes groundwater flow in the various hydrogeologic units identified at the site. Figure 5.1 presents the monitoring well network in relationship to the hydrogeologic profile locations. Hydrogeologic profiles are presented on Figures 5.2 to 5.5.

# 5.2.1 <u>GROUNDWATER FLOW DIRECTIONS</u>

Groundwater flow directions in the upper sand aquifer are presented on Figures 5.6 and 5.7 (the shallow zone) and on Figures 5.8 and 5.9 (the deep zone). Figures 5.6 and 5.8 represent water levels measured in May 2006. Figures 5.7 and 5.9 represent water levels measured in July 2006. CRA has identified four areas of differing flow within and around the PA based upon the May and July water levels. These four areas are a result of the man-made features presented in the previous section.

One flow system encompasses the east side of the PA. The second system is found along the west side of the Turbine Building within the perimeter of the slurry wall and within the limits of the former excavation. The third system is to the northwest of the slurry wall near the perimeter ditch. The fourth system includes the area west-southwest of the PA where groundwater flows to the southwest and discharges to the perimeter ditch. The groundwater flow is restricted by the basement walls and, to some degree, the slurry trench. Groundwater flow directions are provided on Figures 5.6 and 5.7 for the shallow zone of the upper sand aquifer and on Figures 5.8 and 5.9 for the deep zone of the upper sand aquifer.

Groundwater in the near west side of the Turbine Building predominantly flows to the north toward a storm water drainage system ditch north of the Oil/Water Separator. The storm water drainage system ditch is a tributary to the perimeter ditch (Figure 2.3).

To the west and southwest of the PA, the perimeter ditch acts as a discharge point for the shallow groundwater system (CRA, August 2002). Groundwater generally flows to the ditch from east to west. The water elevation within the ditch is measured to be

approximately 586 feet above mean sea level (AMSL) at a location northwest of the PA. Groundwater elevations are higher than ditch elevations along the length of the perimeter ditch as it flows to the south. There is no shallow groundwater flow to the west of the perimeter ditch under normal flow conditions (CRA, September 2003).

# 5.2.2 <u>MAN-MADE INFLUENCES ON GROUNDWATER FLOW</u>

There are a number of man-made features that influence the flow direction and velocity of groundwater as it moves through the site area. These features include:

- The perimeter ditch (Figures 2.3, 2.6, and 2.7), which was dug at the time of the Station Construction to drain surface water away from the Cooling Lake;
- The storm water drainage system (Figures 2.3, 2.4, and 2.5) located on the west side of the Turbine Building and its associated Oil/Water Separator;
- The slurry wall constructed around the footprint of the buildings in the PA (Figure 2.1;
- The former excavation now backfilled with material located around the current buildings (Figure 2.1);
- The various basements and foundations of the turbine, auxiliary, reactor, fuel handling, and other buildings, many of these extend through the water table (Figures 5.2 to 5.5); and
- The Cooling Lake and the slurry wall, which are located south of the PA (Figures 2.13, 2.14, and 5.4).

The figures listed above and the discussion presented below provide basic observations on the impact of these features on groundwater flow which was discussed previously in Section 5.2.2.

The PA (Figure 1.2) is located at the northwest area of the Station property and is surrounded by the perimeter ditch, which flows from the east, to the north of the PA, and then to the south. The perimeter ditch flows along the western boundary of the Station property (Figure 2.3). The elevation of the water in the ditch drops from about 593 feet AMSL on the east side to 586 feet AMSL on the west side. The water levels continue to drop as the ditch flows to the south and west. As the ditch exits the Braidwood Station Property, its surface water elevation is about 579 feet AMSL.

To the south of the PA is the Cooling Lake, which comprises over 2,500 acres of impounded water. A slurry wall constructed to keep surface water from seeping into

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the upper sand aquifer surrounds the Cooling Lake. This is confirmed by the groundwater data monitored by the Station at various locations around the Lake.

During construction of the buildings within the PA, a slurry wall was constructed to minimize groundwater infiltration into the excavation. This excavation was within the confines of the slurry wall and in some areas the depth was greater than 40 feet and into the underlying bedrock shale formation (UFSAR, 1994).

The foundations or basements associated with the Reactors/Auxiliary Building and the Turbine Building extend to depths below the water table. In fact, the foundations were completed through the Wedron Clay Till at this Station, as is shown on the hydrogeologic profiles presented on Figures 5.2 to 5.5 (i.e., the Wedron Clay Till was removed during building excavation). These basements are barriers to groundwater flow in the upper sand aquifer. There are no dewatering systems such as sump pumps used to manage groundwater inflow. As such, the basement walls are assumed to be impermeable to groundwater flow. Consequently, groundwater pressure on these foundations will create an inward gradient into the basement. The Francis Creek Shale Member was not disturbed during building construction and remains in place as an aquitard.

The PA and surrounding land is generally flat and paved areas, roadways, and parking lots now cover it. These areas are drained by a storm water drainage system that drains to the northwest corner of the PA. The storm water drainage system drains to an Oil/Water Separator at the north end of the PA (Figures 2.3 and 2.5). The outfall from the Oil/Water Separator discharges to a small east-west ditch and then flows west to the perimeter ditch.

Previous studies have documented that the storm water drainage system intercepts groundwater on the west side of the Turbine Building. These same studies have indicated that the perimeter ditch, which flows from the north to the south along the western Station property line, also intercepts the groundwater (CRA, August 2002 and September 2003). As such, groundwater flowing near the perimeter ditch will be intercepted by the ditch (Figures 2.6 and 2.7).

# 5.2.3 <u>VERTICAL HYDRAULIC GRADIENTS</u>

Several monitoring well nests have been installed in the upper sand aquifer not only to determine the vertical distribution of impacted groundwater, but also the vertical hydraulic gradient within the aquifer. The calculated hydraulic gradients for the site are

provided in Table 5.1 and the well locations used to calculate hydraulic gradients are shown on Figure 5.1.

Table 5.1 indicates that vertical hydraulic gradients are minor or slightly upward in areas away from the buildings and away from the former construction excavation. However, a few monitoring well clusters located on the west side of the Turbine Building indicate a downward vertical hydraulic gradient. This gradient varies from 0.005 feet/foot (ft/ft) at TB-1-4D/TW-3 location to 0.167 ft/ft at the TB-1-2D/MW-2 location. The locations with downward vertical hydraulic gradients are also near the storm water drainage system. The cause of the downward vertical hydraulic gradients is likely related to the additional recharge from the nearby storm water drainage system.

Vertical groundwater flow is restricted by the regional aquitards. However, due to the removal of the Wedron Clay Till beneath the buildings, one of the two regional aquitards was locally removed within the PA. Nevertheless, groundwater data indicate that the remaining aquitard (the Francis Creek Shale Member) is preventing vertical migration of tritium downward within the PA.

The downward vertical hydraulic gradients measured along the west side of the Turbine Building are likely caused by increased recharge into the fill material by precipitation that leaks from the storm water drainage system. A review of the precipitation and transducer data on Figure 4.3 suggests that there are small groundwater fluctuations that may be due to precipitation/storm water infiltration. The data presented on Figure 4.3 do not suggest that there are any types of systematic or routine events (i.e., operations) that are causing fluctuations in the water table elevations.

## 5.2.4 LATERAL GROUNDWATER FLOW AND VELOCITY

The groundwater flow directions depicted on Figures 5.6, 5.7, 5.8, and 5.9 for the upper sand aquifer indicate, to some degree, a radial pattern of flow from the center of the PA. Groundwater flow directions are similar to conditions measured in May and July 2006. This pattern is better explained by understanding the role of man-made features on the regional flow direction in this upper sand aquifer. Groundwater on a local or regional basis in the upper sand aquifer is to the north and northeast towards the surface waters that drain to the Kankakee and Illinois Rivers (CRA March 2006). This flow direction was confirmed in the blowdown studies discussed in Section 2.6.

Within and nearby the PA the man-made features have modified the local flow system to the north. First, the former construction excavation and the building basements force

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a split or divide in flow as groundwater moves from south to north. Second, the perimeter ditch flows from east, to north to south and ultimately to the west around the PA and becomes a discharge point for groundwater. This ditch intercepts the groundwater table and groundwater discharges into this ditch along its whole length. The surface water elevation of the perimeter ditch as it exits the Braidwood Station property (south of Godley) is approximately 579 feet AMSL (CRA, September 2000). This is 11 to 16 feet lower than the groundwater elevation in the PA.

Consequently, the combination of structures in the PA and the presence of the perimeter ditch create the appearance of radial flow, but these influences are just a modification to the regional flow direction of south to north.

The average calculated horizontal hydraulic gradient in the upper sand aquifer along the east side of the PA is 0.004 ft/ft. The groundwater flow direction in this area is from the south to north. Figures 5.6 and 5.7 display the groundwater elevation contours in the shallow groundwater zone.

The average calculated horizontal hydraulic gradient in the upper sand aquifer along the west side of the Turbine Building is 0.007 ft/ft. The general groundwater flow direction in this area is from south to north (Figures 5.6, 5.7, 5.8, and 5.9).

The average calculated horizontal hydraulic gradient in the upper sand aquifer west of the slurry wall is 0.005 ft/ft. The general groundwater flow direction in this area is from the southeast to the northwest (Figures 5.6, 5.7, 5.8, and 5.9).

The overall, site-wide, average calculated horizontal hydraulic gradient is approximately 0.007 ft/ft within the upper sand aquifer. Results from previous single-well response tests performed east of the PA and along the blowdown line (previous investigations referred to in Section 1.0) indicate that the hydraulic conductivity of the overburden aquifer is  $2.5 \times 10^{-2}$  cm/s. Assuming an average effective porosity of 0.3, the average groundwater velocity in the upper sand aquifer is approximately 604 ft/yr.

The calculated hydraulic gradients and average groundwater velocity are greater than that observed east of the PA and along the blowdown line. It is likely that the groundwater velocity is influenced by steep hydraulic gradients toward the perimeter ditch flowing to the north and to the west of the PA.

## 5.3 <u>GROUNDWATER QUALITY</u>

CRA personnel collected groundwater samples from 45 of the monitoring wells located on the Station property, including 12 newly installed monitoring wells. This subset included all available existing monitoring wells in the PA but did not include those located along the blowdown line to the east. The groundwater samples were analyzed for tritium and additional radionuclides. Teledyne Brown provided the analytical services. The Quality Assurance Program for the laboratory is described in Appendix E. The analytical data reports are provided in Appendix F.

Table 5.2 presents a summary of tritium analyses for groundwater samples collected recently in May and July 2006. Table 5.3 presents a summary of radionuclides analyzed in groundwater samples collected in May and July 2006. Tables 5.4 and 5.5 present the tritium and radionuclide analyses for surface water samples, respectively. Table 5.6 presents a summary of groundwater analyses for tritium in samples collected previously at existing monitoring wells. Table 5.7 presents a summary of surface water analyses for tritium in samples collected previously at existing surface water locations.

The analytical data presented herein has been subjected to CRA's data validation process. CRA has used the data with appropriate qualifiers where necessary.

The data reported in the figures and tables does not include the results of recounts that the laboratory completed, except if those results ultimately replaced an initial report. The tables and figures, therefore, include only the first analysis reported by the laboratory. Where multiple samples were collected over time, then the most recent result has been used in the discussion, below.

## 5.3.1 SUMMARY OF BETA-EMITTING RADIONUCLIDES ANALYTICAL RESULTS

A summary of the tritium results for the groundwater samples collected during this investigation is provided in Table 5.2 and shown on Figure 5.10. Table 5.6 summarizes analytical results for previous sampling events performed at the site.

All tritium concentrations were below the USEPA drinking water standard of 20,000 pCi/L. Tritium was not detected at concentrations greater than at the LLD of 200 pCi/L in 34 of the 45 groundwater samples collected.

The highest concentrations of tritium (between 200 pCi/L and 1,040  $\pm$  172 pCi/L) in test wells were predominantly from groundwater samples collected on the west side of the Turbine Building. The highest concentration of tritium at 1,040  $\pm$  172 pCi/L was found at TW-3, which was installed in the deep upper sand aquifer. At five of these locations, the groundwater analyses indicated tritium concentrations just over 200 pCi/L and less than 250 pCi/L.

The groundwater samples collected from the bedrock monitoring wells MW-BW-201BD and MW-BW-208BD, which were completed to a depth of 95 feet bgs and 100 feet bgs, respectively, did not contain tritium at a concentration exceeding the LLD of 200 pCi/L. These wells were completed beneath the confining layers of the Wedron Clay Till and the Francis Creek Shale Member.

Strontium-89/90 was not detected in concentrations greater than the LLD of 2.0 pCi/L. A summary of the strontium-89/90 results for the groundwater samples collected as part of the investigation that is the subject of this HIR is provided in Table 5.3 and shown on Figure 5.11.

# 5.3.2 SUMMARY OF GAMMA-EMITTING RADIONUCLIDES ANALYTICAL RESULTS

Gamma-emitting target radionuclides were not detected in concentrations greater than their respective LLD. A summary of the gamma-emitting radionuclides results for the groundwater samples collected as part of the investigation that is the subject of this HIR is provided in Table 5.3 and shown on Figure 5.11.

Other non-targeted radionuclides were also included in the tables but excluded from discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station.

# 5.3.3 <u>SUMMARY OF FIELD MEASUREMENTS</u>

Table 4.6 presents of a summary of field measurements collected during the well purging and sampling activities. These field measurements included pH, dissolved oxygen, conductivity, turbidity and temperature. The field parameters were typical of a shallow sand aquifer with carbonate source rock (i.e., the underlying limestones and

shales). As such the pH values were found to be above 7.0 and the conductivity was indicative of a shallow water table system subject to surface water recharge.

Of note were the slightly elevated temperature readings (above 20 degrees Celsius) at TB-1-9D, which is located south of the wastewater treatment building and the treatment lagoon (Figure 3.1), TB-10-D, which is located adjacent to the Turbine Building, and just east of TB-1-9D, and MW-BW-207I, which is located adjacent to the Turbine Building, and north of TB-1-10D. It should also be noted that the conductivity of the water purged from MW-6, TB-1-3D, and TB-1-8D was an order-of-magnitude higher than the readings from other sampling locations.

### 5.4 <u>SURFACE WATER QUALITY</u>

Six surface water samples were collected from the four staff gauge locations on the perimeter ditch and from two locations along the north end of the Cooling Lake. The locations of the samples are shown on Figure 4.1. The samples were analyzed for tritium, gamma-emitting radionuclides, and strontium-89/90. Teledyne Brown provided the analytical services. The Quality Assurance Program for the laboratory is described in Appendix E. The analytical data reports are provided in Appendix F. Analytical data for these surface water samples are presented in Tables 5.4 and 5.5.

#### 5.4.1 SUMMARY OF BETA-EMITTING RADIONUCLIDES ANALYTICAL RESULTS

A summary of the tritium results for the surface water samples collected in this investigation is provided in Table 5.4 and shown on Figure 5.10.

Surface water samples SW-101, SW-102, SW-103 had concentrations of tritium of  $398 \pm 129$ ,  $365 \pm 120$ , and  $230 \pm 114$  pCi/L, respectively. These concentrations are greater than the LLD of 200 pCi/L. Surface water samples SW-101 and SW-102 were collected from the perimeter ditch located just northwest of the PA. Surface water sample SW-103 was collected along the perimeter ditch near the northeast corner of the Cooling Lake. A summary of the tritium analytical results from six surface water samples is presented in Table 5.4. Surface water samples collected as part of the blowdown line investigations and as part of the interim routine monitoring program in the PA are provided in Table 5.7.

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The results of analyses of numerous surface water samples, which were collected during the spring and summer of 2006, along the perimeter ditch, have shown that no tritium greater than detectable limits have left the Station.

Strontium-89/90 was not detected in concentrations greater than the LLD of 2.0 pCi/L. A summary of the strontium-89/90 results for the surface water samples collected in this investigation is provided in Table 5.5 and shown on Figure 5.11.

Surface water samples were collected within the perimeter ditch and analyzed for tritium at four monitoring points found north, west, and south of the PA. In addition, surface water was collected at the north end of the Cooling Lake at two locations just off the shoreline. Figure 4.1 presents these locations.

### 5.4.2 SUMMARY OF GAMMA-EMITTING RADIONUCLIDES ANALYTICAL RESULTS

Gamma-emitting target radionuclides were not detected in concentrations greater than their respective LLD. A summary of the gamma-emitting radionuclides results for the surface water samples collected in this investigation is provided in Table 5.5 and shown on Figure 5.11.

Other non-targeted radionuclides were also included in the tables but excluded from discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station.

### 6.0 RADIONUCLIDES OF CONCERN AND SOURCE AREAS

This section discusses radionuclides evaluated in this investigation, potential sources of the radionuclides detected, and their distribution.

### 6.1 <u>GAMMA-EMITTING RADIONUCLIDES</u>

Gamma-emitting target radionuclides were not detected at concentrations greater than their respective LLD. Other non-targeted radionuclides were also included in the tables but excluded from discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station.

## 6.2 <u>BETA-EMITTING RADIONUCLIDES</u>

Strontium-89/90 was not detected in any of the samples collected at concentrations that were greater than the LLD of 2.0 pCi/L. Concentrations of tritium ranged between 200 pCi/L and 1,040  $\pm$  172 pCi/L.

Since only tritium was detected at concentrations greater than the LLDs, the following sections focus on tritium; specifically, providing general characteristics of tritium, potential sources, distribution in groundwater, and a conceptual model for migration.

## 6.3 <u>TRITIUM</u>

This section discusses the general characteristics of tritium, the distribution of tritium in groundwater and surface water, and the conceptual model of tritium release and migration.

## 6.3.1 <u>GENERAL CHARACTERISTICS</u>

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common forms of tritium are tritium gas and tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen. Tritiated water behaves the same as ordinary water in both the environment and the body.

Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine within a month or so after ingestion. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are bombarded to produce tritium.

Although tritium can be a gas, its most common form is in water because, like non-radioactive hydrogen, radioactive tritium reacts with oxygen to form water. Tritium replaces one of the stable hydrogen atoms in the water molecule and is called tritiated water. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (³He). This radioactive decay releases a beta particle (low-energy electron). The radioactivity of tritium is the source of the risk of exposure.

Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

# 6.3.2 DISTRIBUTION IN STATION GROUNDWATER

This section provides an overview of the lateral and vertical distribution of tritium detected in groundwater within and adjacent to the PA. Tritium has been the only parameter detected in the upper sand aquifer at concentrations exceeding background concentrations. This observation is based upon the studies recently completed within and adjacent to the PA and based upon the extensive studies performed along the blowdown line and reported previously to the Illinois EPA. A hydrogeologic profile of the tritium concentrations in groundwater is presented on Figure 6.1. In addition, a plan view of the tritium concentrations detected in the groundwater samples collected as part of this investigation is presented on Figure 6.2. As discussed later in this section, tritium

has not been detected in the deeper, bedrock groundwater at concentrations greater than the LLD of 200 pCi/L.

The detections of tritium in the shallow or deeper parts of the upper sand aquifer in the Station area, which were greater than the LLD of 200 pCi/L, occur within the confines of the slurry wall.

## 6.3.2.1 <u>UPPER SAND AQUIFER</u>

### West Side of the Turbine Building

Generally, tritium concentrations that were greater than the LLD of 200 pCi/L are limited to an area along the west side of the Turbine Building, as summarized in Table 5.2 and illustrated on Figures 5.10 and 6.2. The tritium detected in the groundwater samples from monitoring wells located along the west side of the Turbine Building (TB-1-3D, TB-1-4D, TW-3, TW-6, MW-9, TW-21, and TB-1-5D) indicate consistent concentrations of tritium greater than the LLD. Tritium analytical data for groundwater samples collected from these monitoring wells are available back to January 2006 and have been included in Table 5.6.

Groundwater flow within the west side of the Turbine Building has been observed recently and historically to flow from south to north. The monitoring wells on the west side of the Turbine Building are located within the limits of the former excavated area (for Station construction) and are located within 150 feet of the main foundation of the Turbine Building. These wells are also located within 150 feet of the main storm water drainage system, which runs from the south to the north parallel to the Turbine Building (Figure 2.3). This storm water drainage system discharges to the Oil/Water Separator located at the north end of the PA as is shown on Figure 2.3.

The storm water drainage system intercepts groundwater and has been shown to be a preferential pathway for groundwater to migrate to the north (Figures 2.4 and 2.5). The sewer's ability to transmit groundwater and its contaminants was documented in various reports submitted to the Illinois EPA in the past (CRA, September 2003).

The more recent detections of tritium in groundwater samples from monitoring wells installed in the area along the west side of the Turbine Building are found both in the upper portions or shallow zone of the sand aquifer (e.g., TW-3 and TW-6) in the deeper portions (deeper zone) of the upper sand aquifer (e.g., TB-1-4D and TB-1-5D); and within the fill material (MW-BW-207I).

# Other Areas

There are four monitoring wells where tritium has been detected in groundwater samples at concentrations greater than the LLD of 200 pCi/L in areas not associated with the Turbine Building. These wells are MW-BW-201S/I, MW-BW-205I and TW-24, and at TW-16. The tritium concentrations detected in groundwater samples from MW-BW-201S/I, MW-BW-205I and TW-24 were only slightly greater than the LLD of 200 pCi/L and below 250 pCi/L (refer to Figures 5.10 and 6.2).

The tritium concentration detected in a groundwater sample from TW-16, which is located approximately 300 feet due west of TW-3 (Figures 4.2, 5.10, and 6.2), is situated where water ponded from the April 6, 2006 steam release (Figure 4.2), was  $893 \pm 145 \text{ pCi/L}$ . In this case, the tritium in the groundwater sample from TW-16 can be explained by the more recent release of tritiated water in the west area of the PA, as is discussed further below. Both TW-3 and TW-16 are located in an area near the point at which the relief valve vents outside of the Turbine Building. As shown on Figure 5.7, the groundwater beneath the western side of the PA generally flows from the south to north-northwest.

# 6.3.2.2 <u>DEEPER BEDROCK GROUNDWATER</u>

The first water bearing zone in the deeper bedrock, the zone below the Wedron Clay Till and the Francis Creek Shale Member of the Carbondale Formation was monitored by MW-BW-201BD and MW-BW-208BD. The screened intervals of these two monitoring wells are completed in the zone of conglomerates and sandstones found at the base of the Francis Creek Shale Member and just above the Colchester Coal No. 2. Some of the private wells located north and east of the PA are also completed in this zone (Figure 2.10). The two deeper bedrock monitoring wells were installed at locations expected to be downgradient of the reactor buildings and fuel handling building. The location of these wells is shown on Figure 4.2. Groundwater samples collected from the two bedrock monitoring wells (including samples and duplicates) indicated tritium concentrations less than the LLD of 200 pCi/L.

Additionally, there are a number of private and public wells located to the north of the PA, which have been sampled as part of the blowdown line investigations. The sample results for tritium from these wells indicated no concentrations greater than the LLD of 200 pCi/L.

Based upon the findings from the recent studies around the PA and those performed in the past along the blowdown line, the groundwater zones found below the Wedron Clay Till and the Francis Creek Shale Member do not indicate tritium impacts from releases within or adjacent to the PA.

## 6.3.3 DISTRIBUTION IN STATION SURFACE WATER

Surface water was collected within the perimeter ditch and analyzed for tritium at four monitoring points found north, west, and south of the PA. In addition, surface water was collected at the north end of the Cooling Lake at two locations just off the shoreline. Figure 4.1 presents these locations.

Surface water samples SW-101, SW-102, and SW-103 had concentrations of tritium of  $398 \pm 129$ ,  $365 \pm 120$ , and  $230 \pm 114$  pCi/L, respectively. These concentrations exceeded the LLD of 200 pCi/L. Surface water samples SW-101 and SW-102 were collected from the perimeter ditch located just northwest of the PA. Surface water sample SW-103 was collected along the perimeter ditch near the northeast corner of the Cooling Lake. A summary of the tritium analytical results from samples collected from surface water is presented in Table 5.4. Surface water samples collected as part of the blowdown line investigations and as part of the interim routine monitoring program in the PA are provided in Table 5.7.

# 6.3.4 <u>CONCEPTUAL MODEL OF TRITIUM RELEASE AND MIGRATION</u>

This section presents CRA's conceptual model of groundwater and tritium migration at the Station. This model is then used to discuss the historic detections of tritium within the PA and the more recent detections found during the hydrogeologic investigations presented in this report.

## Hydrogeologic Framework

Groundwater flows within the upper sand aquifer (Equality Formation) at the site in response to regional discharge points located to the north and in response to the perimeter ditch located west and south of the site. Groundwater moving within the upper sand aquifer is separated from the regional bedrock aquifer zones by the Wedron Clay Till, the Francis Creek Shale Member and the Maquoketa Shale. The only exception is where the building basements were constructed through the Wedron Clay Till.

However, these building structures are considered impermeable barriers to flow in or out of their foundations.

As of the date of this report, no tritium has been detected at concentrations greater than the LLD of 200 pCi/L in samples from bedrock monitoring wells, bedrock private wells, or bedrock public wells located downgradient of the PA. These groundwater quality data further support the role of the Wedron Clay Till and the Francis Creek Shale Member as aquitards. As such, the focus of the conceptual hydrogeologic model presented herein is the migration of groundwater and tritium within the upper sand aquifer.

Groundwater flowing in the upper sand aquifer within the PA is restricted by the building foundations which, in some cases, extend through the Wedron Clay Till. As a result, groundwater flowing with the regional gradient from south to north is diverted to the east or west of the building structures (a divide). In addition, groundwater flowing on the west side of the Turbine Building discharges into and out of the storm water drainage system located in this area of the PA. Additional recharge of water from the sewer into groundwater is expected in this area.

The slurry wall, which surrounds the main Station buildings, appears to provide some limited hydraulic control on the west side of the PA. There is a noticeable drop in groundwater levels across the wall on the west side and groundwater flow changes direction from north to northwest in this area (Figures 5.6 and 5.7). However, the slurry wall's impact on groundwater flowing north toward the regional surface water discharge points is still unknown. The lateral hydraulic gradients to the north are consistent across the slurry wall.

To the west and south of the PA, the upper sand aquifer is influenced by the perimeter ditch which flows from north to south on the west side of the Station property. This man-made ditch intercepts the shallow aquifer and under normal flow conditions is a discharge point for groundwater. The water level in the ditch as it exits the Braidwood Station property is 11 to 16 feet lower than groundwater in the PA. As such, the perimeter ditch is acting similar to a gravity drain or "French Drain" within the upper sand aquifer. This is evident in the southwest and west flow of groundwater outside the slurry wall (Figures 5.6 and 5.7).

## Sources and Migration of Tritium

Tritium has recently been detected at concentrations greater than background in groundwater samples from two areas within the PA and within the confines of the slurry wall:

- Along the west side of the Turbine Building; and
- 300 feet west of the Turbine Building.

Prior to the more recent release of tritium to the surface in the west area of the PA, the tritium detections were limited to the area near the west wall of the Turbine Building. The current distribution of tritium (both within the shallow water table zone and within the deeper portions of the upper sand aquifer) is likely related to the following tritiated water release history:

- previous releases of tritium to the surface or subsurface; and
- the April 6, 2006 release of steam containing tritiated water.

After April 2006 a number of groundwater samples from the same monitoring wells sampled in early 2006 indicated higher concentrations of tritium. The more recent groundwater sampling data that were collected in May and July 2006 show very good correlation with the release of steam which occurred on April 6, 2006 on the west side of the Turbine Building. The distribution of tritium in May 2006 groundwater samples matches with the location of ponded areas of the April 6 steam release and with groundwater and surface water (e.g., storm water) flow directions in this area of the PA. Refer to Figures 6.1 and 6.2 for a presentation of the vertical and lateral distribution of tritium in groundwater, respectively.

In the case of both the pre-April 2006 groundwater data and the post-April 2006 groundwater data the role of surface water infiltration and transport within the storm water drainage system is well documented. The previous discussions suggest that the tritium detected in the groundwater on the west side of the Turbine Building is a result of multiple isolated spills or releases to the surface that have occurred over time.

Groundwater samples were collected from the existing monitoring wells within the PA and the new monitoring wells in the first week of May 2006; a month after the April 6 steam release. This was a surface release that allowed tritiated water to both pond on the land surface and also to seep into the storm water drainage system.

The May 2006 groundwater sampling event very clearly shows the impact of the steam release waters as they ponded on the ground and drained into the storm water drainage system (Figure 3.1). Figure 5.10 and Table 5.2 present the May and July 2006 tritium The highest concentration of tritium detected was in the data in groundwater. groundwater sample from the shallow monitoring well TW-3 ( $1,040 \pm 172 \text{ pCi/L}$ ), which is near the valve which released the steam with the tritiated water. The concentration of tritium in the groundwater sample from this well in March 2006 was approximately 300 pCi/L. CRA considers the increase in tritium concentrations in TW-3 to be a result of steam/water entering the groundwater through the storm water drainage system, which is located near this well. Similarly, the tritium concentration in the groundwater sample from TW-16, which is directly west of the steam vent and where the tritiated water pooled on the ground, increased from  $368 \pm 94$  pCi/L to  $893 \pm 145$  pCi/L. This information indicates that within 30 days the steam release waters had impacted the shallow groundwater zone. The steam release event is also suspected to have affected the groundwater near TW-6, MW-9, and TB-1-5D, which are along or near the storm water drainage system.

Groundwater infiltrating the storm water drainage system will flow to the Oil/Water Separator to the north. This separator discharges water to small ditch which then flows to the west and discharges to the perimeter ditch (Figure 2.3). Surface water samples collected in the perimeter ditch as part of this investigation of the PA (Figure 4.1) and surface water samples collected in the perimeter ditch have indicated concentrations of tritium greater than background at locations north and west of the PA. The main source of the tritium in this area of the perimeter ditch is the plume of tritium migrating from historical releases at vacuum breaker VB-1 into the ditch at that location (CRA, March 2006).

In addition, as a result of the recent steam release, it is expected that some tritiated water has entered the Oil/Water Separator and migrated in the small ditch toward the larger perimeter ditch. Recent sampling of the Oil/Water Separator supports this pathway of tritiated water migration.

Table 5.7 presents the results of previous sampling of surface water in the perimeter ditch and samples from the Oil/Water Separator discharge after the April 6, 2006 steam release.

The following section provides further details supporting the conceptual model of groundwater flow and tritium transport discussed above.

#### 6.3.5 ATTENUATION OF TRITIUM WITHIN THE SHALLOW GROUNDWATER SYSTEM

Within the PA consideration must be given to how long ago a release occurred and the effect of precipitation water infiltration on groundwater quality. During the previous hydrogeologic investigations the releases from vacuum breakers along the blowdown line where it became apparent that the distribution of a historical or older release of tritium into the groundwater system would be impacted by the infiltration from "clean" precipitation recharge (CRA, March 2006). This resulted in the upper, water table zone of the sand aquifer appearing to have lower concentrations of tritium from the deeper portions (these zones are only separated by 5 to 15 feet). This "cleaning up" of the shallow zone of the sand aquifer needs to be considered when evaluating the data collected within the PA. Specifically, the location of the storm water drainage system near the Turbine Building and the affected monitoring wells (TB-1-3D, TB-1-4D, TW-3, TW-6, MW-9, TB-1-5D, and MW-BW-207I) likely allows for both the flow in and out of the sewer line of tritiated water and clean precipitation waters.

Table 5.6 presents the history of sampling results in 2006 for the area west of the Turbine Building. Figure 6.2 presents a summary of these data on a plan view map. The highest concentrations detected prior to the April 6, 2006 steam release event are found in monitoring wells TW-6 and TB-1-4D. The detections in TB-1-4D in March 2006 (582 pCi/L) were greater than in the adjacent shallow well TW-3 (330 pCi/L) for the same sampling event. This suggests that the source for this deeper tritium is not recent but historical in nature. The tritium concentrations in March 2006 for groundwater samples collected at TW-6 were in the 600 to 800 pCi/L range and may indicate a more recent release, although of limited in extent. In both cases (TW-6 and TB-1-4D) the extent of tritium impacts in the upper sand aquifer appears to be limited to near these two wells along the west side of the Turbine Building. It has been determined that the vertical limits in the excavated area are restricted by the underlying shale formation (Figure 6.1).

The relatively high groundwater velocities measured in the site area of 600 ft/yr and the permeable nature of the upper sand aquifer also support attenuation of the tritium through lateral groundwater movement. The dispersion of the tritium as it flows through the sand along with its natural decay rate will allow for reduction in concentrations over time and with distance from a release into the groundwater. Simple fate and transport modeling performed for the blowdown line investigations using the USEPA BIOSCREEN Model (CRA, March 2006 and April 2006) provides evidence of the attenuation of tritium through dispersion and decay. Consequently, tritium released

within the west side of the PA and near the Turbine Building would also be expected to attenuate rapidly to lower concentrations as it flowed in the upper sand aquifer.

The natural decay rate of the tritium itself lends to further attenuation of its concentration in the groundwater. Tritium has a half-life of 12.3 years and as such its concentration would be reduced over the time period that it travels in the groundwater system. Consequently, as the tritium migrates with the groundwater, its concentration would be decreased by 50 percent in a 12.3-year time frame.

### 7.0 EXPOSURE PATHWAY ASSESSMENT

This section addresses the groundwater impacts from tritium and other radionuclides at the Station and potential risks to human health and the environment.

Based upon historical knowledge and data related to the Station operations, and based upon radionuclide analyses of groundwater samples, the primary constituent of concern (COC) is tritium. The discussions that follow are restricted to the exposure pathways related to tritium.

Teledyne Brown reports all samples to their statistically derived Minimum Detectable Concentration (MDC) of approximately 150 to 170 pCi/L, which is associated with 95 percent confidence interval on their hardcopy reports. However, the laboratory uses a 99 percent confidence range ( $\pm$  3 sigma) for determining whether to report the sample activity concentration as detected or not. This 3-sigma confidence range typically equates to 150 ( $\pm$  135.75) pCi/L.

Exelon has specified a LLD of 200 pCi/L for the Fleetwide assessment. Exelon has also required the laboratory to report related peaks identified at the 95 percent confidence level (2-sigma).

This HIR, therefore, screens and assesses data using Exelon's LLD of 200 pCi/L. As is outlined below, this concentration is also a reasonable approximation of the background concentration of tritium in groundwater at the Station.

# 7.1 <u>HEALTH EFFECTS OF TRITIUM</u>

Tritium is a radionuclide that decays by emitting a low-energy beta particle that cannot penetrate deeply into tissue or travel far in air. A person's exposure to tritium is primarily through the ingestion of water (drinking water) or through ingestion of water bearing food products. Inhalation of tritium requires the water to be in a vapor form (i.e., through evaporation or vaporization due to heating). Inhalation is a minor exposure route when compared to direct ingestion or drinking of tritiated water. Absorption of tritium through skin is possible, but tritium exposure is more limited here versus direct ingestion or drinking of tritiated water.

## 7.2 BACKGROUND CONCENTRATIONS OF TRITIUM

The purpose of the following paragraphs is to establish a background concentration through review of various media.

# 7.2.1 <u>GROUNDWATER</u>

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium isotopes  $^{6}Li$  (92.5 percent abundance) and  $^{7}Li$  (7.5 percent abundance) present in crystalline rocks by neutrons produced by the radioactive decay of uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased during the 1950s and early 1960s, coinciding with the release of significant amounts of tritium to the atmosphere during nuclear weapons testing prior to the signing of the Limited Test Ban Treaty in 1963, which prohibited atmospheric nuclear tests.

# 7.2.2 <u>PRECIPITATION DATA</u>

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provided tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at Stations through the U.S. from 1960 up to and including 2006.

Based on GNIP data for sample stations located in the U.S. Midwest including Chicago, St. Louis and Madison, Wisconsin, as well as Ottawa Ontario, and data from the University of Chicago, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of

thermonuclear weapons. Tritium concentrations showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980.

The RadNet database for several stations in the U.S. Midwest (Chicago, Columbus, Indianapolis, Lansing, Madison, Minneapolis, Painesville, Toledo, and Welsch, MN) did not show the same trend, which can attributed to pre-1995 data handling procedures. The pre-1995 data were rounded to the nearest 100 pCi/L, which damped out variances in the data. The post-1995 RadNet data, where rounding was not applied, exhibit much more scatter, and similar to the GNIP data, the vast majority of the data were less than 100 pCi/L.

CRA constructed a non-parametric upper tolerance limit with a confidence of 95 percent and a coverage of 95 percent based on RadNet data for USEPA Region 5 from 2004 to 2005. The resulting upper tolerance limit is 133 pCi/L, which indicates that CRA is 95 percent confident that 95 percent of the ambient precipitation concentration results are below 133 pCi/L. The statistical confidence, however, must be compared with the limitations of the underlying RadNet data, which does not include the minimum detectable concentration for a majority of the measurements. Some of the RadNet values below 200 pCi/L may be approximated. Nevertheless, these results show a background contribution for precipitation of up to 133 pCi/L.

## 7.2.3 SURFACE WATER DATA

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Surface water data from the RadNet database for Illinois sampling stations include East Moline (Mississippi River), Moline (Mississippi River), Marseilles (Illinois River), Morris (Illinois River), Oregon (Rock River), and Zion (Lake Michigan). As is the case for the RadNet precipitation data, the pre-September 1995 Illinois surface water data was rounded to the nearest 100 pCi/L, creating a dampening of variances in the data. The post-1995 Illinois surface water data, similar to the post-1995 Midwest precipitation data, were less than 100 pCi/L with the exception of the Moline (Mississippi River) station. Tritium surface water concentrations at this location varied between 100 and 800 pCi/L, which may reflect local natural or anthropogenic inputs.

For the Lake Michigan station, the surface water concentrations were less than 100 pCi/L, with the exception of a couple of occasions occurring around 1996 to 1997. Tritium concentrations in Lake Michigan would be expected to be lower than

precipitation concentrations given the 99-year surface water residence time within Lake Michigan, which corresponds to 8 half-lives of tritium and the dilution provided the large volume of the Lake (1,180 cubic miles) as well as seasonal mixing effects (WDNR, 1999).

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a  $\pm$  70 to 100 pCi/L 95 percent confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately  $\pm$  70 to 100 pCi/L.

# 7.2.4 DRINKING WATER DATA

Tritium concentrations in drinking water from the RadNet database for three Illinois sampling stations (Chicago, Morris, and East Chicago) exhibit similar trends as the precipitation and surface water data. As with the precipitation and surface water data, the pre-1995 data has dampened out variances due to rounding the data to the nearest 100 pCi/L. The post-1995 results show tritium concentrations in drinking water well below 100 pCi/L and less than the tritium concentrations found in precipitation and surface water.

## 7.2.5 EXPECTED TRITIUM BACKGROUND FOR THE STATION

As reported in the GNIP and RadNet databases, tritium concentrations in U.S. Midwest precipitation has typically been less than 100 pCi/L since 1980. Tritium concentrations reported in the RadNet database for Illinois surface water and groundwater, at least since 1995, has typically been less than 100 pCi/L. Based on the USEPA Region 5's 2004 to 2005 RadNet precipitation data, 95 percent of the ambient concentrations of tritiated water in Illinois are expected to be less than 133 pCi/L, based on a 95 percent confidence limit. Tritium concentrations in surface water and drinking water are expected to be comparable or less based on historical data and trends.

Concentrations in groundwater similar to surface water and drinking are expected to be less as compared to precipitation values. The lower groundwater concentrations are related to the age of the groundwater as compared to the half-life of tritium. Deep aquifers in proximity to crystalline basement rock, however, can potentially show elevated concentrations of tritium due to lithogenic sources.

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As was noted in Section 7.0, the analytical laboratory is reporting tritium results to a LLD of 200 pCi/L. This concentration also represents a reasonable representation of background groundwater quality, given the data for precipitation, surface water, and drinking water.

Based on the evaluation presented above, the background concentration for tritium at the Station is reasonably represented by the LLD of 200 pCi/L.

### 7.3 IDENTIFICATION OF POTENTIAL EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

Three potential exposure pathways were considered during the evaluation of tritium in groundwater:

- groundwater migration off the Station Property to private and public groundwater users;
- groundwater migration off the Station Property to a surface water body; and
- potential exposure to surface water in the perimeter ditch at the Station.

The following section provides an overview of each of these three potential exposure pathways for tritium in groundwater.

## 7.3.1 POTENTIAL GROUNDWATER MIGRATION TO DRINKING WATER USERS OFF THE STATION PROPERTY

In this pathway groundwater flows to the north off Exelon's property and onto adjacent private property. There are a number of private landowners to the north that use private wells completed in the upper sand aquifer. These shallow water supply wells are considered potential pathways.

The concentrations of tritium in groundwater (within the upper sand aquifer and the deeper bedrock aquifer) are below the LLD of 200 pCi/L off the Station property. Consequently, there is no tritium in the groundwater currently migrating off the Station property.

With the exception of the blowdown line investigation there have been no samples collected from private or public water supply wells, to the north or west of the PA, that contained tritium at concentrations that exceed the LLD of 200 pCi/L. Therefore,

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although there is a potentially complete exposure pathway, there is no current risk of exposure associated with groundwater ingestion from private wells in the upper sand aquifer.

Groundwater samples collected from private wells in the deep bedrock investigated did not contain tritium that exceeded the LLD of 200 pCi/L. This is to be expected because the vertical movement of tritiated water into deeper formations is restricted by the following three regional aquitards (see Figure 2.8):

- the Wedron Clay Till, which directly underlies the upper sand aquifer;
- the shales of the Carbondale Formation (Francis Creek Shale Member); and
- the Scales Shale of the Maquoketa Group.

The effectiveness of these aquitards is further supported by the recent data collected from the approximately 100 feet deep bedrock monitoring wells MW-BW-201BD and MW-BW-208BD on the Station property. Samples from these wells were from a water bearing zone just beneath the Francis Creek Shale Member and contained tritium at concentrations less than the LLD of 200 pCi/L. Therefore, the exposure pathway is incomplete and there is no current risk of exposure associated with groundwater ingestion from private wells in the deep bedrock aquifer.

# 7.3.2 POTENTIAL GROUNDWATER MIGRATION TO SURFACE WATER USERS OFF THE STATION PROPERTY

There is a potential exposure pathway in the upper sand aquifer to ponds, ditches, and other surface water bodies. Based on the results of this investigation tritium has not been detected at concentrations greater than the LLD 200 pCi/L in groundwater, which might discharge to these surface water bodies.

Although this is a potentially complete exposure pathway, there is no current risk of exposure associated with ingestion and recreational use off the Station property.

# 7.3.3 POTENTIAL EXPOSURE TO SURFACE WATER IN THE PERIMETER DITCH AT THE STATION

The perimeter ditch flows to the south on the west side of the Station Property and does not flow off the property until a point located approximately 2 miles southwest of the PA. Under this potential exposure pathway, groundwater must migrate to the surface and into the perimeter ditch. Potential exposures could occur if the groundwater discharge to the surface water contains tritium. Although water in the perimeter ditch has contained trace amounts of tritium in the past, Station personnel are protected and monitored by the Radiation Protection Program, which is controlled by Federal guidelines. This is a potentially complete exposure pathway, but there is no current risk of exposure associated with ingestion, inhalation, or absorption on Station property.

### 7.4 SUMMARY OF POTENTIAL TRITIUM EXPOSURE PATHWAYS

There are three potential exposure pathways for tritium originating in or adjacent to the PA:

- groundwater migration off the Station Property to private and public groundwater users (drinking water exposure);
- groundwater migration off the Station Property to a surface water body (recreational exposure); and
- potential exposure to surface water in the perimeter ditch at the Station.

In summary, based upon the groundwater and surface water data provided and referenced in this investigation, none of the potential receptors are at risk of exposure to concentrations of tritium in excess of USEPA drinking water standards (20,000 pCi/L).

## 7.5 <u>OTHER RADIONUCLIDES</u>

Target radionuclides were not detected at concentrations greater than their respective LLD in the groundwater samples collected. Other non-targeted radionuclides were also included in the tables but excluded from discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station.

### 8.0 <u>CONCLUSIONS</u>

Based on all of the studies completed to date at this site, CRA concludes:

Groundwater Flow

- The deeper bedrock water supply aquifers are separated from the upper sand aquifer system by a number of aquitards, including the Wedron Clay Till and the regionally-identified Francis Creek Shale Member, and the Maquoketa Shale. These aquitards are present beneath the PA and continue to restrict downward vertical movement of groundwater.
- Groundwater at near-by properties is extracted from both the 20- to 30-foot thick upper sand aquifer and deeper bedrock formations at depths of 600 to 1,600 feet.
- Depth to groundwater in the upper sand aquifer ranges from 4 to 12 feet and it flows beneath the PA in a generally south to north manner, flowing from the Cooling Lake toward ponds and streams located north of the Station property.
- Groundwater in the upper sand aquifer flows to the west and southwest at locations west and south of the PA.
- Lateral groundwater flow within the PA is affected by the construction (basements/foundations) of the Reactor, Turbine, and Auxiliary Buildings, which were constructed through the Wedron Clay Till onto the top of the Francis Creek Shale Member. These buildings are barriers to lateral flow.
- Lateral groundwater flow within the PA is controlled by the slurry trench to some degree as is evident by the change in hydraulic gradients on the west side of the PA. However, the degree of its influence on flow to the north is not known at this time.
- Vertical groundwater flow is restricted by the regional aquitards, however, due to the removal of the Wedron Clay Till beneath the buildings, one of the two regional aquitards has been removed within the PA. Nevertheless, groundwater data indicate that the remaining aquitard (Francis Creek Shale Member) is preventing vertical migration of tritium downward within the PA.

## Groundwater Quality

- Tritium concentrations in groundwater were not detected at concentrations greater than the USEPA drinking water standard of 20,000 pCi/L.
- Tritium was not detected at concentrations greater than the LLD (200 pCi/L) in 34 of the 45 samples collected as part of this investigation.

- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective LLDs in 45 of the 45 samples collected as part of this investigation.
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 pCi/L in 45 of the 45 samples collected as part of this investigation.
- In the site area, tritium is not migrating off the Exelon property in the upper sand aquifer at concentrations greater than the LLD of 200 pCi/L.
- Deeper private water supply wells that are located downgradient of the PA contain concentrations of tritium less than the LLD of 200 pCi/L. The regional aquitards act as vertical barriers to migration of tritium from surficial aquifers to deeper bedrock aquifers.
- The depth of the tritium detected within the PA is defined by the top of the Wedron Clay Till with one exception. Along the west side of the Turbine Building and within the formerly excavated area, where the clay was excavated and backfilled, the vertical extent of the tritium is limited by the top of the Francis Creek Shale Member.
- Tritium has not been detected at concentrations greater than the LLD of 200 pCi/L in groundwater located beneath the Francis Creek Shale Member in the vicinity of the PA, downgradient of the buildings, and near the former building excavation.

# Surface Water Quality

- Tritium concentrations in surface water were not detected at concentrations greater than the USEPA drinking water standard of 20,000 pCi/L.
- Tritium was not detected at concentrations greater than the LLD (200 pCi/L) in three of the six samples collected as part of this investigation.
- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective LLDs in six of the six samples collected as part of this investigation.
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 pCi/L in six of the six samples collected as part of this investigation.
- In the site area, tritium is not migrating off the Exelon property in surface water at concentrations exceeding the LLD of 200 pCi/L.
- Detections of tritium in the north and east stretches of the perimeter ditch can be attributed to the releases at vacuum breaker VB-1 located to the east along the blowdown line.

## AFE-Braidwood-1 – North of the Slurry Wall

- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective LLDs in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-1.
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 pCi/L in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-1.
- In the area north of the slurry wall, tritium was detected in groundwater samples from the shallow and deeper zones of the upper sand aquifer at concentrations less than 250 pCi/L.
- The concentrations of tritium detected in groundwater samples from north of the slurry wall in the upper sand aquifer are less than or just slightly greater than the LLD of 200 pCi/L.
- The concentrations of tritium detected in groundwater samples from the deeper bedrock monitoring well completed just below the Francis Creek Shale Member was less than the LLD of 200 pCi/L.
- Private well samples collected downgradient of this area provide additional evidence that the deeper bedrock is not impacted by tritium greater than the LLD of 200pCi/L.
- There are currently three monitoring wells (and numerous private wells) located downgradient of this AFE. No additional data are needed in this area of the site. There have been no impacts to groundwater from AFE-Braidwood-1.

## AFE-Braidwood-2 – North/Northeast of Units 1 and 2

- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective LLDs in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-2.
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 pCi/L in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-2.
- Groundwater samples collected downgradient of the fuel handling building, Units 1 and 2, and other systems on the east side of the PA did not contain tritium at concentrations greater than the LLD of 200 pCi/L.

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• There are currently five monitoring wells (and numerous private wells) located downgradient of this AFE. There is no current impact to groundwater from AFE-Braidwood-2.

# AFE-Braidwood-3 – Auxiliary Condensate Construction Storage Tank

- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective LLDs in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-3.
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 pCi/L in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-3.
- Groundwater samples collected from new monitoring wells located near and downgradient of this AFE area did not contain tritium at concentrations greater than the LLD of 200 pCi/L.
- There are two monitoring wells (and numerous private wells) located downgradient of this AFE. There is no current impact to groundwater from AFE-Braidwood-3.

## AFE-Braidwood-4 - West Side of Turbine Building

- Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective LLDs in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-4.
- Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 pCi/L in any of the groundwater samples collected from the monitoring wells in the vicinity of AFE-Braidwood-4.
- Tritium has been detected at concentrations greater than the LLD of 200 pCi/L in a localized area found along the west side of the Turbine Building. These detections are within the former excavation used during construction, adjacent to the deep basement of the Turbine Building and next to the storm water sewer.
- The lateral extent of tritium within this area of the Station has been defined by groundwater monitoring data to the north, west, and south, by the building basements to the east. The vertical extent of the tritium is limited by the Wedron Clay Till.

- The vertical extent of tritium within this area of the Station has been defined by groundwater monitoring data where the Wedron Clay Till has not been excavated and has been defined within the formerly excavated area.
- There are over 37 monitoring wells on the west side of the Turbine building that delineate the lateral and vertical extent of tritium in the upper sand unit and within the fill material.
- The source of the tritium detected on the west side of the Turbine Building is likely a result of multiple intermittent surface spills or releases of tritiated water.

# Potential Receptors

• Based on the results of this investigation¹, there is no current risk from exposure to radionuclides associated with licensed plant operations through any of the identified potential exposure pathways.

# General Conclusions

- Based on the results of this investigation, tritium is not migrating off the Station property at detectable concentrations.
- Based on the results of this investigation, there are no known active releases into the groundwater at the Station.

¹ Using the LLD specified in this HIR.

#### 9.0 <u>RECOMMENDATIONS</u>

The following presents CRA's recommendations for proposed activities to be completed at the Braidwood Station

### 9.1 DATA GAPS

Based on the results of this hydrogeologic investigation, there are no data gaps remaining to support CRA's conclusions regarding the characterization of the groundwater regime and potential impacts from radionuclides at the Station.

### 9.2 <u>GROUNDWATER MONITORING</u>

Based upon the information collected to date, CRA recommends that Exelon conduct periodic monitoring of selected sample locations.

#### 10.0 <u>REFERENCES CITED</u>

- Arnold, T.L., Sullivan, D.J., Harris, M.A., Fitzpatrick F.A., Scudder, B.C., Ruhl, P.M., Hanchar, D.W., and Stewart, J.S., 1999. Environmental Setting of the Upper Illinois River Basin and Implications for Water Quality; Water Resources Report 98-4288.
- Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.
- CRA, June 2006. Memorandum entitled "Evaluation of the Source of Tritium in Two Private Water Supply Wells located along the Kankakee River and IL-Route 113 Braidwood Nuclear Station".
- CRA, April 2006. Investigation of Tritium in the Groundwater in the Vicinity of VB-4.
- CRA, April 2006. Investigation of Tritium in the Groundwater in the Vicinity of VB-6.
- CRA, April 2006. Investigation of Tritium in the Groundwater in the Vicinity of VB-7.
- CRA, August 2002. Results of Stage 2 Investigations, Illinois Site Remediation Program, Exelon Generation - Braidwood Facility.
- CRA, March 2006. Tritium Investigation Report.
- CRA, May 2006. Hydrogeologic Investigation Work Plan.
- CRA, September 2000. Results of Sampling of the Perimeter Ditch, Commonwealth Edison Braidwood Facility, Braceville, Illinois.
- CRA, September 2003. Results of Stage 1 Activities, Illinois Site Remediation Program, Exelon Generation Braidwood Facility.
- Eisenbud, Merril and Gesell, Thomas, 1997. Environmental Radioactivity From Natural, Industrial, and Military Sources, Fourth Edition.
- Exelon, 2004. Updated Final Safety Analysis Report (UFSAR) Revision 10, December 2004.
- Exelon, 2005. Braidwood Station Units 1 and 2, 2004 Annual Radiological Environmental Operating Report, Exelon, (January 1 to December 31, 2005), Braceville, Illinois May 2006.
- Illinois Administrative Code Title 35 Part 742, Tiered Approach to Corrective Action Objectives, Illinois Pollution Control Board, effective February 5, 2002.
- Illinois Geological Survey, March 2006 and October 2003, Coal Section, Map of Coal Mines Will County.
- Puls, R.W., and M.J. Barcelona, April 1996. Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, EPA Ground Water Issue, EPA/540/S-92/005, R. S. Kerr Environmental Research Center, United States Environmental Protection Agency, Ada, Oklahoma.
- Schicht, Richard J., J. Rodger Adams, and John B. Stall, 1976. Water Resources Availability, Quality, and Cost in Northeastern Illinois, Illinois State Water Survey Report of Investigation 83.
- Teledyne Isotopes Midwest Laboratory, May 1987. Environmental Radiological Monitoring for Braidwood Nuclear Power Station, Commonwealth Edison Company, Annual Report 1986.
- Visocky, Adrian P., 1997. Water-Level Trends and Pumpage in the Deep Bedrock Aquifers in the Chicago Region, 1991-1995, Illinois State Water Survey Circular 182.
- Visocky, Adrian P., Marvin G. Sherrill, and Keros Cartwright, 1985. Geology, Hydrogeology, and Water Quality of the Cambrian and Ordovician Systems in Northern Illinois, Illinois State Geological Survey, Illinois State Water Survey, Cooperative Groundwater Report 10.
- Willman, H.B. and Frye, J.C., 1970. Pleistocene Stratigraphy of Illinois, Bulletin 94, Illinois State Geological Survey.
- Willman, H.B., Atherton E., Buschbach, T.C., Collinson, C., Frye, J.C., Hopkins, M.E., Lineback, J.A., Simon, J.A., 1975. Handbook of Illinois Stratigraphy, ISGS Bulletin 95.



### FIGURE 1.2 STATION BOUNDARIES AND FEATURES



### FIGURE 2.1 STATION BASE MAP

#### FIGURE 2.2 STATION FEATURES AND WELL LOCATIONS

#### FIGURE 2.3 STATION SURFACE WATER FEATURES

#### FIGURE 2.3 STATION SURFACE WATER FEATURES









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# FIGURE 2.9 CONTOUR MAP OF THE WEDRON FORMATION

### FIGURE 2.10 PRIVATE WELL LOCATIONS AND WELL DEPTHS

#### FIGURE 2.11 GROUNDWATER MONITORING LOCATIONS

### FIGURE 2.12 REGIONAL HYDROGEOLOGIC CROSS-SECTION LOCATIONS





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-400					
-300					
- 200 (TSWY 11) NOLLY AND EFFENTION (IT WITH THE THE THE THE THE THE THE THE THE T					
- 100					
-0	THIS BAR MEASUR	SCALE VERIFICATIO	DN ST SCALE ACCORDING	.Y.	
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200	Exelon	Ð	COMESTOGA- à Associati	ROVERS IS	
	Source Reference: Project Manager: S OUIGLEY	Reviewed By: M KFIIY	Date:	06	
	Scale: AS SHOWN	Project №: 45136-20	Report №: 012	Drawing №: figure 2.14	

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### FIGURE 2.15 PRIVATE WELL AND MONITORING WELL SAMPLE RESULTS

### FIGURE 3.1 AREAS FOR FURTHER EVALUATION (STATION)

#### FIGURE 3.2 AREAS FOR FURTHER EVALUATION (WEST SIDE OF TURBINE BUILDING)

### FIGURE 4.1 SURFACE WATER/STAFF GAUGE MONITORING LOCATIONS

### FIGURE 4.2 GROUNDWATER MONITORING LOCATIONS (STATION)



# FIGURE 5.1 HYDROGEOLOGIC CROSS-SECTION LOCATIONS



510	67 11111 11111 11111 11111 11111 11111 1111	LEGEND WELL ID Sand STRAT LAYER WELL SCREEN FILL SAND WEDRON CLAY TILL FRANCIS CREEK SHALE				
590		FRANCIS CR COLCHESTE SPOON FOR	EEK SILTSTONE/CON R COAL NO. 2 MATION	GLOMERATE		
08: ELEVATION (II: ANSL)						
570						
560						
550						
540			T SCALE ACCORDING	LY.		
330	FLEETWIDE ASSESSMENT HYDROGEOLOGIC CROSS-SECTION A-A' BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS					
20	Exciton. Source Reference: Project Manager: S. QUIGLEY Scale: AS SHOWN	Reviewed By: M. KELLY Project Na: 45136-20	Date: AUGUST 20 Report Nº: 012	Drawing N ^a : figure 5.2		



H 610	LEGEND WELL ID WELL STRAT LAYER WELL SCREEN FILL SAND WEDRON CLAY TH					
600		FRANCIS C FRANCIS C FRANCIS C COLCHEST SPOON FO	REEK SHALE REEK SILTSTONE/CC ER COAL NO. 2 RMATION	NGLOMERATE		
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560	THIS BAR MEASUR		ON ST SCALE ACCORDING	3LY.		
550	EXELON GENERATION COMPANY, LLC					
	HYDROGE BRAIDW B	OLOGIC CROSS DOD GENERATI RACEVILLE, ILL	S-SECTION B ING STATION INOIS	-B'		
540	Source Reference: Project Manager: S. QUIGLEY	Reviewed By: M. KELLY	Date:	<b>ES</b> 1006		
	Scale: AS SHOWN	Project №: 45136-20	Report №: 012	Drawing №: figure 5.3		





#### FIGURE 5.6 POTENTIOMETRIC SURFACE CONTOURS – SHALLOW ZONE - MAY 2006

#### FIGURE 5.7 POTENTIOMETRIC SURFACE CONTOURS – SHALLOW ZONE - JULY 2006

### FIGURE 5.8 POTENTIOMETRIC SURFACE CONTOURS – DEEP ZONE - MAY 2006

#### FIGURE 5.9 POTENTIOMETRIC SURFACE CONTOURS – DEEP ZONE - JULY 2006

#### FIGURE 5.10 TRITIUM CONCENTRATIONS -GROUNDWATER AND SURFACE WATER

#### FIGURE 5.11 RADIONUCLIDE CONCENTRATIONS – GROUNDWATER AND SURFACE WATER


00       Will BOREL         01       Will BOREL         02       Will BOREL         03       Will BOREL         04       Will BOREL         05       Will BOREL         06       Will BOREL         07       Will BOREL         080       Will BOREL         090       SCALE VERIFICATION	В' SOUTH	LEGEND WELL ID WELL WELL SS3.72 GROUNDWATER ELEVATION OF
		WW-13 WELL SCREEN TRITIUM CONCENTRATION TRITIUM RESULTS GREATER THAN 1,000 (pC/L) TRITIUM RESULTS 500 TO 1,000 (pC/L) TRITIUM RESULTS 200 TO 500 (pC/L) TRITIUM RESULTS 0 TO 200 (pC/L)
-50 -50 -50 -50 -50 -50 -50 -50	— 590 (1: YN(R' 1) NOI	
500 500 500 500 500 500 500 500	терени 	
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508 508 509 504 504 504 504 504 FLEETWIDE ASSESSMENT HYDROGEOLOGIC PROFILE TRITIUM CONCENTRATIONS - GROUNDWATER BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS 504 Exciton Source Reference: 430 Project Manager: Reviewed By: Date:	515	SCALE VERIFICATION THIS BAR MEASURES 1° ON ORIGINAL ADJUST SCALE ACCORDINGLY.
508 509 504 504 FLEETWIDE ASSESSMENT HYDROGEOLOGIC PROFILE TRITIUM CONCENTRATIONS - GROUNDWATER BRAIDWOOD GENERATING STATION BRACE VILLE, ILLINOIS CONESTOGA-ROVERS & ASSOCIATES Source Reference: Hydrogeologic Profession Source Reference: Hydrogeologic Profession Hydrogeologic		EXELON GENERATION COMPANY, LLC
430	508	FLEETWIDE ASSESSMENT HYDROGEOLOGIC PROFILE TRITIUM CONCENTRATIONS - GROUNDWATER BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS
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# FIGURE 6.2 MONITORING WELL TRITIUM SAMPLE RESULTS

(Withheld)

# SUMMARY OF MONITORING WELL INSTALLATION DETAILS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

			Surface	<i>Reference</i>		Screened	Interval			Hydrogeologic
Sample	X coor.	Y coor.	Elevation	Elevation	Тор	Bottom	Тор	Bottom	Well	Unit
Location	(Site-Specific	c Coordinates)	(ft AMSL) ¹	(ft AMSL)	(ft l	bgs) ²	(ft A	MSL)	Construction	Screened ³
Existing Monitoring Wells										
MW-11	65288.1939	84097.4503	600.60	603.83	2.0	12.0	596.00	586.00	2-inch PVC Screen	S
MW-13	65367.1182	84267.4234	597.50	600.85	2.5	12.5	595.00	585.00	2-inch PVC Screen	S
MW-14	65103.9949	84342.5513	599.50	602.46	2.0	12.0	597.50	587.50	2-inch PVC Screen	S
MW-2	65271.3906	83474.2371	599.80	603.00	2.0	12.0	597.80	587.80	2-inch PVC Screen	S
MW-22	65319.3555	83911.9591	597.70	601.65	7.0	17.0	591.70	581.70	2-inch PVC Screen	S
MW-4	65409.1225	83750.0194	599.60	599.35	2.0	12.0	597.60	587.60	2-inch PVC Screen	S
MW-5	65250.5952	83778.1842	599.90	598.64	2.0	12.0	597.90	587.90	2-inch PVC Screen	S
MW-6	65425.2927	83575.8848	599.10	599.56	5.0	15.0	594.10	584.10	2-inch PVC Screen	S
MW-9	65412.2272	84020.0972	600.40	603.83	2.0	12.0	598.40	588.40	2-inch PVC Screen	S
Exelon-Owned Wells										
MW-BW-201I	65818.6280	84208.5570	600.02	603.21	14	24	586.02	576.02	2-inch PVC Screen	Ι
MW-BW-202I	66014.4060	84018.4590	600.72	604.09	15	25	585.72	575.72	2-inch PVC Screen	Ι
MW-BW-203I	66327.2810	83422.6210	598.95	602.19	15	25	583.95	573.95	2-inch PVC Screen	Ι
MW-BW-204I	66042.0060	82081.7290	600.37	603.17	5	25	595.37	575.37	2-inch PVC Screen	Ι
MW-BW-205I	64768.7390	82860.2200	598.04	600.86	15	25	583.04	573.04	2-inch PVC Screen	Ι
MW-BW-206I	64330.7570	81803.4620	595.10	598.35	14	24	581.10	571.10	2-inch PVC Screen	Ι
MW-BW-207I	66063.7670	83836.3590	599.59	601.59	35	45	564.59	554.59	2-inch PVC Screen	Ι
MW-BW-201S	65819.1100	84203.0330	599.97	603.11	5	15	594.97	584.97	2-inch PVC Screen	S
MW-BW-202S	66013.7490	84009.2920	600.87	604.30	5	15	595.87	585.87	2-inch PVC Screen	S
MW-BW-203S	66327.6550	83436.7650	599.14	602.33	5	15	594.14	584.14	2-inch PVC Screen	S
MW-BW-201BD	65825.1430	84203.7530	599.94	603.23	80	95	519.94	504.94	2-inch PVC Screen	BD
MW-BW-208BD	66063.7670	83836.3590	599.98	601.98	85	100	514.59	499.59	2-inch PVC Screen	BD
Existing Temporary Wells										
TB-1-1D	65393.4430	83562.0330	598.50	601.00	15	20	583.50	578.50	1-inch PVC Screen	Ι
TB-1-2D	65273.1690	83473.5080	599.41	600.62	19	24	580.41	575.41	1-inch PVC Screen	Ι
TB-1-3D	65425.9530	83576.8750	599.70	602.77	10	15	589.70	584.70	1-inch PVC Screen	Ι
TB-1-4D	65468.1300	83642.7460	599.45	600.86	17	22	582.45	577.45	1-inch PVC Screen	Ι
TB-1-5D	65467.1650	84030.2150	600.71	602.37	23	28	577.71	572.71	1-inch PVC Screen	Ι
TB-1-6D	65289.3290	84093.8570	600.34	602.69	22.5	27.5	577.84	572.84	1-inch PVC Screen	Ι
TB-1-7D	65143.3310	84097.4860	600.45	601.46	18	23	582.45	577.45	1-inch PVC Screen	Ι

# SUMMARY OF MONITORING WELL INSTALLATION DETAILS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

			Surface	Reference		Screened	Interval		Hydrogeologic	
Sample	X coor.	Y coor.	Elevation	Elevation	Тор	Bottom	Тор	Bottom	Well	Unit
Location	(Site-Specific	Coordinates)	(ft AMSL) ¹	(ft AMSL)	(ft	bgs) ²	(ft A	MSL)	Construction	Screened ³
TB-1-8D	65618.2450	83005.0640	600.43	602.43	23	28	577.43	572.43	1-inch PVC Screen	Ι
TB-1-9D	65293.9090	83362.6330	600.68	603.41	22	27	578.68	573.68	1-inch PVC Screen	Ι
TB-1-10D	65490.5850	83409.8970	600.05	604.68	23	28	577.05	572.05	1-inch PVC Screen	Ι
TB-1-11D	65532.5070	84328.0420	600.41	604.29	10	25	590.41	575.41	1-inch PVC Screen	Ι
TB-1-12D	65621.9120	84412.5880	599.40	603.15	10	25	589.40	574.40	1-inch PVC Screen	Ι
TB-1-13D	65517.5830	84403.9470	599.40	602.59	10	25	589.40	574.40	1-inch PVC Screen	Ι
TB-1-14D	65425.3930	84345.7930	599.16	602.32	10	25	589.16	574.16	1-inch PVC Screen	Ι
TBRW-1	65534.1810	84232.9450	600.58	603.74	4	14	596.58	586.58	2-inch PVC Screen	Ι
TBRW-2	65600.3030	84274.6220	600.44	603.72	4	14	596.44	586.44	2-inch PVC Screen	Ι
TBRW-3	65571.3530	84346.9090	600.53	603.44	4	14	596.53	586.53	2-inch PVC Screen	Ι
TW-8	65465.9498	84031.8836	600.70	600.52	2	12	598.70	588.70	1-inch PVC Screen	S
TW-16	65187.5681	83650.3472	599.00	601.93	2	12	597.20	587.20	1-inch PVC Screen	S
TW-6	65459.9085	83827.6580	599.60	599.56	2	12	597.60	587.60	1-inch PVC Screen	S
TW-23	65288.6581	84140.0696	600.10	603.10	6	16	594.10	584.10	1-inch PVC Screen	S
TW-3	65469.3170	83648.7042	599.60	599.37	2	12	597.60	587.60	1-inch PVC Screen	S
TW-10	65403.4913	84146.6207	600.60	602.54	2	12	598.60	588.60	1-inch PVC Screen	S
TW-15	65099.6209	84260.1475	599.20	601.17	3	13	596.20	586.20	1-inch PVC Screen	S
TW-12	65134.2956	84008.2068	599.30	601.51	2	12	597.30	587.30	1-inch PVC Screen	S
TW-21	65466.2133	84104.6516	600.70	600.54	2	12	598.70	588.70	1-inch PVC Screen	S
TW-18	64856.1143	83653.2073	597.70	599.09	3	13	594.70	584.70	1-inch PVC Screen	S
TW-24	65099.2125	84010.5879	598.90	601.87	5	15	593.90	583.90	1-inch PVC Screen	S
TW-25	65142.5107	84100.4868	597.10	600.07	6	16	591.10	581.10	1-inch PVC Screen	S
TW-26	64958.0854	84223.0321	599.70	602.68	7	17	592.70	582.70	1-inch PVC Screen	S

## Notes:

¹ ft AMSL - feet Above Mean Sea Level

² ft bgs - feet below ground surface

³ Hydrogeologic unit screened:

S, well open to the water table in the shallow aquifer I, well open to the water table in the intermediate aquifer

BD, well open to the top of the bedrock

## SUMMARY OF MONITORING WELL DEVELOPMENT PARAMETERS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Date	Well Volume (gallons)	Volume Purged (gallons)	pH (Std. Units) ⁽¹⁾	Conductivity (µS/cm ) ⁽²⁾	Temperature (°C) ⁽³⁾	Turbidity (NTU) ⁽⁴⁾	Observations
MW-BW-201I	5/1/2006	2.6	6	7.17	891	11.7	452	NM ⁽⁵⁾
			12	7.04	1,014	11.7	175	NM
			18	7.00	1,052	11.7	77	NM
MW-BW-201S	5/1/2006	1.2	3	7.33	1,006	11.0	180	NM
			6	7.11	1,132	11.0	22.0	NM
			9	7.07	1,145	11.0	18.6	NM
MW-BW-202I	5/1/2006	2.7	6	7.68	167	12.2	555	NM
			12	7.34	178	12.3	704	NM
			18	7.26	175	12.3	305	NM
MW-BW-202S	5/1/2006	1.2	4	6.97	248	12.3	310	NM
			8	6.93	221	12.3	85.1	NM
			12	6.89	217	12.3	67.5	NM
MW-BW-203I	5/1/2006	3.2	7	7.23	1,192	11.7	678	NM
			14	7.16	1,201	11.7	177	NM
			21	7.14	1,195	11.7	64	NM
MW-BW-203S	5/1/2006	1.6	4	9.04	930	10.8	1,248	NM
			8	8.30	1,004	10.8	150	NM
			12	8.01	1,040	10.8	73.5	NM
			16	7.91	1,062	10.8	61.1	NM
MW-BW-204I	4/28/2006	2.9	6	8.11	638	13.3	417	Cloudy
			12	7.96	612	13.5	337	Slightly cloudy
			18	7.85	611	13.3	222	Slightly cloudy
			24	7.77	613	13.3	84.2	Slightly cloudy

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## SUMMARY OF MONITORING WELL DEVELOPMENT PARAMETERS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Date	Well Volume (gallons)	Volume Purged (gallons)	pH (Std. Units) ⁽¹⁾	Conductivity (µS/cm ) ⁽²⁾	Temperature (° C) ⁽³⁾	Turbidity (NTU) ⁽⁴⁾	Observations
MW-BW-201I	5/1/2006	2.6	6	7.17	891	11.7	452	NM ⁽⁵⁾
			12	7.04	1,014	11.7	175	NM
			18	7.00	1,052	11.7	77	NM
MW-BW-201S	5/1/2006	1.2	3	7.33	1,006	11.0	180	NM
			6	7.11	1,132	11.0	22.0	NM
			9	7.07	1,145	11.0	18.6	NM
MW-BW-205I	4/28/2006	3.1	6	7.78	859	23.5	264	Cloudy
			12	7.74	825	23.4	48.5	Slightly cloudy
			18	7.72	819	23.3	27.4	Clear
MW-BW-206I	4/28/2006	2.7	5	6.89	1,494	20.7	204	Cloudy
			10	6.92	1,418	20.5	33.0	Slightly cloudy
			15	7.01	1,354	20.6	12.2	Clear
MW-BW-207I	7/14/2006	6.5	6	7.19	491	11.7	NM	Slightly cloudy
			12	7.24	475	12.0	NM	Slightly cloudy
			18	7.27	469	12.0	NM	Slightly cloudy
			24	7.31	431	12.1	NM	Clear
			30	7.35	421	12.0	NM	Clear
MW-BW-208BD	7/18/2006	14	28	7.91	359	13.1	NM	Slightly cloudy
	, ,		42	7.53	371	12.9	NM	Slightly cloudy
			56	7.29	385	12.5	NM	Slightly cloudy
			70	7.13	391	12.3	NM	Slightly cloudy

## Notes:

(1) Std. Units - standard units

(2)  $\mu$ S/cm - microsiemens per centimeter

(3) ° C - degrees Celsius

(4) NTU - nephelometric turbidity units

(5) NM - not measured

# SUMMARY OF GROUNDWATER ELEVATIONS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Reference Elevation	Depth to Water (ft Below	Groundwater Elevation	Depth to Water (ft Below	Groundwater Elevation	
	( <i>ft AMSL</i> ) ⁽¹⁾	Reference) May 9-11, 06	(ft AMSL) May 9-11, 06	Reference) Iuly 31, 06	(ft AMSL) Iulu 31. 06	
				<b>,</b> , <b>,</b> ,	<b>, ,</b> ,	
MW-11	603.83	10.49	593.34	10.79	593.04	
MW-13	600.85	9.86	590.99	9.95	590.90	
MW-14	602.46	12.69	589.77	12.78	589.68	
MW-2	603	NM	NM	6.93	596.07	
MW-22	601.65	8.60	593.05	8.15	593.50	
MW-4	599.35	4.89	594.46	4.73	594.62	
MW-5	599.9	5.40	594.50	4.23	595.67	
MW-6	599.1	5.42	593.68	3.41	595.69	
MW-9	603.83	10.03	593.80	10.40	593.43	
MW-BW-201BD	603.23	10.96	592.27	11.45	591.78	
MW-BW-201I	603.21	10.79	592.42	11.89	591.32	
MW-BW-201S	603.11	10.71	592.40	10.75	592.36	
MW-BW-202I	604.09	10.37	593.72	10.38	593.71	
MW-BW-202S	604.3	10.56	593.74	10.55	593.75	
MW-BW-203I	602.19	7.39	594.80	7.49	594.70	
MW-BW-203S	602.33	7.55	594.78	7.65	594.68	
MW-BW-204I	603.173	8.51	594.66	8.94	594.23	
MW-BW-205I	600.859	8.13	592.73	8.30	592.56	
MW-BW-206I	598.349	10.74	587.61	11.11	587.24	
MW-BW-207I	599.59	NM	NM	7.35	592.24	
MW-BW-208BD	601.98	NM	NM	13.05	588.93*	
TB-1-10D	604.68	9.35	595.33	9.03	595.65	
TB-1-1D	601	6.61	594.39	5.91	595.09	
TB-1-2D	600.62	6.22	594.40	7.04	593.58	
TB-1-3D	602.77	8.64	594.13	6.94	595.83	
TB-1-4D	600.86	6.60	594.26	5.38	595.48	
TB-1-5D	602.37	10.89	591.48	11.40	590.97	
TB-1-6D	602.69	11.14	591.55	11.28	591.41	
TB-1-7D	601.46	9.65	591.81	9.55	591.91	
TB-1-8D	602.43	6.88	595.55	7.00	595.43	
TB-1-9D	603.41	8.03	595.38	7.40	596.01	
TW-10	602.54	10.42	592.12	10.76	591.78	
TW-12	601.51	9.16	592.35	9.06	592.45	
TW-15	601.17	10.92	590.25	11.00	590.17	
TW-16	601.93	7.14	594.79	6.56	595.37	
TW-18	599.09	7.65	591.44	8.61	590.48	
TW-21	600.54	4.79	595.75	7.25	593.29	
TW-23	603.1	11.80	591.30	11.90	591.20	
TW-24	601.87	10.51	591.36	10.48	591.20	
TW-25	600.07	8 14	591.93	8.06	592.01	
TW-26	602.68	12.53	590.15	12.77	589.91	
TW-3	599.37	4.51	594 86	3.82	595.55	
TW-6	599.56	6.73	592.83	5.00	594.56	
TW-84	600.52	613	594 39	710	593 42	

Notes:

(1) - ft AMSL - feet above mean sea level.

NM - Not Measured.

* - A water elevation of 592.74 ft AMSL was measured at MW-BW-208BD on August 15, 2006.

## SUMMARY OF SURFACE WATER ELEVATIONS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Reference Elevation (ft AMSL)	Depth to Water (ft Below Reference)	Groundwater Elevation (ft AMSL)
588.36	1.00	587.36
587.61	1.00	586.61
580.03	1.00	579.03
567.38	1.00	566.38
595.92	1.42	594.50
596.44	2.03	594.41
	Reference Elevation (ft AMSL) 588.36 587.61 580.03 567.38 595.92 596.44	Reference Elevation         Depth to Water (ft Below           (ft AMSL)         Reference)           588.36         1.00           587.61         1.00           580.03         1.00           567.38         1.00           595.92         1.42           596.44         2.03

## Notes:

All elevations were measured May 17, 2006. ft AMSL - feet above mean sea level.

#### SAMPLE KEY FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample			Date		
Location	Sample Identification	QC Sample	Collected	Matrix	Analyses
TB-1-9D	WG-BW-050906-JL-001		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-6	WG-BW-050906-MS-002		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-5D	WG-BW-050906-JL-003		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-3D	WG-BW-050906-MS-004		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-1D	WG-BW-050906-JL-005		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-8	WG-BW-050906-MS-006		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-16	WG-BW-050906-JL-007		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-6	WG-BW-050906-MS-008		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-10D	WG-BW-051006-JL-009		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-5	WG-BW-050906-MS-010		5/9/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-10D	WG-BW-051006-JL-011	Duplicate (009)	5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-11	WG-BW-051006-MS-012		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-4D	WG-BW-051006-JL-013		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
I W-23	WG-BW-051006-MS-014		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
1 VV-5 TW/ 10	WG-DW-051006-JL-015		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
1 W-10	WC BW 051006 H 017		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
IVI VV-2	MG-DW-051000-JL-017		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB 1 2D	WC BW 051006 II 019		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-15	WG-BW-051006-MS-020		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-7D	WG-BW-051000-III-020		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-15	WG-BW-051006-MS-022	Duplicate (020)	5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-14	WG-BW-051006-MS-024	Duplicate (020)	5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-8D	WG-BW-051006-IL-025		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-12	WG-BW-051006-MS-026		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-22	WG-BW-051106-JL-027		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-24	WG-BW-051006-MS-028		5/10/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-9	WG-BW-051106-JL-029		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-4	WG-BW-051106-MS-030		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-9	WG-BW-051106-JL-031	Duplicate (029)	5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-7	WG-BW-051106-MS-032		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-6D	WG-BW-051106-JL-033		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-21	WG-BW-051106-MS-034		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-202I	WG-BW-051106-JL-035		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-203S	WG-BW-051106-MS-036		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-202S	WG-BW-051106-JL-037		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-203I	WG-BW-051106-MS-038		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-201S	WG-BW-051106-JL-039		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2011	WG-BW-051106-MS-040		5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2041	WG-BW-051206-JL-041	D 1: (040)	5/12/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2011	WG-BW-051106-MS-042	Duplicate (040)	5/11/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2051	WG-BW-051206-JL-043		5/12/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-20	WG-BW-051206-WS-044		5/12/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW_BW_206I	WG-BW-051200-MS-048		5/12/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-24	WG-BW-051506-MB-050		5/15/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-24	WG-BW-051506-MB-052	Duplicate (050)	5/15/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
SG-BW-101	SW-BW-051706-MB-101	Duplicate (000)	5/17/2006	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-102	SW-BW-051706-MB-102		5/17/2006	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-103	SW-BW-051706-MB-103		5/17/2006	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-104	SW-BW-051706-MB-104		5/17/2006	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-105	SW-BW-051706-MB-105		5/17/2006	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-106	SW-BW-051706-MB-106		5/17/2006	Surface Water	Tritium/Strontium/Gamma Spectrum
TW-25	WG-BW-051906-MB-054		5/19/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-26	WG-BW-051906-MB-055		5/19/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-201BD	WG-BW-052206-MB-056		5/22/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-201BD	WG-BW-052206-MB-057	Duplicate (056)	5/22/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-208BD	WG-BW-MW-208BD-072806-JL-100		7/28/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-207I	WG-BW-MW-207I-072806-JL-101		7/28/2006	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-207I	WG-BW-MW-207I-072806-JL-102	Duplicate (101)	7/28/2006	Groundwater	Tritium/Strontium/Gamma Spectrum

Notes:

QC - Quality Control

Gamma Spectrum - Barium-140, Cesium-134, Cesium-137, Cobalt-58, Cobalt-60, Iron-59, Lanthanum-140, Manganese-54, Niobium-95, Zinc-65, Zirconium-95

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	nН	Temperature	Conductivitu	ORP ⁽⁵⁾	DO (7)	Turbidity	Purged
			(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	(mV) ⁽⁶⁾	( <i>mg/L</i> ) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
TB-1-9D	5/9/2006	5	200	7.18	22.01	1600	NA	0.80	95	
		10	200	7.19	22.35	1590	NA	0.24	40	
		15	200	7.20	22.47	1580	NA	0.16	37	
		20	200	7.21	22.55	1560	NA	0.13	35	
		25	200	7.22	22.62	1560	NA	0.12	20	
		30	200	7.24	22.62	1550	NA	0.09	20	
		35	200	7.25	22.64	1540	NA	0.10	17	2 gallons
MW-6	5/9/2006	5	250	7.51	16.25	19990	281	0.73	141	
		10	250	7.31	16.14	20020	277	0.55	62.5	
		15	250	7.22	15.98	21000	275	0.58	16.4	
		20	250	7.16	16.01	22200	275	0.55	34.9	
		25	250	7.11	15.91	24300	275	0.51	32.8	2 gallons
TB-1-5D	5/9/2006	5	200	7.76	13.74	763	NA	1.55	100	
		10	200	7.56	14.19	828	NA	2.05	55	
		15	200	7.54	14.77	898	NA	4.68	45	
		20	200	7.52	14.93	907	NA	7.47	29	
		25	200	7.42	14.97	929	NA	7.41	9.2	
		30	200	7.34	15.09	939	NA	7.31	7.6	
		35	200	7.29	15.13	942	NA	7.30	5.7	
		40	200	7.30	15.10	941	NA	7.34	6	2 gallons
TB-3D	5/9/2006	5	200	7.06	16.19	23500	142	0.46	76.7	
		10	200	7.08	15.99	24000	90	0.37	14.1	
		15	200	7.05	16.04	24000	66	0.33	5.98	
		20	200	7.04	15.93	23800	45	0.32	5.11	
		25	200	7.02	15.92	23700	29	0.31	2.96	1 gallon
TB-1D	5/9/2006	5	200	7.48	14.22	889	NA	1.67	190	
		10	200	7.44	14.33	894	NA	1.03	60	
		15	200	7.46	14.30	892	NA	0.12	27	
		20	200	7.47	14.33	889	NA	0.10	28	
		25	200	7.44	14.37	891	NA	0.09	18	
		30	200	7.45	14.33	891	NA	0.08	23	1.5 gallons

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	pH	Temperature	Conductivity	ORP ⁽⁵⁾	DO (7)	Turbidity	Purged
		0	(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	(mV) ⁽⁶⁾	(mg/L) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
TW-8	5/9/2006	5	200	7.98	13.32	8040	217	0.86	13.7	
		10	200	7.17	13.19	7840	222.0	0.62	8.09	
		15	200	6.88	13.18	7650	226	0.52	4.94	
		20	200	6.81	13.16	7540	229	0.48	4.84	
		25	200	6.78	13.01	7330	231	0.48	3.25	1 gallon
TW-16	5/9/2006	5	200	7.14	13.75	437	NA	1.24	5.3	
		10	200	6.98	13.66	435	NA	1.12	3.4	
		15	200	6.90	13.64	432	NA	0.90	2.8	
		20	200	6.83	13.62	438	NA	0.73	1.7	
		25	200	6.83	13.61	439	NA	0.65	2	
		30	200	6.81	13.59	443	NA	0.63	1.4	1.5 gallons
TW-6	5/9/2006	5	200	8.16	16.88	925	123	0.77	16	
		10	200	7.66	17.26	872	112	0.62	16.1	
		15	200	7.39	17.38	781	107	0.70	7.67	
		20	200	7.31	16.70	694	94	0.55	4.44	
		25	200	7.22	16.65	695	89	0.52	2.45	1 gallon
TB-1-10D	5/10/2006	5	200	7.09	19.37	2690	NA	1.01	15	
		10	200	7.15	19.81	2280	NA	6.12	18	
		15	200	7.18	20.11	2060	NA	6.72	4.8	
		20	200	7.10	20.09	1970	NA	5.26	2.2	
		25	200	7.11	20.08	1960	NA	5.84	1.6	
		30	200	7.17	20.10	1940	NA	5.87	1.4	1.5 gallons
MW-5	5/9/2006	5	200	8.68	12.48	553	168	7.76	19.1	
		10	200	8.10	12.52	551	198	7.87	13	
		15	200	7.90	12.64	550	220	7.84	6.43	
		20	200	7.82	12.51	550	231	7.94	5.49	
		25	200	7.77	12.51	556	242	8.06	4.3	1 gallon

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	pН	Temperature	Conductivity	ORP ⁽⁵⁾	DO (7)	Turbidity	Purged
			(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	(mV) ⁽⁶⁾	( <i>mg/L</i> ) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
TB-1-4D	5/10/2006	5	200	7.54	16.14	7730	NA	0.19	310	
		10	200	7.56	16.11	7140	NA	0.14	110	
		15	200	7.58	16.03	6990	NA	0.11	60	
		20	200	7.60	16.04	6770	NA	0.11	31	
		25	200	7.58	16.10	6680	NA	0.11	36	
		30	200	7.60	16.08	6650	NA	0.15	33	1.5 gallons
MW-11	5/10/2006	5	200	8.83	13.26	6600	380.0	6.51	6.18	
		10	200	7.89	13.21	6560	382.0	6.53	5.6	
		15	200	7.38	13.18	6470	384.0	6.42	3.83	
		20	200	7.15	13.21	6330	385.0	6.37	2.16	
		25	200	7.05	13.16	6230	386.0	6.41	1.41	1 gallon
TW-3	5/10/2006	5	200	8.58	16.28	2210	NA	0.58	95	
		10	200	9.31	16.16	2730	NA	0.48	100	
		15	200	9.58	16.14	3070	NA	0.28	390	
		20	200	9.76	16.01	3340	NA	0.25	400	
		25	200	10.06	16.01	3690	NA	0.29	350	1 gallon
TW-23	5/10/2006	5	200	8.31	13.42	2160	303.0	1.57	8.78	
		10	200	7.54	13.02	1710	315.0	3.42	8.75	
		15	200	7.32	12.88	1670	321	3.69	4.65	
		20	200	7.19	12.89	1680	325	3.51	2.77	
		25	200	7.14	12.87	1650	328	3.50	1.72	1 gallon
MW-2	5/10/2006	5	200	7.32	13.40	401	NA	2.43	16	
		10	200	7.26	13.51	400	NA	1.34	8.9	
		15	200	7.23	13.55	398	NA	0.67	4.9	
		20	200	7.21	13.49	397	NA	0.46	3.8	
		25	200	7.19	13.44	397	NA	0.37	2.9	1 gallon
TW-10	5/10/2006	5	200	8.78	14.10	772	282	7.18	47.2	
		10	200	8.63	13.93	772	290	7.31	45.1	
		15	200	8.56	13.92	774	296	7.35	42.3	
		20	200	8.53	13.92	776	301	7.40	39.5	1 gallon

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	pH	Temperature	Conductivity	ORP ⁽⁵⁾	DO ⁽⁷⁾	Turbidity	Purged
			(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	$(mV)^{(6)}$	( <i>mg/L</i> ) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
TB-1-2D	5/10/2006	5	200	7.68	14.49	493	NA	2.49	75	
		10	200	7.66	14.87	488	NA	2.53	32	
		15	200	7.57	14.99	486	NA	1.82	26	
		20	200	7.54	14.96	482	NA	2.08	15	
		25	200	7.52	14.96	482	NA	2.20	16	1 gallon
MW-13	5/10/2006	5	200	7.92	14.57	2190	284	2.13	295	
		10	200	7.47	14.49	2780	295	1.86	169	
		15	200	7.18	14.46	3820	304	1.35	89.7	
		20	200	7.06	14.31	4620	309	1.07	62.3	
		25	200	6.95	14.19	5040	302	0.96	43	1 gallon
TB-1-7D	5/10/2006	5	200	7.60	13.30	1660	NA	1.81	55	
		10	200	7.56	13.24	1650	NA	1.50	100	
		15	200	7.53	13.32	1640	NA	1.24	120	
		20	200	7.55	13.21	1630	NA	1.79	23	
		25	200	7.53	13.55	1640	NA	1.74	12	
		30	200	7.55	13.28	1630	NA	1.51	24	1.5 gallons
TW-15	5/10/2006	5	200	8.69	12.57	662	283	6.89	3.75	
		10	200	7.68	12.40	645	293	7.01	1.67	
		15	200	7.28	12.40	650	303	7.01	1.46	1 gallon
TW-25	5/10/2006	5	200	7.19	12.91	7200	NA	4.97	6.1	
		10	200	7.18	12.97	6550	NA	4.39	3.2	
		15	200	7.20	12.92	6100	NA	4.01	2.7	
		20	200	7.21	12.94	5940	NA	3.94	2.4	
		25	200	7.21	12.98	5860	NA	3.83	2.5	1 gallon
MW-14	5/10/2006	5	200	9.21	11.88	563	288	8.92	2.39	
		10	200	7.97	11.66	524	305	8.90	1.97	
		15	200	7.83	11.59	522	309	8.90	1.46	
		20	200	7.61	11.55	517	314	9.10	1.33	1 gallon

Sample	Data	Minutes Durged	Pumping Rata	"Н	Townsrature	Conductivity	OPP (5)	DO ⁽⁷⁾	Turbiditu	Volume Durged
Locution	Dute	r urgeu	(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(μS/cm) ⁽⁴⁾	$(mV)^{(6)}$	( <i>mg/L</i> ) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
TB-1-8D	5/10/2006	5	250	7.22	14.51	11580	NA	2.11	160	
		10	200	7.21	14.49	11560	NA	1.38	40	
		15	200	7.20	14.54	11460	NA	0.74	16	
		20	200	7.20	14.51	11470	NA	0.41	13	
		25	200	7.19	14.52	11520	NA	0.37	7.3	1.5 gallons
TW-12	5/10/2006	5	200	7.90	14.89	2440	317	7.17	3.01	
		10	200	7.34	14.68	2440	322	7.35	4.95	
		15	200	7.13	14.63	2520	328	7.42	5.93	
		20	200	7.01	14.58	2840	332	7.60	4.02	
		25	200	6.95	14.54	3090	335	7.13	2.01	1 gallon
MW-22	5/10/2006	5	250	7.79	14.44	717	NA	3.57	7.2	
		10	200	7.78	14.44	732	NA	2.72	4.5	
		15	200	7.76	14.89	740	NA	2.66	4.7	
		20	200	7.74	14.50	738	NA	2.76	2.4	1 gallon
TW-24	5/12/2006	5	250	7.25	16.59	2	301	8.55	2.91	
		10	200	7.21	16.32	2	311	8.60	2.81	
		15	200	7.20	16.30	1	319	8.63	1.79	1 gallon
MW-9	5/10/2006	5	200	7.53	12.00	2520	NA	1.21	2.6	
		10	200	7.53	11.99	2550	NA	1.05	2	
		15	200	7.52	11.95	2570	NA	1.01	1.9	1 gallon
MW-4	5/11/2006	5	200	7.68	13.00	2610	334	0.94	11.1	
		10	200	7.08	13.02	2610	306	0.78	10	
		15	200	6.88	13.14	2630	271	0.74	6.94	
		20	200	6.82	13.01	2620	251	0.69	4.42	1 gallon
TB-1-6D	5/11/2006	5	200	8.10	12.72	807	NA	3.05	19	
		10	200	8.05	12.65	851	NA	3.85	25	
		15	150	7.97	12.72	927	NA	3.33	19	
		20	150	7.90	12.73	928	NA	3.16	11	
		25	150	8.11	12.68	930	NA	3.85	5.4	1 gallon

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	nН	Temperature	Conductivitu	ORP ⁽⁵⁾	DO ⁽⁷⁾	Turbiditu	Purged
			(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	(mV) ⁽⁶⁾	( <i>mg/L</i> ) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
MW-7	5/11/2006	5	200	7.08	14.56	4320	265	1.83	98.7	
	, ,	10	200	7.09	14.79	4050	267	1.57	94.2	
		15	200	7.20	14.83	3290	271	2.87	86.2	
		20	200	7.16	14.82	3110	276	2.92	48.3	1 gallon
MW-BW-202	5/11/2006	5	250	7.55	12.01	1480	NA	1.47	85	
		10	250	7.54	12.02	1510	NA	1.46	27	
		15	250	7.55	12.00	1520	NA	0.68	13	
		20	250	7.54	12.02	1540	NA	0.51	6.9	
		25	250	7.54	12.01	1540	NA	0.88	4.6	1.5 gallons
TW-21	5/11/2006	5	250	7.19	13.32	3040	303	3.10	64.1	
		10	200	7.16	13.19	3080	305	3.11	31.5	
		15	200	7.08	13.06	3090	307	3.38	13	
		20	200	7.03	12.02	2820	309	3.43	11	1 gallon
MW-BW-202S	5/11/2006	5	250	7.48	12.42	3480	NA	1.56	24	
		10	250	7.35	12.38	3400	NA	0.81	13	
		15	250	7.34	12.39	3130	NA	0.55	7.9	
		20	250	7.35	12.39	2850	NA	0.39	6.7	
		25	250	7.35	12.36	2620	NA	0.38	4.7	
		30	250	7.35	12.31	2590	NA	0.36	3.7	
MW-BW-203S	5/11/2006	5	200	7.54	11.02	962	317	4.64	129	
		10	200	7.54	11.08	997	318	4.27	60.2	
		15	200	7.53	11.12	1005	318	4.20	32.8	
		20	200	7.51	11.15	1025	320	3.99	13.11	
		25	200	7.51	11.16	1032	321	3.90	7.89	1 gallon
MW-BW-201S	5/11/2006	5	250	7.62	11.07	893	NA	4.94	5.1	
		10	250	7.59	11.10	904	NA	4.73	3.6	
		15	250	7.58	11.09	915	NA	4.67	3.4	
		20	250	7.58	11.09	914	NA	4.68	1.7	1 gallon

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	pН	Temperature	Conductivity	ORP ⁽⁵⁾	DO (7)	Turbidity	Purged
		0	(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	(mV) ⁽⁶⁾	(mg/L) ⁽⁸⁾	(NTU) ())	(gallons)
MW-BW-203I	5/11/2006	5	200	8.24	11.68	1332	217	1.02	764	
		10	200	7.61	11.53	1324	216	0.77	113	
		15	200	7.30	11.50	1326	209	0.71	37.5	
		20	200	7.14	11.50	1332	207	0.65	26.2	
		25	200	7.07	11.48	1329	203	0.63	12.4	1 gallon
MW-BW-201I	5/11/2006	5	200	7.20	12.42	1	267	9.31	na	
		10	200	7.19	11.54	1630	267	1.32	534	
		15	200	7.20	11.50	1680	271	0.85	57.5	
		20	200	7.17	11.47	1700	272	0.70	27.1	
		25	200	7.13	11.46	1710	274	0.62	11.2	1 gallon
MW-BW-204I	5/12/2006	5	250	7.36	10.44	512	NA	2.27	900	
		10	250	7.34	10.35	510	NA	1.43	130	
		15	250	7.33	10.30	514	NA	0.96	60	
		20	250	7.33	10.33	520	NA	0.62	55	
		25	250	7.32	10.36	522	NA	0.45	31	
		30	250	7.31	10.35	523	NA	0.32	24	
		35	250	7.31	10.34	525	NA	0.34	18	2 gallons
TW-26	5/12/2006	5	200	7.81	11.28	949	305	5.66	29.5	
		10	200	7.36	11.29	1043	314	5.51	21.5	
		15	200	7.17	11.34	1092	321	5.52	16.2	
		20	200	7.05	11.32	1113	325	5.51	11.6	1 gallon
TW-18	5/12/2006	5	200	7.17	10.57	1780	341	1.06	10.73	
		10	200	7.16	10.64	1770	340	0.93	8.13	
		15	200	7.13	10.68	1760	326	0.77	4.47	1 gallon
MW-BW-205I	5/12/2006	5	250	7.87	20.43	944	NA	0.19	16	
		10	250	7.88	20.37	944	NA	0.12	8.8	
		15	250	7.86	20.63	943	NA	0.10	5.4	
		20	250	7.87	20.74	941	NA	0.09	6.2	1 gallon

Sample		Minutes	Pumping							Volume
Location	Date	Purged	Rate	pН	Temperature	Conductivity	<b>ORP</b> ⁽⁵⁾	DO (7)	Turbidity	Purged
		0	(mL/min) ⁽¹⁾	(Std. Units) ⁽²⁾	(°C) ⁽³⁾	(µS/cm) ⁽⁴⁾	(mV) ⁽⁶⁾	(mg/L) ⁽⁸⁾	(NTU) ⁽⁹⁾	(gallons)
MW-BW-206I	5/12/2006	5	200	6.78	16.55	3580	233	1.11	na	
		10	200	6.61	16.06	3570	213	0.94	na	
		15	200	6.60	16.34	3580	208	0.88	799	
		20	200	6.54	16.21	3590	197	0.77	287	
		25	200	6.54	16.30	3600	189	0.72	147	1 gallon
TW-24	5/15/2006	5	200	7.25	16.59	2000	303	8.55	2.91	
		10	200	7.21	16.32	2000	310	8.60	2.81	
		15	200	7.20	16.30	100	313	8.63	1.79	1 gallon
TW-25	5/19/2006	5	200	6.89	12.90	457	310	6.21	45.7	
		10	200	6.87	12.80	463	316	6.15	32.1	
		15	200	6.85	12.90	471	318	6.13	19.6	1 gallon
TW-26	5/19/2006	5	200	7.71	11.32	949	307	5.65	30.2	
		10	200	7.32	11.32	1010	310	5.62	24.1	
		15	200	7.05	11.33	1015	313	5.61	20.9	
		20	200	7.01	11.35	1023	315	5.61	14.6	1 gallon
MW-BW-201BD	5/22/2006	5	200	7.59	12.00	432	732	1.56	1000	
		10	200	7.54	12.30	452	315	2.15	1000	
		15	200	7.55	12.20	455	217	3.19	929	
		20	200	7.37	12.50	432	214	3.27	572	
		25	200	7.28	12.70	415	210	3.33	453	
		30	200	7.27	12.90	417	208	3.34	193	1.5 gallons
MW-BW-208BD	7/28/2006	10	250	7.15	19.53	419	333	2.17	cloudy	
		15	250	7.39	17.75	429	319	2.71	cloudy	
		20	250	7.41	17.06	422	311	2.53	cloudy	
		25	250	7.50	17.70	411	305	3.18	cloudy	
		30	250	7.46	17.09	408	307	2.76	cloudy	
		35	250	7.58	17.10	400	302	2.70	cloudy	
		40	250	7.57	17.05	400	302	2.40	cloudy	
		45	250	7.60	17.66	402	301	2.65	cloudy	
		50	250	7.64	17.09	401	299	2.72	cloudy	
		55	250	7.63	17.13	403	302	2.61	slightly cloudy	3 gallons
MW-BW-207I	7/28/2006	10	250	8.20	24.73	1290	245	0.18	cloudy	

## SUMMARY OF MONITORING WELL PURGING PARAMETERS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Date	Minutes Purged	Pumping Rate (mL/min) ⁽¹⁾	pH (Std. Units) ⁽²⁾	Temperature (°C) ⁽³⁾	Conductivity (µS/cm) ⁽⁴⁾	ORP ⁽⁵⁾ (mV) ⁽⁶⁾	DO ⁽⁷⁾ (mg/L) ⁽⁸⁾	Turbidity (NTU) ⁽⁹⁾	Volume Purged (gallons)
		15	250	8.25	24.83	1292	230	0.16	slightly cloudy	
		20	250	8.31	24.98	1295	216	0.15	slightly cloudy	
		25	250	8.32	24.93	1293	190	0.15	clear	
		30	250	8.30	24.93	1289	185	0.14	clear	1.5 gallons

Notes:

- (1) mL/min milliliters per minute
- (2) Std. Units standard units
- (3) °C degrees Celsius
- (4)  $\mu$ S/cm microsiemens per centimet
- (5) ORP oxidation-reduction potential
- (6) mV millivolts(7) DO dissolved oxygen
- (8) mg/L milligrams per liter
- NTU nephelometric turbidity units
   The last three readings are provided in the table

# SUMMARY OF CALCULATED VERTICAL GRADIENTS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

	Top of	Bottom of	Mid-Point	31	-Jul-06
Sample Location	Screen Elevation	Screen Elevation	of Screen Elevation	Water Level	Vertical Gradient
	(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)	$(ft/ft)^{(1)}$
MW-BW-201S	594.97	584.97	589.97	592.36	0.116
MW-BW-201I	586.02	576.02	581.02	591.32	
MW-BW-202S	595.87	585.87	590.87	593.75	0.004
MW-BW-202I	585.72	575.72	580.72	593.71	
MW-BW-203S	594.14	584.14	589.14	594.68	-0.002
MW-BW-203I	583.95	573.95	578.95	594.70	
TB-1-4D	582.45	577.45	579.45	595.48	0.005
TW-3	597.60	587.60	592.6	595.55	
TB-1-2D	580.41	575.41	577.91	593.58	0.167
MW-2	597.80	587.80	592.8	596.07	
MW-11	594.10	584.10	589.1	593.04	0.118
TB-1-6D	577.84	572.84	575.34	591.41	
MW-6	594.10	584.10	589.1	595.69	-0.074
TB-1-3D	589.70	584.70	587.2	595.83	
MW-BW-207I	564.59	554.59	559.59	592.24	0.100
TW-3	597.60	587.60	592.6	595.55	

Notes:

ft AMSL feet above mean sea level.

(1) Positive value denotes downward vertical gradient; negative value denotes upward vertical gradient.

## ANALYTICAL RESULTS SUMMARY - TRITIUM IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Identification	QC Sample	Sample Date	Tritium (pCi/L)	Result Error
MW-2	WG-BW-051006-JL-017		5/10/2006	ND (200)	-
MW-4	WG-BW-051106-MS-030		5/11/2006	ND (200)	-
MW-5	WG-BW-050906-MS-010		5/9/2006	ND (200)	-
MW-6	WG-BW-050906-MS-002		5/9/2006	288	+/-121
MW-7	WG-BW-051106-MS-032		5/11/2006	214	+/-101
MW-9	WG-BW-051106-JL-029		5/11/2006	311	+/-118
MW-9	WG-BW-051106-JL-031	Duplicate (029)	5/11/2006	441	+/-131
MW-11	WG-BW-051006-MS-012	1 ( )	5/10/2006	ND (200)	-
MW-13	WG-BW-051006-MS-018		5/10/2006	ND (200)	-
MW-14	WG-BW-051006-MS-024		5/10/2006	ND (200)	-
MW-22	WG-BW-051106-JL-027		5/11/2006	ND (200)	-
MW-BW-201BD	WG-BW-052206-MB-056		5/22/2006	ND (200)	-
MW-BW-201BD	WG-BW-052206-MB-057	Duplicate (056)	5/22/2006	ND (200)	-
MW-BW-201I	WG-BW-051106-MS-040	1 ( )	5/11/2006	261	+/-104
MW-BW-201I	WG-BW-051106-MS-042	Duplicate (040)	5/11/2006	ND (200)	-
MW-BW-201S	WG-BW-051106-JL-039		5/11/2006	244	+/-100
MW-BW-202I	WG-BW-051106-JL-035		5/11/2006	ND (200)	-
MW-BW-202S	WG-BW-051106-JL-037		5/11/2006	ND (200)	-
MW-BW-203I	WG-BW-051106-MS-038		5/11/2006	ND (200)	-
MW-BW-203S	WG-BW-051106-MS-036		5/11/2006	ND (200)	-
MW-BW-204I	WG-BW-051206-JL-041		5/12/2006	ND (200)	-
MW-BW-205I	WG-BW-051206-JL-043		5/12/2006	221	+/-102
MW-BW-206I	WG-BW-051206-MS-048		5/12/2006	ND (200)	-
MW-BW-207I	WG-BW-207-072806-JL-101		7/28/2006	438	+/-133
MW-BW-207I	WG-BW-207-072806-JL-102	Duplicate (101)	7/28/2006	471	+/-137
MW-BW-208BD	WG-BW-208D-072806-JL-100		7/28/2006	ND (200)	-
TB-1-1D	WG-BW-050906-JL-005		5/9/2006	ND (200)	-
TB-1-2D	WG-BW-051006-JL-019		5/10/2006	ND (200)	-
TB-1-3D	WG-BW-050906-MS-004		5/9/2006	285	+/-120
TB-1-4D	WG-BW-051006-JL-013		5/10/2006	719	+/-150
TB-1-5D	WG-BW-050906-JL-003		5/9/2006	443	+/-122
TB-1-6D	WG-BW-051106-JL-033		5/11/2006	ND (200)	-
TB-1-7D	WG-BW-051006-JL-021		5/10/2006	ND (200)	-
TB-1-8D	WG-BW-051006-JL-025		5/10/2006	ND (200)	-
TB-1-9D	WG-BW-050906-JL-001	(4)	5/9/2006	ND (200)	-
TB-1-10D	WG-BW-051006-JL-011	Duplicate (009) ⁽¹⁾	5/10/2006	ND (200)	-
TW-3	WG-BW-051006-JL-015		5/10/2006	1040	+/-172
TW-6	WG-BW-050906-MS-008		5/9/2006	775	+/-136
TW-8	WG-BW-050906-MS-006		5/9/2006	ND (200)	-
TW-10	WG-BW-051006-MS-016		5/10/2006	ND (200)	-
TW-12	WG-BW-051006-MS-026		5/10/2006	ND (200)	-
TW-15	WG-BW-051006-MS-020		5/10/2006	ND (200)	-
TW-15	WG-BW-051006-MS-022	Duplicate (020)	5/10/2006	ND (200)	-
TW-16	WG-BW-050906-JL-007		5/9/2006	893	+/-145
TW-18	WG-BW-051206-MS-046		5/12/2006	ND (200)	-
TW-21	WG-BW-051106-MS-034		5/11/2006	211	+/-95.6
TW-23	WG-BW-051006-MS-014		5/10/2006	ND (200)	-
1W-24	WG-BW-051506-MB-050		5/15/2006	204	+/-112
1W-24	WG-BW-051506-MB-052	Duplicate (050)	5/15/2006	200	+/-111
1W-25	WG-BW-051906-MB-054		5/19/2006	ND (200)	-
1W-26	WG-BW-051206-MS-044		5/12/2006	ND (200)	-
TW-26	WG-BW-051906-MB-055		5/19/2006	ND (200)	-

## Notes:

Samples analyzed by: Teledyne Brown Engineering, Inc.

QC - Quality Control

(1) - Sample container for original tritium analysis lost in transit.
 ND () - Non-detect; value in parentheses is the LLD.

LLD - Lower limit of detection.

- - Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		MW-2 WG-BW-051006-JL-017 5/10/2006	MW-2 Result Error	MW-4 WG-BW-051106-MS-030 5/11/2006	MW-4 Result Error	MW-5 WG-BW-050906-MS-010 5/9/2006	MW-5 Result Error	MW-6 WG-BW-050906-MS-002 5/9/2006	MW-6 Result Error	MW-7 WG-BW-051106-MS-032 5/11/2006	MW-7 Result Error
Target Radionuclides	Units										
-											
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	•	ND (10)	-	ND (10)	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	RNI		RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	5.585	+/-3.31	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
	F - ,										

#### Samples analyzed by: Teledyne Brown

(1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound / Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. - - Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:	Units	MW-9 WG <b>-BW-051106-JL-029</b> 5/11/2006	MW-9 Result Error	MW-9 WG-BW-051106-JL-031 5/11/2006 Duplicate	MW-9 Result Error	MW-11 WG-BW-051006-MS-012 5/10/2006	MW-11 Result Error	MW-13 WG-BW-051006-MS-018 5/10/2006	MW-13 Result Error	MW-14 WG-BW-051006-MS-024 5/10/2006	MW-14 Result Error
Target Radionuclides											
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)		ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10) U*	-	ND (10)	-	ND (10) U*	-	ND (10)	-	ND (10) U*	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30) U*	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-	ND (30) U*	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	151.5	+/-27.52
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	99.41	+/-39.54
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	10.46	+/-2.686
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	12.97	+/-4.909

Samples analyzed by: Teledyne Brown

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#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		MW-22 WG-BW-051106-JL-027 5/11/2006	MW-22 Result Error	MW-BW-201BD WG-BW-052206-MB-056 5/22/2006	MW-BW-201BD Result Error	MW-BW-201BD WG-BW-052206-MB-057 5/22/2006 Duplicate	MW-BW-201BD Result Error	MW-BW-2011 WG-BW-051106-MS-040 5/11/2006	MW-BW-2011 Result Error
Targat Padianuclidae	Units								
Turget Ruutonuctiues									
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10) U*	-	ND (10)	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾									
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. - - Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:	Units	MW-BW-2011 WG-BW-051106-MS-042 5/11/2006 Duplicate	MW-BW-2011 Result Error	MW-BW-2015 WG-BW-051106-JL-039 5/11/2006	MW-BW-201S Result Error	MW-BW-2021 WG-BW-051106-JL-035 5/11/2006	MW-BW-2021 Result Error	MW-BW-2025 WG-BW-051106-JL-037 5/11/2006	MW-BW-202S Result Error
Turget Ruutonuctiues									
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾									
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	· -	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown

(1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound / Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:	MW-BW-2031 WG-BW-051106-MS-038 5/11/2006	MW-BW-2031 Result Error	MW-BW-2035 WG-BW-051106-MS-036 5/11/2006	MW-BW-2035 Result Error	MW-BW-2041 WG-BW-051206-JL-041 5/12/2006	MW-BW-204I Result Error	MW-BW-2051 WG-BW-051206-JL-043 5/12/2006	MW-BW-2051 Result Error
Units Target Radionuclides								
Barium-140 pCi/L	ND (60)	-						
Cesium-134 pCi/L	ND (10) U*	-	ND (10)	-	ND (10)	-	ND (10)	-
Cesium-137 pCi/L	ND (18)	-						
Cobalt-58 pCi/L	ND (15)	-						
Cobalt-60 pCi/L	ND (15)	-						
Iron-59 pCi/L	ND (30)	-						
Lanthanum-140 pCi/L	ND (15)	-						
Manganese-54 pCi/L	ND (15)		ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95 pCi/L	ND (10)	-						
Strontium-89/90 (Total) pCi/L	ND (2)	-						
Zinc-65 pCi/L	ND (30)	-						
Zirconium-95 pCi/L	ND (10)	-						
Non-Target Radionuclides ⁽¹⁾								
Potassium-40 pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Radium-226 pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228 pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-232 pCi/L	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. - - Non-detect value, +/- value not reported.

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#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:	Units	MW-BW-206I WG-BW-051206-MS-048 5/12/2006	MW-BW-206I Result Error	MW-BW-2071 WG-BW-207-072806-JL-101 7/28/2006	MW-BW-2071 Result Error	MW-BW-2071 WG-BW-207-072806-JL-102 7/28/2006 Duplicate	MW-BW-207I Result Error	MW-BW-208BD WG-BW-208D-072806-JL-100 7/28/2006	MW-BW-208BD Result Error
Target Radionuclides									
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)		ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾									
Potassium-40	pCi/L	RNI	-	RNI	-	RNI		RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	10.5	+/-4.897
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. - - Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		TB-1-1D WG-BW-050906-JL-005 5/9/2006	TB-1-1D Result Error	TB-1-2D WG-BW-051006-JL-019 5/10/2006	TB-1-2D Result Error	TB-1-3D WG-BW-050906-MS-004 5/9/2006	TB-1-3D Result E <del>r</del> ror	TB-1-4D WG-BW-051006-JL-013 5/10/2006	TB-1-4D Result Error	TB-1-5D WG-BW-050906-JL-003 5/9/2006	TB-1-5D Result Error
	Units										
Target Radionuclides											
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)		ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10)	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)		ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	120	+/-55.18	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	5.026	+/-3.153	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	•	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown

(1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND() - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		TB-1-6D WG-BW-051106-JL-033 5/11/2006	TB-1-6D Result Error	TB-1-7D WG-BW-051006-JL-021 5/10/2006	TB-1-7D Result Error	TB-1-8D WG-BW-051006-JL-025 5/10/2006	TB-1-8D Result E <del>rr</del> or	TB-1-9D WG-BW-050906-JL-001 5/9/2006	TB-1-9D Result E <del>r</del> ror	TB-1-10D WG-BW-051006-JL-009 5/10/2006	TB-1-10D Result Error
Target Radionuclides	Units										
Barium-140	pCì/L	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10) U*	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	RNI	-	73.83	+/-34.97	RNI	-	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	21.28	+/-3.067	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:	Unite	TB-1-10D WG-BW-051006-JL-011 5/10/2006 Duplicate	TB-1-10D Result Error	TW-3 WG-BW-051006-JL-015 5/10/2006	TW-3 Result Error	TW-6 WG-BW-050906-MS-008 5/9/2006	TW-6 Result Error	TW-8 WG-BW-050906-MS-006 5/9/2006	TW-8 Result Error	TW-10 WG-BW-051006-MS-016 5/10/2006	TW-10 Result E <del>rr</del> or
Target Radionuclides	umis										
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10) U*	-	ND (10) U*	-	ND (10) U*	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	104.9	+/-53	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND() - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		TW-12 WG-BW-051006-MS-026 5/10/2006	TW-12 Result Error	TW-15 WG-BW-051006-MS-020 5/10/2006	TW-15 Result Error	TW-15 WG-BW-051006-MS-022 5/10/2006	TW-15 Result Error	TW-16 WG-BW-050906-JL-007 5/9/2006	TW-16 Result Error	TW-18 WG-BW-051206-MS-046 5/12/2006	TW-18 Result Error
	Units		2	0.10.2000	27707	Duplicate					
Target Radionuclides											
Barium-140	pCi/L	ND (60)	-	ND (60)		ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	-	ND (10) U*	-	ND (10) U*	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10) U*	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30) U*	-	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown

(1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. - - Non-detect value, +/- value not reported.

CRA 045136 (12) Braidwood Generating Station

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		TW-21 WG-BW-051106-MS-034 5/11/2006	TW-21 Result Error	TW-23 WG-BW-051006-MS-014 5/10/2006	TW-23 Result Error	TW-24 WG-BW-051006-MS-028 5/10/2006	TW-24 Result Error	TW-24 WG-BW-051506-MB-050 5/15/2006	TW-24 Result Error	TW-24 WG-BW-051506-MB-052 5/15/2006 Duplicate	TW-24 Result Error
Target Radionuclides	Units										
Barium-140	pCi/L	ND (60)	-	ND (60)		ND (60)	-	ND (60)		ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	_	ND (10) U*	-	ND (10) U*	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-						
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-						
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-						
Iron-59	pCi/L	ND (30)	-	ND (30)	-						
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)		ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-						
Niobium-95	pCi/L	ND (10)	-	ND (10)	-						
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-						
Zinc-65	pCi/L	ND (30)	-	ND (30)	-						
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-						
Non-Target Radionuclides ⁽¹⁾											
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	136.6	+/-89.11	ŔNI	-	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-	RNI	-

#### Samples analyzed by: Teledyne Brown

(1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. - - Non-detect value, +/- value not reported.

#### ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		TW-25 WG-BW-051906-MB-054 5/19/2006	TW-25 Result Error	TW-26 WG-BW-051206-MS-044 5/12/2006	TW-26 Result E <del>rr</del> or	TW-26 WG-BW-051906-MB-055 5/19/2006	TW-26 Result E <del>rr</del> or
Target Radionuclides	Units						
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10) U*	-	ND (10)	-	ND (10)	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)		ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)		ND (30)		ND (30) U*	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾							
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-
Radium-226	pCi/L	RNI	-	RNI	-	RNI	-
Thorium-228	pCi/L	8.752	+/-5.457	RNI	-	RNI	-
Thorium-232	pCi/L	RNI	-	RNI	-	RNI	-

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND () - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

## ANALYTICAL RESULTS SUMMARY - TRITIUM IN SURFACE WATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Identification	Sample Date	Tritium (pCi/L)	Result Error
SG-BW-101	SW-BW-051706-MB-101	5/17/2006	398	+/-129
SG-BW-102	SW-BW-051706-MB-102	5/17/2006	365	+/-120
SG-BW-103	SW-BW-051706-MB-103	5/17/2006	230	+/-114
SG-BW-104	SW-BW-051706-MB-104	5/17/2006	ND (200)	_
SG-BW-105	SW-BW-051706-MB-105	5/17/2006	ND (200)	-
SG-BW-106	SW-BW-051706-MB-106	5/17/2006	ND (200)	-

Notes:

Samples analyzed by: Teledyne Brown Engineering, Inc.

ND () - Non-detect; value in parentheses is the LLD.

LLD - Lower limit of detection.

- - Non-detect value, +/- value not reported.

## ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN SURFACE WATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		SG-BW-101 SW-BW-051706-MB-101 5/17/2006	SG-BW-101 Result Error	SG- <b>BW-102</b> SW-BW-051706-MB-102 5/17/2006	SG-BW-102 Result Error	SG-BW-103 SW-BW-051706-MB-103 5/17/2006	SG-BW-103 Result Error	SG-BW-104 SW-BW-051706-MB-104 5/17/2006	SG-BW-104 Result E <del>r</del> ror
	Units								
Target Radionuclides									
Barium-140	pCi/L	ND (60)	-	ND (60)	-	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10) U*	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-	ND (30) U*	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾									
Actinium-228	pCi/L	RNI	-	RNI	-	RNI	-	11.64	+/-5.653
Potassium-40	pCi/L	RNI	-	RNI	-	RNI	-	RNI	-

Notes:

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND() - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound / Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

## ANALYTICAL RESULTS SUMMARY - RADIONUCLIDES IN SURFACE WATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location: Sample Identification: Sample Date:		SG-BW-105 SW-BW-051706-MB-105 5/17/2006	SG-BW-105 Result Error	SG-BW-106 SW-BW-051706-MB-106 5/17/2006	SG-BW-106 Result Error
	Units				
Target Radionuclides					
Barium-140	pCi/L	ND (60)	-	ND (60)	-
Cesium-134	pCi/L	ND (10)	-	ND (10) U*	-
Cesium-137	pCi/L	ND (18)	-	ND (18)	-
Cobalt-58	pCi/L	ND (15)	-	ND (15)	-
Cobalt-60	pCi/L	ND (15)	-	ND (15)	-
Iron-59	pCi/L	ND (30)	-	ND (30)	-
Lanthanum-140	pCi/L	ND (15)	-	ND (15)	-
Manganese-54	pCi/L	ND (15)	-	ND (15)	-
Niobium-95	pCi/L	ND (10)	-	ND (10)	-
Strontium-89/90 (Total)	pCi/L	ND (2)	-	ND (2)	-
Zinc-65	pCi/L	ND (30)	-	ND (30)	-
Zirconium-95	pCi/L	ND (10)	-	ND (10)	-
Non-Target Radionuclides ⁽¹⁾					
Actinium-228	pCi/L	RNI	-	RNI	-
Potassium-40	pCi/L	65.77	+/-41.1	RNI	-

#### Notes:

Samples analyzed by: Teledyne Brown (1) - These non-targeted radionuclides are included in this table but excluded from the discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. RNI- Radionuclide Not Identified during analysis. ND() - Non-detect; value in parentheses is the LLD. LLD - Lower limit of detection. U* - Compound / Analyte not detected. Peak not identified, but forced activity concentration exceeds Minimum Detectable Concentration and 3 sigma. -- Non-detect value, +/- value not reported.

# EXISTING ANALYTICAL RESULTS SUMMARY - TRITIUM IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Identification	QC Sample	Laboratory Analysis	Laboratory	Sample Date	Tritium (pCi/L)	Result Error
MW-2	GW-030806-MB-MW-2			EI	3/8/2006	ND (200)	-
MW-2	WG-BW-051006-JL-017			TBE	5/10/2006	ND (200)	-
MW-4	GW-030806-MB-MW-4			EI	3/8/2006	ND (200)	-
MW-4	GW-050206-MB-MW-4			EI	5/2/2006	390	+/-95
MW-4	WG-BW-051106-MS-030			TBE	5/11/2006	ND (200)	-
MW-5	GW-050206-MB-MW-5			EI	5/2/2006	206	+/-87
MW-5	WG-BW-050906-MS-010			TBE	5/9/2006	ND (200)	-
MW-6	GW-030806-MB-MW-6			EI	3/8/2006	348	+/-107
MW-6	WG-BW-050906-MS-002			TBE	5/9/2006	288	+/-121
MW-7	WG-BW-051106-MS-032			TBE	5/11/2006	214	+/-101
MW-9	WG-BW-051106-IL-029			TBE	5/11/2006	311	+/-118
MW-9	WG-BW-051106-IL-031	Duplicate (029)		TBE	5/11/2006	441	+/-131
MW-11	WG-BW-051006-MS-012	Duplicate (020)		TBE	5/10/2006	ND (200)	-
MW-13	WG-BW-051006-MS-018			TRE	5/10/2006	ND (200)	_
MW-14	WC-BW-051006-MS-024			TRE	5/10/2006	ND (200)	_
MW-14	WG-BW-051000-WB-024			TRE	5/11/2006	ND (200)	_
	WC DW 052206 MD 056			TDE	5/22/2006	ND (200)	-
	WC DW 052200-WD 057	Duplicate (056)		TDE	5/22/2000	ND (200)	-
	WG-DW-052200-WB-057	Duplicate (056)		I DE	5/22/2000	ND (200)	-
MW-BW-2011	WG-BW-051106-MS-040	D		IBE	5/11/2006	201 NID (900)	+/-104
MW-BW-2011	WG-BW-051106-MS-042	Duplicate (040)		IBE	5/11/2006	ND (200)	-
MW-BW-201S	WG-BW-051106-JL-039			TBE	5/11/2006	244	+/-100
MW-BW-2021	WG-BW-051106-JL-035			TBE	5/11/2006	ND (200)	-
MW-BW-202S	WG-BW-051106-JL-037			TBE	5/11/2006	ND (200)	-
MW-BW-2031	WG-BW-051106-MS-038			TBE	5/11/2006	ND (200)	-
MW-BW-203S	WG-BW-051106-MS-036			TBE	5/11/2006	ND (200)	-
MW-BW-204I	WG-BW-051206-JL-041			TBE	5/12/2006	ND (200)	-
MW-BW-205I	WG-BW-051206-JL-043			TBE	5/12/2006	221	+/-102
MW-BW-206I	WG-BW-051206-MS-048			TBE	5/12/2006	ND (200)	-
TB-1-1D	GW-011106-MB-TB-1D			EI	1/11/2006	ND (200)	-
TB-1-1D	GW-030806-MB-TB-1D			EI	3/8/2006	ND (200)	-
TB-1-1D	WG-BW-050906-JL-005			TBE	5/9/2006	ND (200)	-
TB-1-2D	GW-011106-MB-TB-2D			EI	1/11/2006	ND (200)	-
TB-1-2D	GW-030806-MB-TB-2D			EI	3/8/2006	ND (200)	-
TB-1-2D	WG-BW-051006-JL-019			TBE	5/10/2006	ND (200)	-
TB-1-3D	GW-011106-MB-TB-3D			EI	1/11/2006	265	+/-117
TB-1-3D	GW-030806-MB-TB-3D			EI	3/8/2006	301	+/-90
TB-1-3D	WG-BW-050906-MS-004			TBE	5/9/2006	285	+/-120
TB-1-4D	GW-011106-MB-TB-4D			EI	1/11/2006	622	+/-128
TB-1-4D	GW-030806-EV-TB-4D			EI	3/8/2006	582	+/-111
TB-1-4D	WG-BW-051006-JL-013			TBE	5/10/2006	719	+/-150
TB-1-5D	GW-011106-MB-TB-5D			EI	1/11/2006	ND (200)	-
TB-1-5D	GW-030806-MB-TB-5D			EI	3/8/2006	ND (200)	-
TB-1-5D	WG-BW-050906-JL-003			TBE	5/9/2006	443	+/-122
TB-1-6D	GW-011106-MB-TB-6D			EI	1/11/2006	ND (200)	-
TB-1-6D	GW-030806-MB-TB-6D			EI	3/8/2006	ND (200)	-
TB-1-6D	WG-BW-051106-JL-033			TBE	5/11/2006	ND (200)	-
TB-1-7D	GW-011106-MB-TB-7D			EI	1/11/2006	ND (200)	-
TB-1-7D	GW-030806-EV-TB-7D			EI	3/8/2006	ND (200)	-
TB-1-7D	WG-BW-051006-II -021			TBF	5/10/2006	ND (200)	-
TB-1-8D	GW-022406-MR-TR1-8D			FI	2/24/2006	ND (200)	-
	GW-030806-MR-TR-8D			FI	3/8/2000	ND (200)	_
TB-1.9D	$WC_RW_051006$ II 025			TRF	5/10/2000	ND (200)	-
	CW 099406 MD TD1 0D			I DE FI	3/10/2000 9/9//9000	ND (200)	-
1D-1-9D TD 1 0D				El FI	2/24/2000 2/0/2000	ND (200)	-
				EI TDE	5/0/2000	ND (200)	-
1D-1-9D				IBE	J/ J/ 2000	ND (200)	-
TB-1-10D	GW-022406-MB-TB1-10D			El	2/24/2006	ND (200)	-

CRA 045136 (12) Braidwood Generating Station
#### TABLE 5.6

#### EXISTING ANALYTICAL RESULTS SUMMARY - TRITIUM IN GROUNDWATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Identification	QC Sample	Laboratory Analysis	Laboratory	Sample Date	Tritium (pCi/L)	<b>Result Error</b>
TB-1-10D	GW-030806-EV-TB-1-10D			EI	3/8/2006	ND (200)	-
TB-1-10D	WG-BW-051006-JL-011	Duplicate (009) ⁽¹⁾		TBE	5/10/2006	ND (200)	-
TB-1-11D	GW-031706-MB-TB1-11D	1		EI	3/17/2006	ND (200)	-
TB-1-12D	GW-031606-MB-TB1-12D			EI	3/16/2006	ND (200)	-
TB-1-13D	GW-031606-MB-TB1-13D			EI	3/16/2006	ND (200)	-
TB-1-14D	GW-031706-MB-TB1-14D			EI	3/17/2006	ND (200)	-
TBRW-1	GW-031706-MB-TBRW-1			EI	3/17/2006	ND (200)	-
TBRW-1	GW-050206-MB-TBRW-1			EI	5/2/2006	ND (200)	-
TBRW-2	GW-031706-MB-TBRW-2			EI	3/17/2006	ND (200)	-
TBRW-2	GW-050206-MB-TBRW-2			EI	5/2/2006	ND (200)	-
TBRW-3	GW-031706-MB-TBRW-3			EI	3/17/2006	ND (200)	-
TBRW-3	GW-050206-MB-TBRW-3			EI	5/2/2006	ND (200)	-
TW-3	GW-030806-EV-TW-3			EI	3/8/2006	302	+/-101
TW-3	GW-030806-EV-TW-3-recount		Recount	EI	3/8/2006	330	+/-103
TW-3	WG-BW-051006-JL-015			TBE	5/10/2006	1040	+/-172
TW-6	GW-030806-EV-TW-6			EI	3/8/2006	880	+/-110
TW-6	GW-030806-EV-TW-6-recount		Recount	EI	3/8/2006	676	+/-117
TW-6	WG-BW-050906-MS-008			TBE	5/9/2006	775	+/-136
TW-8	GW-030806-EV-TW-8			EI	3/8/2006	ND (200)	-
TW-8	WG-BW-050906-MS-006			TBE	5/9/2006	ND (200)	-
TW-10	WG-BW-051006-MS-016			TBE	5/10/2006	ND (200)	-
TW-12	WG-BW-051006-MS-026			TBE	5/10/2006	ND (200)	-
TW-15	WG-BW-051006-MS-020			TBE	5/10/2006	ND (200)	-
TW-15	WG-BW-051006-MS-022	Duplicate (020)		TBE	5/10/2006	ND (200)	-
TW-16	GW-050206-MB-TW-16			EI	5/2/2006	368	+/-94
TW-16	WG-BW-050906-JL-007			TBE	5/9/2006	893	+/-145
TW-18	WG-BW-051206-MS-046			TBE	5/12/2006	ND (200)	-
TW-21	WG-BW-051106-MS-034			TBE	5/11/2006	211	+/-95.6
TW-23	WG-BW-051006-MS-014			TBE	5/10/2006	ND (200)	-
TW-24	WG-BW-051506-MB-050			TBE	5/15/2006	204	+/-112
TW-24	WG-BW-051506-MB-052	Duplicate (050)		TBE	5/15/2006	200	+/-111
TW-25	GW-030806-EV-TW-25			EI	3/8/2006	ND (200)	-
TW-25	WG-BW-051906-MB-054			TBE	5/19/2006	ND (200)	-
TW-26	WG-BW-051206-MS-044			TBE	5/12/2006	ND (200)	-
TW-26	WG-BW-051906-MB-055			TBE	5/19/2006	ND (200)	-
Seep*	Turbine Building Basement			EI	12/13/2005	2,825	+/-181

Notes:

EI - Environmental, Inc.

TBE - Teledyne Brown Engineering, Inc.

QC - Quality Control

(1) - Sample container for original tritium analysis lost in transit.

ND - Non-detect at associated value.

- Non-detect value, +/- value not reported.

* This seep sample was collected from the west side of the Turbine Building within the basement. The water seeps into the basement on an intermittent basis. This water sample may not represent groundwater.

#### TABLE 5.7

#### EXISTING ANALYTICAL RESULTS SUMMARY - TRITIUM IN SURFACE WATER FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Date	Sample Identification	Tritium (pCi/L)	Result Error
Ditch at Culvert	12/22/2005	Ditch at Culvert~12/22/05	1007	+/-128
Ditch at Culvert	2/15/2006	GW-021506-MB-Ditch at Culvert	468	+/-99
Ditch at Culvert	2/22/2006	GW-022206-MB-Ditch at Culvert	306	+/-95
Ditch at Culvert	3/1/2006	GW-030106-MB-Ditch at Culvert	670	+/-119
Ditch at Culvert	3/7/2006	GW-030706-MB-Ditch at Culvert	311	+/-91
Ditch at Culvert	3/15/2006	GW-031506-MB-Ditch at Culvert	458	+/-96
Ditch at Culvert	3/22/2006	GW-032206-MB-Ditch at Culvert	889	+/-119
Ditch at Culvert	3/29/2006	GW-032906-MB-Ditch at Culvert	598	+/-109
Ditch at Culvert	4/5/2006	GW-040506-MB-Ditch at Culvert	704	+/-110
Ditch at Culvert	4/12/2006	GW-041206-MB-Ditch at Culvert	664	+/-102
Ditch at Culvert	4/19/2006	GW-041906-MB-Ditch at Culvert	423	+/-90
Ditch at Culvert	4/26/2006	GW-042606-JL-Ditch at Culvert	633	+/-104
Ditch at Culvert	5/17/2006	GW-051706-MB-Ditch at Culvert	368	+/-101
Ditch by Alpha Gate	12/15/2005	Ditch by Alpha Gate~12/15/05	1	+/-82
Ditch by Alpha Gate	12/22/2005	Ditch by Alpha Gate~12/22/05	13	+/-82
Ditch by Alpha Gate	12/29/2005	Ditch by Alpha Gate~12/29/05	11	+/-93
Ditch by Alpha Gate	1/5/2006	Ditch by Alpha Gate~1/5/06	7	+/-93
Ditch by Alpha Gate	1/12/2006	Ditch by Alpha Gate~1/12/06	-30	+/-95
Ditch by Alpha Gate	1/19/2006	Ditch by Alpha Gate~1/19/06	107	+/-100
Ditch by Alpha Gate	1/26/2006	Ditch by Alpha Gate~1/26/06	77	+/-98
Ditch by Alpha Gate	2/2/2006	Ditch by Alpha Gate~2/2/06	23	+/-96
Ditch by Alpha Gate	2/9/2006	Ditch by Alpha Gate~2/9/06	201	+/-86
Ditch by Alpha Gate	2/16/2006	Ditch by Alpha Gate~2/16/06	123	+/-100
Ditch by Alpha Gate	2/23/2006	Ditch by Alpha Gate~2/23/06	166	+/-84
Ditch by GW-1	2/15/2006	GW-021506-MB-Ditch by GW-1	36	+/-82
Ditch by GW-1	2/22/2006	GW-022206-MB-Ditch by GW-1	100	+/-91
Ditch by GW-1	3/1/2006	GW-030106-MB-Ditch by GW-1	-10	+/-80
Ditch by GW-1	3/7/2006	GW-030706-MB-Ditch by GW-1	56	+/-80
Ditch by GW-1	3/15/2006	GW-031506-MB-Ditch by GW-1	96	+/-81
Ditch by GW-1	3/22/2006	GW-032206-MB-Ditch by GW-1	70	+/-82
Ditch by GW-1	3/29/2006	GW-032906-MB-Ditch by GW-1	-166	+/-79
Ditch by GW-1	4/5/2006	GW-040506-MB-Ditch by GW-1	122	+/-89
Ditch by GW-1	4/12/2006	GW-041206-MB-Ditch by GW-1	89	+/-79
Ditch by GW-1	4/19/2006	GW-041906-MB-Ditch by GW-1	-30	+/-97
Ditch by GW-1	4/26/2006	GW-042606-JL-Ditch at GW-1	152	+/-85
Ditch by GW-1	5/17/2006	GW-051706-MB-DITCHBYGW-1	105	+/-108
Oil Water Sep	4/19/2006	GW-041906-MB-Oil Water Sep	86	+/-75
Oil Water Sep	5/2/2006	GW-050206-MB-OILWATERSEP	368	+/-94
Oil Water Sep	5/18/2006	Oil Separator~051806	394	+/-99
Oil Water Sep	6/2/2006	Oil Separator~060206	199	+/-85

Note:

Samples analyzed by Environmental, Inc.

**Revision 1** 

#### APPENDIX A

#### MONITORING WELL LOGS



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

EPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	Monito	ring Well			SAMI	-LE	
BGS		 IL BGS			NUMBER	INTERVAL	REC (%)	'N' VALUE	
2 4 5 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36	NO SAMPLE SP SAND (native) - fine grain, saturated CL CLAY - trace gravel, silt, hard, gray	23.00 24.50		Gel/Portland Mix 2" Ø PVC Well Casing	WNN		REC	51 163 65	



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	Monitoring Well		<u> </u>	SAMF	PLE	
ft BGS		πBGS		NUMBER	INTERVAL	REC (%)	'N' VALUE	
- 42				<u> </u>				
- 44			Bentonite					
- 46								
- 48								
- 50								
- 52								
- 54	END OF OVERBURDEN HOLE @ 54.0ft BGS	1						
- 56								
- 58								
-60								
-64								
-66								
- 68								
- 70								
-72								
-74								
-76								
-78								
 <u>1</u>	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; R	EFER TO	URRENT ELEVATION TABLE	<u> </u>	<u> </u>			



# STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	Monitoring Well	RUN NUMBER	CORE RECOVERY :	RQD %	
-54 -56 -58 -60 -62 -64 -66 -68 -70 -72	SHALE - dark gray, soft	54.00			CO	RO	
			6" Borehole				
			2" Ø PVC Wel Screen Sand Pack				
<u>N</u>	OTES: MEASURING POINT ELEVATIONS MAY CHANGE	REFER TO		<u> </u>	<u> </u>		]



## STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	Monitoring Well	RUN NUMBER	CORE ECOVERY %	RQD %	
-94	SANDSTONE - dark gray, fine grained, saturated	93.00			~		
- 98							
- 100 -	END OF BOREHOLE @ 100.0ft BGS	100.00	WELL DETAILS Screened interval:				
			Length: 10ft Diameter: 2in Slot Size: 0.010 Material: PVC				
- 106 -			Sand Pack: 77.50 to 100.00ft BGS Material: #5 Sand				
		1					
- 112							
- 118							
120							
- 							
- 							
126							
- 128 -					-		
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE;	REFER TO	CURRENT ELEVATION TABLE	Ξ			



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS HOLE DESIGNATION: MW-BW-2011 DATE COMPLETED: April 26, 2006 DRILLING METHOD: Hollow Stem Auger FIELD PERSONNEL: N. KUHL/M. BORKOWSKI

ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		Monitoring Well		r <del>.</del>	SAMI		r
		AMSL		BER	RVAL	(%) ;	ALUE	
	TOP OF RISE GROUND SURFAC	ER 603.21 CE 600.02		NUN	INTE	REC	, v.	
-2 -4 -6 -10 -12 -112 -14 -16 -12 -14 -16 -20 -22 -24 -24 -26 -28 -30 -32	NO SAMPLE SP SAND (native) - fine grain, saturated END OF BOREHOLE @ 25.0ft BGS	ER         603.21           600.02         600.02           577.02         575.02	Concrete Bentonite Bentonite 2" ø PVC Well Casing 6" Borehole 2" ø PVC Well Screen Sand Pack Sand Pack Sand Pack Starent 10ft Diameter: 2in Stot Size: 0.010 Material: PVC Sand Pack: 588.02 to 575.02ft AMSL 12.00 to 25.00ft BGS Material: #5 Sand	NUMBE	INTERV	REC (%	.N. APTI	
- 38								



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

HOLE DESIGNATION: MW-BW-201S DATE COMPLETED: April 26, 2006 DRILLING METHOD: Hollow Stem Auger FIELD PERSONNEL: N. KUHL

ЛЕРТН		ELEV.				SAMF	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	AMSL		BER	:VAL	(%)	LUE	
	TOP OF RISER GROUND SURFACE	603.11 599.97		NUME	INTER	REC	N' VA	
	NO SAMPLE		Concrete Bentonite 2" Ø PVC Well Casing 6" Borehole 2" Ø PVC Well Screen Sand Pack					
- 16 - 18 - 20 - 22	END OF BOREHOLE @ 15.0ft BGS	584.97	WELL DETAILS Screened interval: 594.97 to 584.97ft AMSL 5.00 to 15.00ft BGS Length: 10ft Diameter: 2in Slot Size: 0.010 Material: PVC Sand Pack: 596.97 to 584.97ft AMSL					
- 24			3.00 to 15.00ft BGS Material: #5 Sand					
- 26 - - 28								
- 					1			
-32								
- 34					1			
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; F	REFER TO	CURRENT ELEVATION TABLE	<u> </u>	<u>.</u>	1	J	<b></b>



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS HOLE DESIGNATION: MW-BW-2021 DATE COMPLETED: April 26, 2006 DRILLING METHOD: HSA/GEOPROBE FIELD PERSONNEL: N. KUHL

DEPTH			ELEV.	Monitoring Woll			SAMF	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARK	.5	π AMSL		BER	<b>WAL</b>	(%)	TUE	
	TOF GROUND	OF RISER	604.09 600.72		NUME	INTER	REC	N' VA	
-	GP GRAVEL (FILL) - gray		599.72						
-2	SP/GP (FILL) - brown		000.12						
-									
-4	NO SAMPLE		596.72	Bentonite					
F_				2" @ P.V.C. Well					
6 C				Casing					
-8									
F I									
- 10									
- 14				6" Borehole					
- 16									
- 19				Screen					
				Sand Pack					
-20 -			580.72						
	CL CLAY - trace gravels, silty, hard, low								
-22	plasticity, gray - 2" clay seam, firm to soft, silty, medium								
-24	plasticity at 21.0ft BGS		576.72						
-									
- 26	END OF BOREHOLE @ 20.0K BOO			WELL DETAILS Screened interval:					
-				585.72 to 575.72ft AMSL 15.00 to 25.00ft BGS					
				Length: 10ft Diameter: 2in					
- 30				Slot Size: 0.010					
				Sand Pack:					
-32				13.00 to 25.00ft BGS					
				Material: #5 Sand			1		
- 34									
- 36									
-									
⊢38 ⊢									
	NOTES: MEASURING POINT ELEVATIONS MAY (	;Hange; F	KEFER TO	CURRENT ELEVATION TABLE					
·									



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS HOLE DESIGNATION: MW-BW-202S DATE COMPLETED: April 26, 2006 DRILLING METHOD: Hollow Stem Auger FIELD PERSONNEL: N. KUHL

DEPTH		ELEV.	Monitoring Well			SAM	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	π AMSL		BER	VAL	(%)	LUE	
	TOP OF RISE GROUND SURFAC	R 604.30 E 600.87		NUME	INTER	REC	N' VA	
-	GP GRAVEL (FILL) - gray	1 19 500 87	Concrete					
-2	SP/GP (FILL) - brown	29 29 20	Bentonite 2" Ø PVC Well Casing					
-4	NO SAMPLE	<b>≻</b> ∎ 596.87	6" Borehole					
-6			2" Ø PVC Well					
			Screen Sand Pack					
- 10 								
-12								
		585.87						
	END OF BOREHOLL @ 13.011 BOS		WELL DETAILS Screened interval: 595.87 to 585.87ft AMSL					
- 18			5.00 to 15.00ft BGS Length: 10ft Diameter: 2in					
-20 -			Slot Size: 0.010 Material: PVC Sand Pack:					
- 22			597.87 to 585.87tt AMSL 3.00 to 15.00ft BGS Material: #5 Sand					
-26								
- 30 -								
32 					1			
- 34 -								
- 36 -								
-38								
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE	; REFER TO	CURRENT ELEVATION TABLE	1	1			<u>I</u>



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS HOLE DESIGNATION: MW-BW-2031 DATE COMPLETED: April 25, 2006 DRILLING METHOD: Hollow Stem Auger FIELD PERSONNEL: N. KUHL

EPTH		5	ELEV.	Monitorina Well			SAMF		
BGS		OF RISER	AMSL 602.19		JMBER	rerval	EC (%)	VALUE	
	GROUND		598.95		ž	E	R	ŗ.	
2	GP GRAVEL SP SAND (FILL) - medium grain, poorly graded, dry		598.45	Concrete					
4 – 6 8 10 12	NO SAMPLE		594.95	2" Ø PVC Well Casing					
14 16 18 20 - 22 24 - 26 28	SP SAND - medium grain, poorly graded, brown, saturated - 2" clay seam, medium plasticity, soft at 21.3ft BGS CL CLAY, trace gravel, silty, hard, low plasticity, gray END OF BOREHOLE @ 25.0ft BGS		578.95 574.95 573.95	Screen     Sand Pack      Screen     Sand Pack      WELL DETAILS     Screened interval:     583.95 to 573.95ft AMSL     15.00 to 25.00ft BGS					
28 30 32 34 36 38				Length: 10ft Diameter: 2in Slot Size: 0.010 Material: PVC Sand Pack: 585.95 to 573.95ft AMSL 13.00 to 25.00ft BGS Material: #5 Sand					



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS HOLE DESIGNATION: MW-BW-203S DATE COMPLETED: April 25, 2006 DRILLING METHOD: Hollow Stem Auger FIELD PERSONNEL: N. KUHL

рертн			ELEV.	Monitoring Woll			SAMF	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARK	.5	π AMSL		BER	<b>WAL</b>	(%)	LUE	
	TOP GROUND	OF RISER SURFACE	602.33 599.14		NUME	INTER	REC	'N' VA	
	GP GRAVEL		598.64	Concrete		_			
-2	graded, dry			2" Ø PVC Well					
				Casing					
-4 -	NO SAMPLE		595.14	6" Borehole					
- 6									
				2" Ø PVC Well					
8									
				Sand Pack					l
- 12									
- 14									
	END OF BOREHOLE @ 15.0ft BGS	L	584.14						
- 16				WELL DETAILS Screened interval:					
				594.14 to 584.14tt AMSL 5.00 to 15.00ft BGS					
				Length: 10tt Diameter: 2in					
-20				Slot Size: 0.010 Material: PVC					
- 22				Sand Pack: 596.64 to 584.14ft AMSL					
				2.50 to 15.00ft BGS Material: #5 Sand					
-24									
- 26									
- 20									
28									
- 30									1
32									
- 34									
- 36									
-									
				CURRENT ELEVATION TABLE	I	I	<u> </u>	<u> </u>	<u> </u>
	10150. MEASORING FOINT ELEVATIONS MAT C								



## STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20

CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

HOLE DESIGNATION: MW-BW-2041 DATE COMPLETED: April 25, 2006 DRILLING METHOD: Holiow Stem Auger FIELD PERSONNEL: N. KUHL

DEPTH		ELEV.	Monitoring Woll			SAM	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	AMSL		В	VAL	(%)	Ч	
	TOP OF RISER GROUND SURFACE	R 603.17 E 600.37		NUMB	INTER	REC (	'N' VAI	
- 2 - 4 - 6 - 8 - 10 - 12 - 14 - 16 - 22 - 4 - 6 - 7 - 8 - 10 - 12 - 14 - 16 - 22 - 24 - 26 - 28 - 30 - 34 - 34 - 36 - 38 	SP SAND - medium grain, poorly graded, brown, saturated GP GRAVEL - trace sand, well graded ML SILTS - poorly graded, hard, moist END OF BOREHOLE @ 25.0ft BGS	585.37 577.37 576.37 575.37	Concrete Bentonite 2" Ø PVC Well Casing 6" Borehole 2" Ø PVC Well Screen Sand Pack Sand Pack Screened interval: 595.37 to 575.37ft AMSL 5.00 to 25.00ft BGS Length: 20ft Diameter: 2in Slot Size: 0.010 Material: PVC Sand Pack: 595.37 to 575.37ft AMSL 5.00 to 25.00ft BGS Material: #5 Sand					
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE;	REFER TO	CURRENT ELEVATION TABLE					



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PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC LOCATION: BRAIDWOOD, ILLINOIS HOLE DESIGNATION: MW-BW-2051 DATE COMPLETED: April 27, 2006 DRILLING METHOD: HSA/GEOPROBE FIELD PERSONNEL: M. BORKOWSKI

DEPTH		ELEV.	Maniforing Woll			SAM	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	AMSL		ER	VAL	(%)	LUE	
	TOP OF RISE GROUND SURFAC	R 600.86 E 598.04		NUMB	INTER	REC	N' VA	
-	SOIL (organic)	597.04	│ └╢ ═ <del>╡</del> ╪╸╢					
-2	SP SAND - dark tan							
-								
-4	NO SAMPLE	594.04	Bentonite					
			2" Ø PVC Well					
-			Casing					
- 10			Sand Pack					
- 10							1	
- 12								
-								
14 			6" Borenole					
								1
-								
- 18			2" Ø PVC Well					
		578.04						
- 20								
- 22	SP SAND - fine grain, saturated					1		
-		574.04						
	- clay, slightly saturated at 25.0ft BGS	574.04						
- 26	END OF BOREHOLE @ 25.0ft BGS		WELL DETAILS Screened interval:					
			583.04 to 573.04ft AMSL 15.00 to 25.00ft BGS					
			Length: 10ft					
- 30			Slot Size: 0.010					
			Material: PVC Sand Pack:					
32			585.04 to 573.04ft AMSL 13.00 to 25.00ft BGS					
			Material: #5 Sand			1		
34 								
- 36								
Ę								
F						<u> </u>		
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE	REFER TO	CURRENT ELEVATION TABLE					
L.,								



Page 1 of 1

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

HOLE DESIGNATION: MW-BW-2061 DATE COMPLETED: April 25, 2006 DRILLING METHOD: Hollow Stem Auger FIELD PERSONNEL: N. KUHL

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS		ELEV.	Monitoring Well	SAM		SAM		
ft BGS	TOP O GROUND SI	F RISER URFACE	AMSL 598.35 595.10		NUMBER	NTERVAL	REC (%)	V' VALUE	
2         4         6         8         10         12         14         16         18         20         22         24         26         28         30         32         34         36         38	SP SAND - medium grain, poorly graded, brown, saturated CL CLAY, trace gravel, silty, hard, low plasticity, gray, dry END OF BOREHOLE @ 25.0ft BGS		575.10 572.10 570.10	Concrete Bentonite Bentonite 2" 0 PVC Well Casing			Ϋ́ Υ		



Page 1 of 2

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	S	ELEV. ft	Monito	ring Well	~	Ļ	SAMF	PLE ш	
	GROUND	SURFACE	599.59			NUMBER	NTERVA	REC (%	'N' VALU	
	Asphalt		E00.00				_		-	
	SP - Sand, brown	****	599.09							
<u></u>		؞ ؞ ۰ ۰								
2										
4										
	acturated at 5 Off PCS	°°°°° °°°°°								
	- Saturated at 5.011 DGS	****								
6		**** ****								
		**** ****								
8										
		**** ****								
10 –	Fill gray poorly graded medium grained		589.59							
	sand, saturated									
12										
14										
					Quest					
					Grout					
16										
19										
10										
20										
22										
24										
	- brown at 25.0ft BGS									
26										
28					Bentonito					
20					Chips					
<u>NC</u>	<u>JTES:</u> MEASURING POINT ELEVATIONS MAY CF	HANGE; RI	EFER TO	CUKKENTELE	VATION TABLE					



Page 2 of 2

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20

CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV.	Monitoring Well			SAMF	PLE	
ft BGS		AMSL		ER	VAL	(%)	Щ	
				UMB	TER	KEC (	' VAI	
	- cobble seam at 30 Off BGS			z	Z		Ž	
-								
- 32								
- 52								
-								
34			Sand					
- 36								
-								
+								
- 40	Sand/gravel fill, dry concrete	559.59						
E .								
- 42			2" Ø PVC Well					
-								
- 44		555.59						
-	GL - Clay, Silty							
- 16	Shale, hard	554.09						
- 40								
-								
48								
E								
- 50	END OF BORFHOLE @ 50.0ft BGS	549.59						
-			WELL DETAILS Screened interval:					
			564.59 to 554.59ft AMSL					
/9/06			Length: 10ft					
			Slot Size: 10					
0 54			Material: PVC Sand Pack:					
00- √-			567.59 to 549.59ft AMSL 32.00 to 50.00ft BGS					
ະ⊔_56			Material: Sand					
0.GP								
58								
8⊢ ¥⊢								
BURD	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; R	EFER TO	CURRENT ELEVATION TABLE					
VER								
UL								



Page 1 of 5

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20

CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH	STRATIGRAPHIC DESCRIPTION 8	& REMARKS	DEPTH	Monitoring Well				SAMF	PLE	
		TOP OF CASING	601.98	1		NUMBER	NTERVAL	REC (%)	N' VALUE	
	SP - Sand, brown	••••					_		-	
		* * * * * * * * *								
2										
		* • * • • • • • • • • • •								
1		***** ****								
		*•*•* •*••								
6		• • • • • • • • • • • • •								
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3										
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0		***** ****								
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2										
		* * * * * * * * *								
4		**** **** ****								
		***** *****								
6		**** ****								
		***** ****								
		•`•`• • • • • • •								
8		`•`•`• • • • • • • • •								
		*								
0				Grout						
		* • * • • • • • •								
2		**** ****								
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		\$`\$`\$ \$`\$`\$ \$`\$`\$								
4		\$*** *** ***								
		* • * • • • • • • • • • •								
6		 								
		°°°°°								
8		\$**** ****								
-		دَّهُ بُنْ • • • • •								
		\$````` \$`````								
<u></u> NC	DTES: MEASURING POINT ELEVATION	NS MAY CHANGE; R	EFER TO		ABLE	1				
		, -	2							



Page 2 of 5

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20

CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	Monitoring Well			SAMF	PLE	
ft BGS		ft BGS		ШШ	VAL	(%	ПE.	
				UMB	TER	EC (	VAL	
	A A A A A A A A A A A A A A A A A A A	30.00		ž	Ż	R	Ż	
_	CL - clay, silty, gray	50.00						
-								
- 32								
- 34								
F								
_								
-								
- 38								
-								
40	END OF OVERBURDEN HOLE @ 40.0ft BGS							
-								
-42								
-								
-								
-								
- 46								
-48								
-								
- 50								
- 00								
-								
52 ੪ੵ−								
T 8/9								
0 								
56 − 56								
GP								
86-20.								
86								
100								
SDEN	NOTES: MEASURING POINT FLEVATIONS MAY CHANGE: R	EFER TO C	URRENT EI EVATION TABLE					
RBUI								
OVE								



## STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

Page 3 of 5

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	Monitoring Well	RUN NUMBER	CORE RECOVERY %	RQD %	
-40 -42 -42 -44 -46 -48 -50 -52 -54 -56 -58 -60 -62	Shale, gray	40.00	HISTING OF CIT		CORE	RQD %	
- 64							
<u></u> <u>NC</u>	DTES: MEASURING POINT ELEVATIONS MAY CHANGE;	EFER TO		1	I		



## STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

Page 4 of 5

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20

CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

-70 -72 -74 -76 -78 -82 -84 -86	ORE	NUN	MBER	ORE VERY %	2D %	
70 72 74 76 80 80 82 84 84 84			Y IN	RECO	RQ	
-72 -74 -76 -78 -80 -82 -84 -86						
-74 -76 -78 -80 -82 -84 -86						
-76 -78 -80 -82 -84 -84 -86						
-80 -82 -84 -86						
82 84 86						
84 						
- 90						
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE		<u> </u>	[		L	



#### STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

Page 5 of 5

PROJECT NAME: BRAIDWOOD GENERATING STATION PROJECT NUMBER: 45136-20 CLIENT: EXELON GENERATION COMPANY LLC

LOCATION: BRAIDWOOD, ILLINOIS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	Monitoring Well	RUN NUMBER	CORE RECOVERY %	RQD %	
- - - 	- trace sandstone at 98.0ft BGS						
- 	END OF BOREHOLE @ 102.0ft BGS	102.00	WELL DETAILS Screened interval: 85.00 to 100.00ft BGS Length: 15ft				
- - 106 - -			Slot Size: 10 Material: PVC Sand Pack: 82.00 to 102.00ft BGS Material: Sand				
108   110 							
- 							
- 114 -							
- 116 							
120  							
122 							
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; R	EFER TO (	CURRENT ELEVATION TABLE				

**Revision** 0

#### APPENDIX B

### PRIVATE WATER WELL INVENTORY RECORDS (CRA, MARCH 2006)

#### TABLE B.1

Location	X-coord	Y-coord
PW-8	69990.437	86292.616
PWS-105	72609.760	84740.620
PWS-201B	72599.192	84017.487
PWS-104	72321.130	84616.820
PWN-103	72237.120	85936.930
PWS-101	72171 640	85070 240
PW-409	72106 054	85345 562
PWN-102	72073 780	85953 130
DW/A11	72014 083	84605 227
DW/ 110	72044.303	Q5012 705
T W-410	72029.333	01013.795
F WS-102	71952.970	04000.930 94650 450
PWS-105	71940.000	04030.430
PWIN-202	71931.210	80935.330
PWIN-101	71858.950	85920.420
PW-403	71852.715	87016.198
PW-406	71852.715	86649.659
PW-407	71848.974	86567.375
PW-416	71845.234	86862.850
PW-900	71802.536	86662.790
PW-600	71801.847	88801.973
PWN-201	71701.864	85717.075
PW-408	71643.264	86500.052
PW-418	71643.264	86088.631
PW-419	71639.524	85763.235
PW-405	71624.563	86806.747
PW-6	71605.796	85391.696
PW-420	71602.122	85254.570
PW-12	71587.852	86707.365
PW-404	71583.421	87132.143
PW-13	71546.472	86841.803
PW-6P	71388.441	85039.761
PW-401	71385.191	88665.620
PW-402	71329 088	88014 827
PW-530	71289 638	88990 609
PW-5	71067 841	85419 750
$PW_{-11}$	71011 173	88710 502
DW_115	71011.175	88863 850
DW/ 7	70330.212	86008 911
1 W-1 DW 199 Dond	70005.511	00000.244
PW-422-P0110	70706.217	0/040.019
SVV-7	70380.707	00000 500
PW-422	70405.262	88033.528
PW-400	70337.939	88673.100
PW-3	69587.058	84332.752
PW-2	69372.937	84385.856
PW-11	69334.651	86909.209
PW-1	69272.431	84296.473
PW-9	69244.481	86394.565

**TABLE B.1** 

Location	X-coord	Y-coord
PW-413	69163.521	88609.517
PW-604-Pond	69024.152	93493.943
PW-603	69024.152	93493.943
PW-602	69024.152	93512.320
PW-431	68697.487	84158,754
PW-423-Trailer	68580 051	86803 007
PW-10	68549 643	86613 142
PW-423	68381 822	88669 360
PW-15	68374 868	85430 394
PW-4	68105 605	85295 707
PW-14	68000 667	85361 724
PWG-005	67790 817	90404 436
PW-614	66594 462	87475 150
PW-540	66064 576	87131 387
PWG-184	63950 203	81324 681
PWG-080	63943 422	81783 803
PWC-143	63014 520	81008 720
PWC-143	63802 110	82101 811
DWC-096	63882 126	81783 803
DWC 199	62971 101	81222 <i>17</i> 0
DWC 191	63850 382	81506 29 <i>4</i>
DWC 105	63848 878	81300.324
PWC 10J	62045 020	82331.000 92457 900
FWG-104	03043.029	02437.009
PWC-095	63824 480	81780 753
DWC 1/1	62921 264	81002 502
PW/C-031	63808 704	82600 370
PWC-600	63781 800	82113 025
DWC 180	62780 270	81220 540
DWC 102	62772 622	81330.340
PWC-094	63754 335	81777 703
I WG-034 DWC 170	62752 012	01777.703 01701.675
DWC 029	62749 755	01431.073
DWC 027	62682 525	82702 058
FWG-027	03062.333	02703.930
FWG-020	03000.241	02039.302
PWG-139 DWC 000	62669 040	01902.770
PWC 003	62665 800	82300.210
FWG-095	03003.690	01/00.334
FWG-170 DWC 177	03003.090	01491.073
PWG-177	03000.101	01010.022
PWG-130	03030.000	02093.073
F WG-020 DWC 022	03043.33ð 62626 650	02100.202
	03030.030	020JU.//2 01769 AFA
F WG-091	03398.793	01/02.404
Г WG-130 DWC 994	00090.400	01972.939
r WG-234	03393.438	01000.498
г vv G-U32	03393.304	03109.034

Location	X-coord	Y-coord
PWG-135	63593.012	82096.903
PWG-227	63588.720	82096.765
PWG-229	63588.720	82161.708
PWG-228	63588.720	82159.469
PWG-097	63586.595	82348.016
PWG-024	63581 601	82701 664
PWG-023	63572 425	82832 420
PWG-232	63564 086	83292 621
PWG-233	63555 128	83568 071
PWC-174	63551 761	81/91 675
PWC-175	63551.761	81310 032
PWC-090	63525 500	81750 404
DWC 220	63404 664	81733.404 82227 840
DWC 197	62400 780	02237.049
FWG-107	03490.700	04104.240
PWG-172	03401.440	01491.073
PWG-1/3	03481.448	81310.032
PWG-089	63452.404	81750.255
PWG-1/1	63440.432	81307.103
PWG-170	63414.064	81488.745
PWG-087	63363.960	81768.554
PWG-185	63361.329	81280.735
PWG-156	63361.329	81280.735
PWG-186	63358.399	81482.886
PWG-088	63342.611	81930.193
PWG-199	63324.066	82912.177
PWG-198-1	63324.002	82912.876
PWG-122	63309.063	82421.212
PWG-169	63273.437	81479.956
PWG-189	63269.049	83305.923
PWG-086	63266.366	81771.603
PWG-237	63265.453	83313.127
PWG-168	63255.859	81307.103
PWG-120	63226.718	82280.921
PWG-085	63180.971	81762.454
PWG-198-2	63177.091	83054.698
PWG-200	63172.637	82907.723
PWG-166	63170.897	81304.173
PWG-167	63170.897	81465.308
PWG-121	63162.673	82430.361
PWG-126	63150.473	82283.970
PWG-084	63110.826	81759.404
PWG-164	63083.005	81304.173
PWG-163	63071.287	81465.308
PWG-007	63047 106	82281 973
PWG-119	63043 730	82277 871
PWG-009	63026 460	82121 289
PWG-083	63022 382	81756 354
		J

Location	X-coord	Y-coord
PWG-162	62995.114	81304.173
PWG-161	62980.465	81453.589
PWG-008	62953.053	82167.169
PWG-082	62936.987	81756.354
PWG-006	62934.701	82295.684
PWG-129	62912.589	82433.411
PWG-131	62909 539	82433 411
PWG-160	62872 065	81274 876
PWG-116	62863 792	82283 970
PWG-081	62857 692	81753 305
PWG-159	62848 628	81441 870
PWG-130	62833 294	82430 361
PWG-133	62833 294	82430 361
PWG-157	62792 963	81269.016
PWG-115	62790 596	82265 672
PWG-114	62787 547	82268 721
PWC-158	62769 525	81/17 729
PWC-079	62766 198	81711 155
PWC-145	62758 451	82130 765
PWC-188	62754 058	827/0 86/
PWC-113	62753 000	82202 762
PWC-119	62753 000	82206 812
DWC 100	62752 000	82206 812
PWC 110	62752 000	82206 812
PWC 144	62752 826	82220 766
DWC 194	62750 040	82202 762
DWC 125	62750.040	82202 762
PWG-123	62747 800	82206 812
PWC 102	62746 006	02350.013 99749 017
PWC 147	62652 450	02/40.01/ 010/0 011
PWC 146	62640 700	01042.011 99149 015
PWC 034	62620 564	02142.01J 91611 012
PWC 140	62627 100	01044.013 916/2 950
$\frac{1}{2} \frac{1}{2} \frac{1}$	62407 088	01043.2JJ 01009 191
PWC 015	62407.088	01002.121 01007 196
PWC 021	62404.754	81004.120 80660 206
FWG-021	62205 619	80009.200 80747 901
FWG-020	02393.010	00/4/.201
FWG-017	02393.010	00009.427
FWG-010	02393.324	00030.900
FWG-019	02322.211	00721.907
PWG-015	02319.917	01194.525
r W-333 DWC 019	02310.010	019//.041
	02310./41	01207.932
r WG-004	02244.082	00000.002
rwg-213	02197.250	00297.800
rwg-108	02192.835	820/3.534
rwg-107	02189.785	81902.745

Location	X-coord	Y-coord
PWG-062	62162.337	80856.662
PWG-210	62117.088	80627.381
PWG-206	62108.180	81090.575
PWG-203	62108.180	81331.080
PWG-202	62103.727	81429.064
PWG-208	62014.651	80979.230
PWG-071	61939.701	80444.939
PWG-061	61918.352	80756.019
PWG-205	61912.214	81126.206
PWG-003	61872.603	81240.813
PWG-070	61848.207	80444.939
PWG-069	61848.207	80344.295
PWG-002	61829.919	81115.274
PWG-068	61784.161	80341.245
PWG-224	61778.600	80685.280
PWG-001	61759.617	81110.252
PWG-221	61756.331	81420.156
PWG-223	61756.331	80930.239
PWG-222	61756.331	81001.499
PWG-225	61640.532	80645.196
PWG-004	61631.567	81243.324
PWG-067	61616.422	80826.164
PWG-072	61573.725	80447.988
PWG-066	61534.077	80734.670
PWG-190	61516.651	81467.694
PWG-190-Pond	61516.376	81471.908
PWG-193	61509.499	81467.694
PWG-065	61476.131	80829.214
PWG-052-Pond	61425.969	79697.474
PWG-591	61425.953	81080.151
PWG-049	61417.429	80490.904
PWG-042	61414.176	81226.180
PWG-048	61404.415	80617.788
PWG-047	61404.415	80708.884
PWG-045	61340.567	83003.772
PWG-054	61328.366	79636.472
PWG-053	61328.366	79689.341
PWG-046	61313.319	80725.151
PWG-051	61312.099	79827.611
PWG-050	61303.966	79913.014
PWG-059	61280.545	80190.231
PWG-056	61280.545	86566.046
PWG-542	61204.623	82476.990
PWG-043	61181.962	83007.839

REC-2

#### Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Тор	Bottom
sand dolomitic white to brn pnk crs to f	(	10
till, dolomitic, sandy, gray, pebbly	10	15
sand dolomitic silty white-brn pnk rndd	15	5 20
till dolomitic sandy silty gray pebbly	20	45
shale	4	5 75
no sample	7	5 80
shale	8	90
sandstone	90	95
coal	95	5 100
underclay	104	105
sandstone	10	5 115
shale	11	5 135
sandstone	13	5 145
Maguoketa limestone, siltstone, shale	14	5 260
Galena limestone	26	460
Decorah limestone	46	515
Platteville limestone	51	5 640
Glenwood limestone sandstone dolomite sh	64	740
St. Peter sandstone	74	875
Shakopee dolomite, sandstone	87	5 995
Total Depth		1647

Permit Dates

Permit #: 0

32N - 9E

COMPANY	Varner C W			-
FARM	and a second	- Aller		
DATE DRILL	January 1.	1937 NO.	1	-
ELEVATION	577GL	COUNTY NO.	00010	
LOCATION	1310'N line,	257'E line of SW		hanthe,
COUNTY	W111	API 121970	001000	8 -

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Driller's Log filed Survey Sample Study filed Sample set # 1933 (0' - 1603')

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#### ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Тор	Bottom
topsoil, sand	' 0	5
brown sand	; ; 5	20
gray sand	20	28
blue clay	28	55
sandy clay	: 55	60
sandy shale	60	71
some rock in shale	: 71	80
Total Depth		. 80
Casing: 5' GALV STEEL from 0' to 62'		•
Grout: NEAT CEMENT from 0 to 20. Size hole below casing: 5		: . [*]
Water from limestone, shale at 71' to 80'. Static level 8' below casing top which is 1' above GL Pumping level 20' when pumping at 20 gpm for 2 hours	; •	1 1 1
Driller's Log filed Location source: Platbook verified	:	
		•

Permit Date: October 17, 1	.973 <b>Permit #1</b> 26	5015
COMPANY Griffy, Cecil D	•.·	
PARK CALLER	•	
DATE DRILLED November 5, 1	1973 <b>NO</b>	
ELEVATION 0	COUNTY NO. 24083	· · · · · · · · · · · · · · · · · · ·
LOCATION NW NW SW		
LATITUDE	LONGITUDE	·BB
COUNTY Will	API 121972408300	16 - 32N - 9E

#### Page 1

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19900000000000000000000000000000000000	Rec-	ROAL / WATER SURVEYS SECTION, RE SUIL OF GEOLOGICAL AND WAT <u>ER SUR</u> VEYE VELL RECORD	10. Property owner	Driller The Advest Advest Advest Average No	at depth //_ to // It. Sec. //	Length: It. Slot Hge Fge Elev	$\frac{\text{Diam. (In.)}}{5} \frac{\text{Kind and Veluli}}{\sqrt{3/2}} \frac{\text{Figh}}{\sqrt{5}} \frac{1}{\sqrt{5}} \frac{1}{$		16. Size Hole helow cooling:	gpm for H hours.	Nover Jan 19 28 20	Accession and a second and a second				(CONTINUE ON SEPARATE SHEET IF NECESSARY)	SIGNED SI	
	•	Blue Copy - Well Owner I PROVIDE PROPER WELL LOCATION. II I INDIS DED LETTSETT OF PHRILL OF HELL LOCATION.	WELL CONSTRUCTION REPORT	1. Type of Well a. Dug Bored Hole Diami Jin. Depth HA. Curb material Buried Slab: Yes No	c. Drilled K. Finished in Drift In Rock K.	a. diversion (KIND) FROM (FL) TO (FL)		2. Distance to Nearest: BuildingFt. Seepage Tile Field Cess Pool	Privy Sewer (Cast iron) Septic Tank Barnyard	3. Is writer from this well to be used for human consumption? Yes X, No	4. Date well completed / - 2.5 - 1.2 . 5. Permanent Pump Installed? Yes X No	Manufacturer <u>Y. M. A. M. R. I. 1996 Weild Annulacturer</u> Capacity <u>gpm.</u> Depth of setting <u>25</u> ft. 6. Well Top Sealed? Yes. <u>K</u> No	7. Pitless Adoptor Installed? Yes X No 8. Well Disinfected? Yes X No	9. Water Scapple Submitted? YesNoNo	REMARKINS: Durnes instructed		IDPH 4.065 10/68	P 14043A

140020

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### DRILLERS LOG

VILLAGE OF BRAIDWOOD, TEST HOLE NO. 1

Formation	From	To
Humus	0	4
Sand	4	17
Clay	17	27
Sandstone	27	65
Shale	65	75
		TD

Driller: Date drilled: County No. Authority: County: Location:

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St. 200 CO

J. Bolliger and Sons April 1950 1222 J. W. Crenshaw Will

9-220524

### DRILLERS LOG

## VILLAGE OF BRAIDWOOD, TEST HOLE NO. 2

Formation	From	<u>T o</u>
Humus	0	2
Tight sand	2	15
Hard sandy clay, no water	15	27 T D

Driller: Date drilled: County No. Authority: County: Location:

C O P Y

> J. Bolliger and Sons April 1950 1223 J. W. Crenshaw Will

### DRILLERS LOG

VILLAGE OF BRAIDWOOD, TEST HOLE NO. 3

From	<u>To</u>	
0	2	
2	2.5	
25	27	
27	30	
30	735	
75	79	
	From 0 2 25 27 30 75	

Driller: Date drilled: County No. Authority: County: Location:

C[.] 0

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J. Bolliger and Sons April 1950 1224 J. W. Crenshaw Will

8-220522
# DRILLERS LOG

# VILLAGE OF BRAIDWOOD, TEST HOLE NO. 2

Formation	Thickness	<u>Top</u>	Bottom
Sand vellow	5	0	5
Sand vellow	6.5	5	11.5
Fine grav sand	5	11.5	16.5
Gray sandstope 17!	5.5 ·	16.5	22 · ·
Grav sandstone	5	22	27
Softens at 28	5,5	27	32.5
Hard again 33'. Fine gray sand	5	32.5	37, 5
Cemented with lime	5.5	37.5	43
Hard gray sandstone	5	43	48
Hard gray sandstone	5,5	48	53.5
Hard gray sandstone and coal	5	53.5	58.5
Hard gray sandstone and coal	5,5	58.5	64
Hard gray sandstone and coal	5	64	6 <b>9</b> ·
Hard Bray Dealerone and Cont	5.5	69	74, 5
Stopped drilling at 80'	5	74, 5	79.5

Driller: Date drilled: County No. Authority: County: Location:

C O P Y

> J. P. Miller Artesian Well Co. July 1955 1225 J. P. Miller Artesian Well Co. Will

> > 6-220525

### DRILLERS LOG

VILLAGE OF BRAIDWOOD, TEST HOLE NO. 3

Formation	Thickness	Top	Bottom
Dirty sand	5	0	5.
Fine sand	6.5	5	11.5
Fine sand	5	11.5	16,5
Hard blue clay and boulders 18'	5.5		22
Soft 22 ¹ , hard 23 ¹ . Moved hole ahead 2 ¹	5	22	27
Hard blue clay and boulders	5,5	27	32. 5
Sandstone 33'	.5 5, 5	32.5	37.5 43
Sandstone	5	43	48
Sandstone	5.5	48	53, 5
Sandstone and some coal	2.5	53.5	56

Driller: Date drilled: County No. Authority: County: Location: J. P. Miller Artesian Well Co. July 1955 1226 J. P. Miller Artesian Well Co.

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### ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Top	Bottom
sandy soil to 2', 2' orange sand	, 0	5
fine sand Boulder 11. With ls chips	. 5	11
hard blue glacial clay	. 11	16
hard blue glacial clay	16	22
hard blue glacial clay	22	27
sandstone 30 1/2'	27	32
sandstone	32	37
sandstone	37	43
sandstone	: 43	: 48
sandstone	: 48	53
sandstone. Gray clay 58'	53	58
gray clay	58	64
gray clay	64	69
gray clay	. 69	• 74
gray clay	74	79
gray clay	79	. 85
gray clay	85	90
gray clay	90	95
hard gray clay	95	100
hard gray clay	. 100	106
Total Depth		i 106 İ

Permit #: 0 Permit Date: 222 COMPANY Miller, J. P. Art. Well PARM DATE DRILLED July 1, 1955 NO. 0001 COUNTY NO. 01227 ELEVATION 0 LOCATION , LONGITUDE ( COUNTY Will API 121970122700

18 - 32N - 9E

### ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Top	Bottom
sandy soil to 2', 2' orange sand	. 0	5
fine sand Boulder 11' With 1s chips	. 5	11
hard blue glacial clay	. 11	16
hard blue glacial clay	16	22
hard blue glacial clay	22	27
sandstone 30 1/2'	27	32
sandstone	32	37
sandstone	37	43
sandstone	43	48
sandstone	; 48	53
sandstone. Gray clay 58'	53	58
gray clay	58	64
gray cla <b>y</b>	64	69
gray clay	69	- 74
gray clay	74	79
gray clay	79	85
gray clay	85	90
gray clay	90	95
hard gray clay	. 95	100
hard gray clay	100	106
Total Depth		106
· ·		

Permit Dat			Perr	it #:	0			<u>.</u>	
COMPANY PARM	-Miller, J. P. A Braidwood City	rt. Well						<u>.</u> ,	
DATE DRIL	<b>LED</b> July 1, 1955		<b>NO.</b> 0	001					
ELEVATION LOCATION LATITUDE	1 0 330'N line, 330 41.255505	'E line o: LONGITU	f se ne 1011: - 88.22	27621					
COUNTY	wi11	API	12197012	22700		18	- 3:	2N	- 9 <b>e</b>

ILLINOIS STATE GEOLOGICAL SURVEY

Oriller's	Loa	filed	

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Miller, J. P. Art. Well COUNTY Will

Braidwood City 0001 API 121970122700 18 - 32N - 9E

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18 - 32N - 9E

### ILLINOIS STATE GEOLOGICAL SURVEY

Water Well		Top	Bottom
cinders		0	2
yellow sand	1	2	6
fine gray sand to medium, loose		6	: . 14
gray clay, gravel and boulders imbedded		14	29
hard gray s & cl mixture,used pulldowns		29	49
gray hard shale		49	65
Total Depth			65

### Driller's Log filed

			•
		•	
	•		
		•	

Permit Date: Permit #: 0

COMPARY	Layne Wester	n Co., Inc.			
PARM	Braidwood Vi	llage			
DATE DRIL	LED February	1, 1957	1	NO.	0001
ELEVATION	0	, C	DUNTY 1	ю.	01229
LOCATION LATITUDE	650'S line, 41.262320	650'E line LONGI	of SW TUDE -	88.2	00523
COUNTY	will	API	1219	9701	22900

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### 9 - 32N - 9E

INSTRUCTIONS TO DRILLERS

White Copy – White Copy – Wellic ... (th 11. Dept of Public ... (th Yellow Copy – Well Contractor Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED 3 MAIL ORIGINAL TO STATE DE-PARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINDIS, 62706. DO NOT DETACH GEOLOGICAL /WATER SURVEYS SECTION. BE SURE TO

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	ELL RECORD	No. 180			10 (11) LOCATION IN 101 100 ELAT		n is 1 ft. when pumping at 10.	THICKNESS DEPTH OF			13, 43,	33, 72,		1 1 1 - 9 - 9 - 27
	GEOLOGICAL AND WATER SURVEYS W	Driller SCHART FUL SHARE	11. Permit No. 14351 Date J 12. Water from ADD Structures 13. Count at depth 42 to 15 ft. Sec.	Length: ft. Slot Rge. Elev.	Diam. (In.)- Kind and Weight From (Fr.) 1		10. Size flote below casing:in. 17. Static level <u>20</u> ft. below casing top which above ground level. Pumping level <u>20</u> ft. v	JPHI TOT HOULS. 18. FORMATIONS PASSED THROUGH	Tep Soll	CLAY	TOUD (TODIEL	SAND STONE		(CONTINUE ON SEPARATE SHEET IF NECESSARY)
PROVIDE PROPER WELL LOCATION.	ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT	1. Type of Well a. Dug Bored Hole Dicm. 5_ in. Depth 5 ft.	b. Driven material Drive Pipe Diam 5 in. Depth 7 ft. 1 c. Drilled X. Finished in Drift In Rock X. Tubular 5 ft. 1	d. Grout: (KIND) FROM (Ft.) TO (Ft.)	2. Distance to Nearest:	Cess Pool critic Seepage Tile Field 1-3 Cess Pool Cess Pool Sewer (non Cast iron)	Septic Tank D / Barnyard Leaching Pit Manure Pile	$Ves \rightarrow Noter I form this well to be used for human consumption f$	5. Permanent Pump Installed? Yes X No	Manufacturer, DHKNF2 Type, 2018 MEKSJUK E Capacity 10 gpm. Depth of setting 100 11.	6. Well Top Sealed? Yes X No 7. Pitless Adoptor Installed? Yes X No	8. Well Disinfected? Yes No	REMARKS:	IDPH 4.065 10/68

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TIONS TO DRILLERS INST

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FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

LOCATION IN SECTION PLAT DEPTH OF BOTTOM SESENG Static level <u>40.</u> It. below casing top which is <u>find</u> above ground level. Pumping level <u>40.</u> It. when pumping at <u>6</u>. SHOW g GEOLOGICAL AND WATER SURVEYS WELL RECORD 0 r THICKNESS Õ N , vell No. đ To (FL.) R đ DATE the License No. 13. County Rge. Twp Elev. (CONTINUE ON SEPARATE SHEET IF NECESSARY) Sec. From (Pt.) Date ____ Ò Ē 100107 FORMATIONS PASSED THROUGH 12165 Size Hole below casing: 🗘 Kind and Weight J. KI Ê 1 ġ Ŧ, **Casing and Liner Pipe** 41/200 ft. Slot bours. р В mazer う Permit No. 🖽 Screen: Diam. Property owhe Driller Water from at depth 2X よいな Q Length: _ gpm for _ Address 2 Dies. (in.) イン SIGNED N. 14. ω 17. jo. 2 11. ġ d'idea Ŷ Notesting to to source but ÷ Depth 2 Oft. Depth 20 ft. 5 ( J. J. ) No is water from this well to be used for human consumption? ln Rock_ ILLINOIS DEPARTMENT OF PUBLIC HEALTH X-on ę Depth of setting REMARKS: JCI WX Topl. Quession to mis Sewer (non Cast iron) Seepage Tile Field_ å Typester ġ in. WELL CONSTRUCTION REPORT Sewer (Cast iron) Buried Slab: Yes Hole Dial. located in house FROM (PL.) Manure Pile Drive Pipe Dian. ů Barnyard _ J Finished in Drift Depart of the second of the se Gravel Packed , Yes_ 63 Pitless Adaptor Installed? X Yes ц Ц Ŋ Permanent Pupp Installed? (GNIND) Well Top.Sealed? Well Disinfected? Yes Water Sample Submitted? Manufacturer 2 41 A Le Date well completed <u>...</u> Bored__ 0 Distance to Negrest Building ĝ là Curb material ._____6nQ Leaching Pit Type of Well Septic Tank Driven Tubular Drilled Capacity_ Cess Pool Building_ Grout: **IDPH 4.065** ļ Privy. Yes KNB-1 ы в 10-72 ပံ ÷  $\subset$ ۲. ഗ 4 ອ່ <u>.</u> ώ ത് ė ŝ

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Yellow Copy - Well Contractor hite Copy -111. Dept. of Public Health

Blue Copy ~ Well Owner

ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	•	Тор	Bottom
sandy clay	ł	0	5
sanđ	:	5	10
sandy clay	:	10	20
blue clay		20	60
shale, coal, rock	:	60	61
shale	:	61	. 86
Total Depth			86
Casing: 5- GALV STL 15 from 0' to 60'	Ì		i
Grout: NEAT CEMENT from 0 to 20. Size hole below casing: 5"			
Water from shale at 61' to 86'. Static level 12' below casing top which is 1' above	GL		
Pumping level 60' when pumping at 4 gpm for 5 hours			
Driller's Log filed Location source: Platbook verified			
		•	

Permit #: 32855 Permit Date: September 9, 1974 Griffy, Cecil D. COMPANY TARM • : DATE DRILLED October 5, 1974 190 COUNTY NO. 24827 ELEVATION 0 SE SW SW LOCATION LONGITUDE LATITUDE API 121972482700 9 - 32N - 9E COUNTY Will

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### ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Тор	Bottom
sand	0	30
gravel	30	46
sandstone	46	90
Total Depth	:	90
Casing: 5" A-53 15# from 0' to 46'		:
Size hole below casing: 5"		1 4
Water from sandstone at 46' to 90'. Static level 20' below casing top which is 1' above ( Pumping level 20' when pumping at 10 gpm for 1 hour Permanent pump installed at 60' on , with a capacity	of 10 gpm	
Driller's Log filed Location source: Location from permit		
		!
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. <i>.</i>	:	Ì

COMPANY Lockport Well & E			 		<u> </u>
TARM			 		<u> </u>
DATE DRILLED October 28, 19	74	NO. 0001	  		
CONTINN 0	COUNTY	<b>DIU.</b> 24052	 	· · ·	
ATITUDE	LONGITUDE		 <u></u> ا	L	

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ILLINOIS STATE GEOLOGICAL SURVEY

Water Well				тор	Bottom
sand		<u> </u>	:	0	40
here all marth			-		40
CERT Paper			• :		;
					:
					:
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miller's Log filed					;
ATTICE 3 Dog tribe					
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Permit Date:		Permit	0 ± 0	į	
COMPANY Anderson Well Drlg.					
FARM					· · · · · · · · · · · · · · · · · · ·
DATE DRILLED June 1, 1972		NO. 1			┝┊┠╍╵╼┥
ELEVATION 0	COUNTY	NO. 25404	1		
LOCATION NW SE SE			_		

API 121972540400 COUNTY Will

8 - 32N - 9E

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FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

White / -111. Dept. of Public Health Yellow Copy - Welt Contractor Blue Copy - Well Owner

	E FROTER AFLE FULLETORS
ILLINOIS DEPARTMENT OF PUBLIC HEALTH	GEOLOGICAL AND WATER SURVEYS WELL RECORD
WELL CONSTRUCTION REPORT	10. Property owner
ا. Type of Well a. Dug Bored Hole Diam. 5 in. Depth 225 ft.	Address Driller L' Hog less U Tauk 22 License No. 1.3
Curb material Buried Slab: YesNo b. Driven Drive Pipe Diam. 5in. Depth 35ft.	11. Permit No. 56857 Date 2-17-77 12. Water from Drived Stave- 13. County 2229
c. Duilled X. Finished in Drift In Rock X. Tubular Gravel Packed	at depth 35 to 65 ft. Sec. 17.19
d. Grout: (KIND) FROM (FL) TO (FL)	Length: ft. Slot Rge. 9.
	15. Casing and Liner Pipe
	Diam. (in.) Kind and Veight Prom (Fi.) To (Fi.) LocATION IN
2. Distance to Nearest:	5 A-53 15 26, 0 35 SECTION PULL
Building 35 Ft. Seepage Tile Field 75'	
Cess Pool Sewer (non Cast iron)	
Privy Sewer (Cast iron)	16. Size Hole below cosing:
Septic Tank <u>20</u> Barnyard Leaching Pit Manure Pile	17. Static level <u>7(7</u> it. beiow casing top which is <u>17. Static level</u> obove around level. Pumping level <u>20</u> it. when pumping at <u>2</u> .
3. Is water from this well to be used for human consumption?	gpm for <u>/hours</u> .
Yes No 9 5 5 7 7 7	IR FORMATIONS PASSED TUROUGH THICKNESS DEPTH OF
4. Date well completed	0 / 35 35
5. Permanent Pump Installed? Yes	21 VC
Monufacturer <u>VOPLANKA</u> Type <u>All Konteranter</u> Connectiv S and Depth of setting 40 ft.	Nadažene. XI V
6. Well Top Sealed? Yes No	
7. Pitless Adaptor Installed? Yes X No	
B. Well Disinfected? Yes No	
9. Water Sample Submitted? YesNoNo	
REMARKS:	
· · ·	(CONTINUE ON SEPARATE SHEET IF NECESSARY)

IDPH 4.065 10-72 KNB-1 0 1/1 0 ヘ

SIGNED CRAARA SAFE DATE-

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White Co, III. Dept. of Public Health Yellow Copy - Well Contractor DEPARTMENT OF PUBLIC HEALTH	UTIUN" IU DIVILLERS A TION REQUESTED AND MAIL ORIGINAL TO STATE 1. BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST
Tellow Copy - Well Contractor JEFFERSON, SPRINGFIELD, ILLING Blue Copy - Well Owner SURVEYS SECTION. BE SURE TO P	DIS, 62761. DO NOT DETACH GEOLOGICAL/WATER PROVIDE PROPER WELL LOCATION.
ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT	GEOLOGICAL AND WATER SURVEYS WELL RECORD
1. Type of Well a. Dug Bored Hole Diam. 5 in. Depth 100 Curb material Buried Slab: YesNo	ti. Driller 73034 Date 171, Pare No. 33 11. Permit No. 73034 Date 4-73-78
b. Driven	It. 12. Water from $ACTICATEON 13. County 1.4 A to the formulan Sec. 12./h A depth 40 to 65 ft. Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 14 Sec. 12./h A depth 12 Sec. 12./h A depth 14 Sec. 12./h A depth 12 Sec. 12./h A depth 14 Sec. 12./h A depth 12 Sec. 12./h A depth 14 Sec. 12./h A depth 12 Sec. 12./h A depth 14 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12./h A depth 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h A depth 12 Sec. 12./h $
d. Grout: (KIND) FROM (PL) TO (PL)	Length: ft. Slot Rge. 96 Elev
	Disa. (In.) Kind and Weight From (Ft.) To (Ft.) LOCATION IN Disa. (In.) Kind and Weight From (Ft.) To (Ft.) LOCATION IN
2. Distance to Nearest: Building 25 Ft. Seepage Tile Field 75'	21 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -
Cess Pool Sewer (non Cast iron) Privy Sewer (Cast iron) Septic Tank 50 / Barnvard	16. Size Hole below casing: 5 in. 17. Static level 60 ft. below casing top which is 1/
Leaching Pit Manure Pile 3. Is water from this well to be used for human consumption?	above ground level. Pumping level <u>40</u> ft. when pumping at <u>40</u> gpm for <u>10</u> hours.
Yes X No Z/- J0- 7%	18. FORMATIONS PASSED THROUGH THICKNESS DEPTH OF BOTTOM
5. Permanent Pump Installed? Yes X No	- Janol 40 40
Manufacturer <b>BOANNED</b> Type OurDin Face Capacity <u>A</u> gpm. Depth of setting	-11. Janlatina 35 100
6. Well Top Sealed? Yes X No No Yes X No No Yes Xdantor Installed? Yes X No	1/a ec
8. Well Disinfected? Yes X No	
9. Water Sample Submitted? Yes No 🔨	
REMARKS:	
· .	(CONTINUE ON SEPARATE SHEET IF NECESSARY)
1DPH 4.065 72	SIGNED Charles styles DATE 12-1-1

Rec. 19'

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White Copy -111. Dept. of Public Health Yellow Copy - Well Contractor Blue Copy - Well Owner

# INSTRUCTIONS TO DRIVE ERS

DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER FILL IN ALL PERTIMENT INFORMATION REQUES: _ AND MAIL ORIGINAL TO STATE SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

Type of Well <u>...</u>

5 in. Depth 40 ft. Depth 60 ft. No. <u>5</u> in. Buried Slab: Yes. Drive Pipe Nam Curb material ____ Driven_ a. Dug____ ė

In Rock X Finished in Drift Gravel Packed . Drilled X Tubular___ ú

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TO (FL) FROM (PL) (KIND) Grout:

Distance to Nearest: ci

× ____N____ 75 Well furnishes water for human consumption? Yes_<u>X</u> Data wall completed Sewer (non Cast iron) Seepage Tile Field_ Sewer (Cast iron) ... Manure Pile _ Banyad __ F. Date well completed 50 ŝ Leaching Pit Septic Tank Cess Pool Building _ Privy ...

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å Location. Permanent Pump Installed? Yes____Date _ Type _ Manufacturer. ഗ് 4

gpm. Depth of Setting Capacity...

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____Type __<u>Vermin=Proof (W</u>ms) Yes_ Well Top Sealed? Yes X No Pitless Adapter Installed? 9.2

Model Number How attached to casing? Manufacturer 🔔

X No_ Well Disinfected? Yes_ œ

å Yes___ ....gal. Type ... Pump and Equipment Disinfected? Pressure Tank Size ____ எ Ö

No X Yes. 11. Water Sample Submitted? Location ____ REMARKS:

14266. # ථ

# **GEOLOGICAL AND WATER SURVEYS WELL RECORD**

	-23				NHOV MATON IN	TION PLAT		H H		BOTTON	381	- 09		
ell No. 1	No. 102- 1-21-86	TTHE L		╵	(II) (II)	40 7	} < _	ie +	hen pumpii	THICENER	381	221	}	
N	License   Date1	- 13. County Ser.	die ≱e ⊢ œ	Elev	From (Pt.) To	0		in. ng top which	el <u>58</u> ft. •				-	
	s Fykes 46	tene	: . <u>.</u>		<b>Velght</b>	15 lbs.		ing: 5	Pumping lev	UBED THROUG		tone		
owner	Charles do. 12824	38 - 5 - 20	Dian.	and Liner Pij	Eind and	A-53		le below cas evel <u>35</u> ft	round level.	REATIONS PA	Pues	Sande		
0. Property	Address Driller - 11 Permit N	12. Water fr	14. Screen: Length:	15. Casing (	Dlam. (in.)	5"		16. Size Ho 17. Static le	above g gpm for	18. 70				

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

Nov. 26, 1986 DATE -SIGNED J

V CON O 10PH 4.065

Well Construction Report

Rec -

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Yellow Copy: Well Contractor White Copy: W.C.M.D.

This form must be completed within 30 days of well completion and submitted to the approprists office depending on which township the veil is located. See listing at bottom of pege.

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C DIM V

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10. Vell Site Addres

9. Driller_

GEOLOGICAL AND VATER SURVEYS VELL RECORD

-6-8-

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8 8 8 A	at depth to From (11)		and the Stat	
ty Omer 197-42-000-5	free Liner Pipe g and Liner Pipe	Areventer). Dam Par	in the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of	ALL SAUD
Local	4. Vator 5. Casir Ham.(Hn)	- 112	16. Ser 17. Star 19. Star 20. Ear	
Depth 15	1n Rock 10 (Ft.)	Yes X No	140	Will County Health Dept. Environmental Health 800 University Park
ten	shed in Drift FROM (FL.)	human consumption? It-27-91 Tros	No. Type GAU No. Type GAU No. Mo. Mo.	l County Health Dept. Snyfronmental Health
1. Type of Vall 4. Bored	c. Drillad Fini d. Graut:	2. Vell furnieres water for 3. Date well drilled 4. Permanent pump installed Manufacturer Location	Capacity	dill County Mealth Dept. Mil Environmentel Mealth E

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Continue en separate sheet if necèssary. _ : University Park, 1L 60448 (815) 727-8803

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(108) 534-0800

Will County Health Dept. Environmental Health 701 M. Lockport St. Plainfield, IL 60544 (815) 436-6871

SOI EIle Avenue

Joliet, 11 60433 (815) 727-8840

Green Garden

Frankfort

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DuPage Nomer Lockbort Plainfield Mheatland

Wilmington

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- Florence ) 101 loc Jeckson Custer

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### ILLINOIS STATE GEOLOGICAL SURVEY

Private Water Well	:	Тор	Bottom
top soil	1	0	
sand		2 ·	36
sandstone		38	. 65
Total Depth			65
Casing: 5" A-53 15 LBS. from 0' to 42'	i		) :
Size hole below casing: 5"	•		! -
Water from sandstone at 38' to 65'. Static level 30' below casing top which is 1' above GL Pumping level 40' when pumping at 10 gpm for 1 hour	:		:
Permanent pump installed at 50' on July 28, 1984, with of 10 gpm		capacity	

Location source: Field verified

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Permit Date: July 27, 1984

Permit #: 113697

COMPANY Fykes, Charles N.						
TARM STARM						
DATE DRILLED July 27, 1984	BK	<b>5.</b> 1		÷		
ELEVATION 593GL	COUNTY NO	31161	ş	· ••••••	····· ·	
LOCATION				. <b>.</b>	· · · · · · ·	
LATITUDE L	ONGITUDE -				<u> </u>	نــــــ
COUNTY Will	API 12197	3116100	16 -	- 32	N -	• 9E

Well Construction Report

.: Well Contractor W.C.H.D. Yellov Ci White Cor

This fore must be completed within 30 days of well completion and subsitted to the appropriate office depending on which to would be well is located. See listing at bottos of page

<u>07 - 00</u>	5-15-	i locat Shey locat	06, ≲ €, ^U	¥	r above or ho	f Depth o Bottom	9/	32	148		
No /	Vall Ho Market	2 = = = h				Depth o Top	0	16	32		
Alec		at depth 3			in. 18. Groun in. 18. Groun ting top which	ugh					
8	10-000	ND ROCK I Ploo			r casing []	a Passed Thron		CLAU	Rock	•	
riller	amit No. <u>191</u> ocation: <u>BR</u> at	Atter from SH Asting and Line (in) Kind and			Screen: Diam Size hole belo Static level 4	Earth Haterlal	SAND	GRAU	SAND		
. 0	11. 12. 13. 13. 13.		1 voo Lu	2 N. N.	<u>B50-Acr</u> 10.		111 County Mealth Dept.	Environmental Mealth BOO University Park	(515) 127-8803 (312) 534-0800	Iowashias Crete-	Frankfort
s listing at bottom of page.	Diam. J. In. Depth 20 No		Nor 5 1991 March	Depth of cetting	1047 Yos 1 No 2 2 2 1 No 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Infected Yes / Ho	ill County Health Dept. W	Environmental Health 342 N. Independence	(815) 886-1550 (312) 738-7971	Ternshies	DuPaga 🔛
ship the vell is located. See	I. Type of Vell A. Bored Hole Burled Slab: Yet b. Driven Drive C. Drilled (XIRD)	d. Grout:	3. Date vell drilled <u>Jr.</u> 4. Permanent pump installe Hanufacturer <u>v/a.s.(</u>	Capacity <u>/C</u> gpm. 1 5. Well top sealed? Yes.	6. Pitless adapter instal Manufacturer <u>Let Lit</u> How attached to casing 7. Vall disinfacted? Yes	8. Pump and equipment dis	County Mealth Dept.	v tromental Health 501 Ella Avenue 1811 - The Source	(815) 727-8840	Lornahias . Innation New Lenos	ster Reed
£								<b>.</b> .	•	- <del>-</del>	Ũ

Continue on separate sheet if necessary.

Green Garden

Plainfield wheat land Lockport DuPage 

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Florence Jackson

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GEOLOGICAL AND VATER SURVEYS VELL RECORD

REC- 22

ALCONED No 102 -001 6.

Date Issued 5 -15-90

Show location

In section

NE, SE, NE

hours

Depth of | Depth of

**[**[ ]

Private Water Well	Top	Bottom
sand	. 0	16
gray clay	: 16	32
sand rock	. 32	48
Total Depth		48
Casing: 5" A-53 14.62# from 0' to 35'		
Water from sand rock at 32' to 48'. Static level 9' below casing top which is 1' above GL		:
Permanent pump installed at 32' on June 8, 1991, with	a capacity	•
of 10 gpm	;	· .
Additional location info:		•
Address of well:		
Location source: Location from permit		i i
	* • •	1
· · · · · · · · · · · · · · · · · · ·		
		i
		;
		;
		i
Permit Date: May 15, 1990 Permit #:		
COMPANY Wills, Elmer D.		
PARM		
DATE DRILLED June 5, 1991 NO.		
ELEVATION 0 COUNTY NO. 35619		
LOCATION NE SE NE		
LATITUDE	•	

## Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Shew locatio Z Z ··· 3-9-9 Depth of Depth of : 1 in section Bottom NEWENE 17. Stare hole below casing 211 in. 18. Ground Elay LLAL 11. 19. Stattic Tever 12 ft below casing top which is 2211. above ground Tevel. Pumping Tevel 2211, pumping gam for 10 ho 302 5 16. Seroon: Dim. [1410. Longing in. Slot Size & MEN Date Issued_ Oal Ho. Top GEOLDGICAL AND VATER SURVEYS VELL RECORD ť  $\overline{(2)}$ nte No. County R9+ ... 5 Sec. و د ( ( ۱ ) Continue on separate sheet if necessary. 2 at depth. States 20. Earth Haterials Passed Through Calibrized Stee (C) m plack RANUTE Dipp. (In) | Kind and Veloht 15. Casing and Liner Pipe 13. Location: C'ONER 12. Permit No. 197-072 10. Vall Site Addres 11. Property Ome 14. Vator from Sand ru DC Stgned. 9. Driller Tax 4 University Park, IL 60466 Will County Health Dept. Environmental Health 800 University Perk Green Garden -inished Vashington (708) 534-0500 Iconships Frankfort Peotone (615) 727-8603 Hones よどし • Jet Pumpine Jet Ņ, Ŷ E M UN N 0.00th 14' TO (FL.) Type Brivenized In Rock X. 0.001h____1 Nodel No. -opm. Depth of setting In Crawl 3 This fors must be completed within 30 days of well completion and aubmitted to the appropriate office depending on which to making the vall is located. See listing at bottom of page. ŝ Will County Health Dept. 20 Environmental Mealth 2. Vell (unition viter for hund) conjunction? 701 M. Lockport St. Plainfield, IL 60544 Drive Pipe Diam. 14 In. Ŷ Lockport Plainfield FROM (FL (815) 436-6871 8. Pump and equipment disinfacted Yer thest land Finished in Drift_ Iornahles HOM DuPage نے ا X How attached to casing? Threas ŝ Hole Diam. 6. Pition adopter Initalial Vi Manufacturar Farm + 146 Ŷ Yellov Copy: Well Contractor Hanufacturer Farm & Vell top sealed? Yes X 4. Permanent pump_installed? , , (UNIX) 3. Date well drilled___ Carry .С.н.р. will county health Dept. **Wilmington** May Landa Environmental Health Burled Slab: Capacity 25 V11100 Yes ley Joliet, 11 .0433 Read Troy 501 Ella Avenue (815) 727-2840 1. Type of Vell b. Oriven A c. Drilled d. Greut: I or on h las Location A. Borad Channahon White Copy Florence JACKSON Hanha' Custer 101105 . م

Well Conr Juction Report

Rec- V

5 Shew Tecation 11 2 i noq NESENE 26 in section Suchale Lot 49 Depth of Depth of Better · rt. above 111 20. Earth Natorials Passed Through 12, pumping gpm for h Date Issued 57 ١ County 101 17. Stare hele below casing in. 18. Ground Elev. GEOLOGICAL AND VATER SURVEYS VELL RECORD License No. 16. Seroon: Dian. 114 In. Longih 48 in. Slot Size T• (ft) 2 ť 19. Stattic Tevel____fs below casing top which is ___ a 9 7 at depth from (11) 5 260 ₩.W S -Ś 0 M 4 SALD POINT 80086 GAlvar, ZeD Diam.(in) Kind and Valght 15. Casing and Liner Pipe 661 10. Vell Site Addr 11. Property Omed Well Construction Report 12. Peralt No. H. Wier Free Location: SAND Tax / Driller X 2 ő Type Jet Dar Mp : Depth 14 ft ž ź イマシ In Rock <u>10 (FL.)</u> Depth______ 26 Hodel, No. Ŷ Date 6/5-This fors must be completed within 30 days of well completion and submitted to the appropriate office depending on which township the well is located. See listing at bottom of page. ž 2. Vell furnishes valor for hundre concurption? 3. Date well drilled 6/9/9.2Drive Pipe Dian. 14 in. Type j. FROM (FL.) .t. Puno and equipment distafacted Yes opm. Depth of setting Finished in Drift Hole Dian. In. No Permanent pump lagtalled? Yes L Yer ž ¥9 Yellow Copy: Well Contractor 6. Pitless adapter installed? 7. Vall disinfacted? Yes つぜてい Vell top sealed? Yed How attached to caling?___ Ĭ. **TRING** 3. Oate well drilled White Copy: W.C.H.D. Burled Slab: 7, 2 J Manufacturer Manufacturer_ 1. Type of Vell b. Oriver 7 Capielty __ c. Drilled 4. Bored d. Greut: Location_ ÷

Will County Health Dept. Environmentel melth Jollet, 11 60433 SOT Elle Avenue 04h1-121 (510)

Will County Realth Dept. Environmental Health 701 M. Lockport St. Flainfield, IL 60344 (815) 436-6871

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University Park, IL 60466 Will County Health Dept. Environmental Health. 800 University Park (708) 534-0800 (815) 727-6803

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Oreen Garden Veshington Frankfort Peotone 10 Konee 

Continue on separate sheet if necessary. 

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SEOLOGICAL AND VATER SURVEYS VELL RECOND (<del>1</del> - <del>4</del>) Shew Tecalle Ž Driver DATUJA BAUUT OF K+K VICENCE NO D3 17644 in section 1 2 Depth of Depth of Bottom 50 19. Static lovel 10 ft below casing top which is 1 ft. above 6 m 0 20 Pf F 3 ы У 5 1 トリ 4.1 Ke. pumping ope for phones and web-19-the 6 20 2 16. Screen: Dim. 5_ in. Longin 10 in. Slot Size 015 C REAL 17. Size hale balpy casing 2 in. 18. Ground Elev. ٥ 5 5 ť (1)) •1 County I. Top 35 ť 0 40 10 <u>50</u> 0 at depth_/ From (11) ULL I ground level. Pumping level-40 ft. Continue on separate sheet if necessary. 0 4130 H130 H135 20. Earth Materials Passed Through Well Construction Report PIASTIC PVC the int andstone n Dim.(in) Kind and Veight 14. VILLE Tra Shall 15. Casing and Liner Pipe SD R claster 10. Vell 51te Adresd 11. Property 0000 GIRAVC 13. Location: SAU Lh a l Tax 3 <u>,</u> University Park, IL 60466 WILL COUNTY HEAL IH DEPT. Will County Health Dept. RECEIVED Environmental Health 200 University Park cybrinated. DEC 0.5, 1994 Green Garden ٢ (208) 534-0800 (015) 727-4403 **Lecondon** Frankfort 16461 No. B500 C 3100 Hones ב Wash). <u>حلاک</u> مرا 200 , ₽ on <u>19-18-01-01-01</u> vor LUDRO 10 (11.) Oepth___ In Rock Depth 50 rt a P HO200 Puno and equipment disinfacted Yes. K No 40 Drawnut This fors must be completed within 30 days of well completion counship the well is located. See listing at bottom of page. aunia instructed wea _| ² and aubmitted to the appropriate office depending on which LLH . --Will County Realth Dept. 2. Voll furniture vator for human consumption? 3. Date vall drilled 10 - 31 - 94 Type_ Environmental Bealth 701 M. Lockport St. Plainfield, IL 60544 FROM (FL.) 2 Capacity 12 00m. Dopth of cetting ians (815) 436-6071 Finished in Drift_ Pleinfield Hele Blm. 5_In. € | # Was Jan [excalles Lockport brive Pipe Diam. Ì DuPaja ġ # Yellow Copy: Well Contractor Vall disinfacted? You X Permanent pump installed? Pilless adapter installed? U JI I How attached to casing? PLASTIC U A ۲**:** (GN13) à White Copy: W.C.H.D. 2 WIII County Meelth Dept. Burled Slab: Hanufacturer___ Hanufacturer___ wi la lagten Environmental Mailin Her Lange A. Bered Drilled V "Bealey Killer 1. Type of Vell Joliet, IL 40433 Ortven lroy ( (-Aeed SOI EILA Avenue Location_ 0000-121 (210) d. Greut: Ieroshies Channahon florence JACABON Custer Jollet Hannal ŝ 4 (

ROC- 22

REC.-241

COUNTY

will

### ILLINOIS STATE GEOLOGICAL SURVEY

Private Water Well	Top	Bottom
sand	0	25
shale	. 25	40
gravel	. 40	45
shale	45	' : 110
Total Depth		110
Casing: 5 BLACK STEEL from 0 to 50	į	
Grout: BENTONITE from 0 to 50. Size hole below casing: 4.75"	: : :	i
Water from shale at 45° to 110°. Static level 50° below casing top which is 1° above GL Pumping level 60° when pumping at 0 gpm for 4 hours Permanent pump installed at 60° on December 5, 1994, w capacity of 15 gpm	ich a	• • • • • • • • • • • • • • • • • • •
Additional location info:		
Address of well:		
Location source: Location from permit		
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ermit Date: October 21, 1994 Permit #:		
www.www		
ARM ANTE DRILLED November 11, 1994 BO.		
VARM VARM NO. NATE DRILLED November 11, 1994 NO. ILEVATION 0 COUNTY NO. 36500		·····

API 121973650000

16 - 32N - 9B

# REC- 268

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and 0 20 hale 4 limestone 20 J50 J50 J50 J50 J50 J50 J50 J5	Private Water Well	Тор	Botton	
hale 4 limestone     20     350       rotel Depth     350       rasing:     5' BLACK STEEL from 0' to 60'       rrout:     DENTONITE from 0 to 60.       tater from shale 4 limestome at 60' to 350'.       tatic level 15' below casing top which is 0' above 60       umping level 330' when pumping at 0 gpn for 2 hours       ermanent pump installed at 330' on May 16, 1996, with a capacity of 7 gpm       dditional       ocation info:       ddress of well:       ocation source:     Location from permit   Parait Date: May 9, 1995 Permit 0; ONDAMY Fordonski, Keith And Ant DRILLED May 15, 1996 NO. LEVATION 0 COUNTY NO. 37128 COUNTY Will LONDITURE Api 121973712800 16 - 32N - 9X	and	0	20	
brain pupt       350         Asing:       5. BLACK STELL from 0' to 60'.         irout:       BENTONITE from 0 to 60.         iater from shale 4 limestone at 60' to 350'.         tatic level 15' below casing top which is 0' above 6L         umping level 330' when pumping at 0 gpm for 2 hours         ermanent pump installed at 330' on Nay 16, 1996, with a capacity of 7 gpm         ddicional ocation info:         ddress of well:         ocation nource:       Location from permit         emait Date:       May 9, 1996         Permit 0.       Permit 0.         OMPANY Fordonski, Keith       No.         ATE DRILLED May 15, 1996       No.         COUNTY NO. 37128       Image: County No. 37128         OCATION SW NM SW       LONOITUDE         ATE DRILLED May 15, 1996       API 121973712800         16 - 32N - 9E	hale & limestone	20	350	
Asing: 5. BLACK STEEL from 0' to 60' Trout: BENTONITE from 0 to 60. Hater from shale & limestone at 60' to 350'. tatic level 15' below casing top which is 0' above 6L umping level 330' when pumping at 0 gpm for 2 hours ermanent pump installed at 330' on May 16, 1996, with a capacity of 7 gpm dditional ocation info: ddress of well: cotation source: Location from permit ocation source: Location from permit ocation source: Location from permit ocation source: Location from permit Maxim ATE DRILLED May 15, 1996 LEVATION 0 COUNTY Will AFI 121973712800 16 - 32N - 9E	otal Depth		350	
wrout: BENYONITE from 0 to 60.         hater from shale 6 limestone at 60 to 350".         tatic level 15 below casing top which is 0 above GL         umping level 330 when pumping at 0 gpm         dditional         ocation info:         ddress of well:         ocation source:         location from permit         ocation from permit         ocation source:         location from permit         ocation from permit	Casing: 5" BLACK STEEL from 0' to 60'			
dditional ocation info: ddress of well: ocation source: Location from permit ocation source: Location from permit Location from from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from permit source: Location from per	Grout: BENTONITE from 0 to 60. Water from shale & limestone at 60 to 350'. Static level 15' below casing top which is 0' al Pumping level 330' when pumping at 0 gpm for 2 & Permanent pump installed at 330' on May 16, 1994 of 7 gpm	bove GL hours 5, with a capacity	· · · ·	
ddress of well: ocation source: Location from permit exmit Date: May 9, 1996 Parmit 0. OMPANY Fordonski, Keith ARM ATE DRILLED May 15, 1996 NO. LEVATION 0 COUNTY NO. 37129 OCATION SW NW SW ATITUDE API 121973712800 16 - 32N - 9E	dditional ocation info:			
ocation source: Location from permit ermit Date: May 9, 1996 Permit 0: OMPANY Fordonski, Keith ARM Fordonski, Keith ARM Fordonski, Keith ARM FORMARY 15, 1996 NO. LEVATION 0 COUNTY NO. 37128 OUNTY Will LONGITUDE API 121973712800 16 - 32N - 9E	Address of well:			• •
ATE DRILLED May 15, 1996 ATE DRILLED May 15, 1996 ATE DRILLED May 15, 1996 LEVATION 0 COUNTY NO. 37128 OCATION SW NW SW ATTUDE COUNTY Will API 121973712800 16 - 32N - 9E	ocation source: Location from permit	-		·
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LEVATION 0 COUNTY NO. 37128 OCATION SW NW SW ATITUDE LONGITUDE COUNTY WILL API 121973712800 16 - 32N - 9E	ATE DRILLED May 15, 1996 NO.			
OUNTY WILL API 121973712800 16 - 32N - 9E	LEVATION 0 COUNTY NO. 371 OCATION SW NW SW	28		
	COUNTY WILL API 121973712	800 16 - 32	N - 98	

REC - 275

Page 1	IDDINOIS SIRIE GEOROGICAL S	JRVEI	
Private Nat	er Nell	тор	Bottom
sand	· · ·	0	20
shale	· · · · · · · · · · · · · · · · · · ·	20	100
limestone		100	110
limestone &	shale	110	260
limestone		260	470
Total Depth	· · · · · · · · · · · · · · · · · · ·		470
Casing:	5. STEEL from 0. to 110.		
Crout DENIMA	NITE from 0 to 110.		
Water from 1	imestone at 260' to 470'.		
Static level	50' below casing top which is 1' above GL		:
Pumping leve	1 450' when pumping at 0 gpm for 4 hours		
Permanent pu	mp installed at 450° on October 21, 1996, wi	th a	i
	capacity of 5 gpm		;
Additional			
location inf	o:		Ì
Adress of w	.11.		i
WUICSS OF W			
Location sou:	rce: Location from permit		
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	· · · ·		
			i i
ermit Date:	September 18, 1996 Permit #1	·	<del></del>
COMPANY F	ordonski, Keith		
PARM			
DATE DRILLE	D October 21, 1996 NO.		
	COUNTY NO. 37229		

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ELEVATION 0

LOCATION LATITUDE

COUNTY

SW NN SW

WIII

LONGITUDE

API 121973722900

16 - 32N - 9E

Well Cons. Juction Report

White Copy: W.C.H.D. Yellov Copy: Well Contractor

V-- P11--1 14. VALOF Front PULLICACING ۍ ∩ Kind and Velght willin 15. Casing and Liner Pipe 13. Location: SE 10. Vell Sile Address 12. Pomili Ho.<u>24</u> 11. Property Omj Tax / 9. brilled . . . . Type Color ş Å. In Rock y 70 (51. 015-51-01 Depth Y TYPO JEILOG Qq Model Ne. Depth and submitted to the appropriate office depending an which township the wall is located. See listing at bottom of page. This form must be completed within 30 days of well completion mage atta women Depth of setting 100 2. Vell fumiches viter for human consumption? <u>-</u> ŝ Date FRON (FL.) Finished in Drift i i Orive Pipe Dias. ğ 5. Voll top sealed? Yes Y No Ĉ Permanent pump Installad' Yes Y HANNEALVER J V ALLACO Hele Diam. ¦ ₽ TOUNT How attached to casingl ¥... 7. Vell dithfected? Yes 2/ volva Manufacturer (20010) TRINGS Burled Slab: Location 1. Type of Vell b. Ortven___ Capacity _ c. Drilled d. Grout: 4. Bored

Will County Health Dept. Environmental Health 501 [1]à Avenue Joliàl, 11. 60433 (015) 127-4490 [815] 127-4490 Chennehon Hev Lenox Cutter

Will County Nealth Dapt. Environmental Nealth 701 N. Lockport St. Plainfield, 1L 60544 (815) 436-6871

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8. Pump and equipment disinfected Yes)

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Will County Health Dept. Environmental Mealth 800 University Park University Park, 1L 60466 (108) 127-8803 (708) 534-0600

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Shew location (in ); I John Ŀ in section Depth of 5-カビー, y. above Bottom BLAILLING LICONIE NOVIZ - (X) V 11 No. 17 19. Statle level <u>JU</u>rt below casing top which is <u>DU</u>r. ground level. Pumping level <u>JU</u>rt, pumping operation 5 Depth of Date lerved 2 17. Star hole balow casing 45/4 in. 18. Ground 8107.3 GEOLOGICAL AND VATER SURVEYS VELL RECORD 10 (11) **۲** Top County 16. Screen: Dian Allin. Length - In. Stat Size_ Well door 400 Sec. י ז From ((1) 9 20. Earth Hatartala Passed Through 610 151

Continue on separate sheet if necessary.

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G-22N S-2 /10	COBSII 104 KEPOIT Date June 48	13. Property Owner GEOLOGICAL & WATER SURVEY WELL RECORD 14. Driller CORFLECT ST PAUGE License #092-002/8.2 Name of Drilling Company DEFE LUELL V PUMP License #092-002/8.2 Permit No. (47-00-00-6-5 D D Date Issued 16.	18. Weil SITE address Township Name LEED Subdivision Name b. Township 21 A Range 26 Section b. Township 21 A Range 26 Section c. 5. Ouarter A & Ouarter A C Ouarter	d. coordinates: Site Elevation f.(G) 22. Casings, Liners*, & Screen Information Diam. (in.) Material Joint Slot Size From (h) To (f.) $\overline{Sr'} PV \subseteq C/U = J = \overline{Slot Size} + I$ $\overline{Sr'} PV \subseteq C/U = J = \overline{Slot Size} + I$ $\overline{Slot Size} + I$ $\overline{Slot Size} = 0.001$	(*) (List reason for liner, type of upper and lower scals installed) 23. Water from <u>AAND V (AND) Mar</u> a depth of <u>An</u> A. to <u>A</u> A. a. static water level <u>AD</u> A. below casing which is <u>An</u> . an above ground a static water level is <u>A</u> anomalon <u>A</u> memory shore stronged to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another second to <u>A</u> another se	24. Earth Materials Passed Through From (ft.) To (ft.)	SAND - GRAVEL 20 38				(ITARY HOLE, fill out log-& indicate how hole was sealed)
	WCII 4 COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT	<ol> <li>Type of Well: a. Driven Well: Casing diam. in. Depth f.</li> <li>Bored Well: Buried Slab [] Yes [] No</li> <li>Hole Diameter in. to ft.; in. to ft.; in. to ft.</li> <li>E. Drilled Well: PVC casing Formation packer set at depth of ft.</li> <li>Hole Diameter in. to ft.; in. to ft.; in. to ft.</li> </ol>	Type of Grout # of Bags Grout Weight From (A.) To (A.) Tremie Depth (A.) BEAHDNULLC   Q.(6, per 32 0 VES 5 d. Drilled Well: Steel Casing Mechanically Driven [ ] Yes [ ] No	Holc Diameterin. tofh.;in. toft.;in. toft. Type of Grout # of Bags Grout Weight From (A.) To (A.) Tremie Depth (ft.)	- e. Well finished within: [PJ.Unconsolidated Materials []Bedrock I. Kind of Gravel Sand Pack Grain Size/Supplier # From (A.) To (A.) アビチ しんそいたし パイ 38 33	2. Well Use: [X] Domestic [] Irrigation [] Commercial [] Livestock [] Monitoring [] Other	<ol> <li>Date Well Completed: 6 - 7 - 2 0 Well Disinfected PC Yes [] No Driller's estimated well yield 6 - 7 - 2 0 m</li> <li>Date Permanent Pump Installed 6 - 2 - 2 0 0 m</li> <li>Pump Capacity 10 gpm Set at (depth) 30 ft.</li> </ol>	6. Pitless Adapter Model and Manufacturer. DAKE K. [B. Capitye and Manufacturer DAKE K. [B. Capitye Air.K] Yes [] No 8. Pressure Tank: Working Cycle [3:5 gals. Capitye Air.K] Yes [] No 9. Pump System Disinfected: [ Yes [] No	11. Pumpinshile: KACY SWAN Shile # 101-00467 12. Labert Trans. Iscense # 101-00255	Illinois Department of Public Health $\mathcal{OAH} 38837$ Division of Environmental Health	525 W. Jefferson Street Springfield, IL 62761 マンジマリレ DO Not write on these lines

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form has been approved by the Forms Management Center. 1L 482-0126 rev. 12/98

ment of Public Health DNSTRUCTION REPORT 13. Property Date Did Did Did Did Did Did Did Did AND WATER SURVEY WELL RECORD	15. Name of Drilling Co.       11. 11. 11. 11. 11. 11. 11. 11. 11. 11.	22. Casings, Lincrs ⁺ and Screen Information Diam. (in.) Material Joint Stor Size From. (il.) To (n.) Strip WC CULE 1/3Cot 22 3.2 Strip WC CULE SOR 21 4.2 Strip 22	(List reason for liner, type of upper and kuver scals insulted) 23. Water from Land Land Land Lane scale insulted) a. Static water level E. A. below casing which is 2.7n. above ground b. Pumping level is 2.2. A. pumping <u>S. Epm</u> after pumping for <u>bours</u> 24. Earth Materials Passed Through From (A.) To (A.)		(If the following and indicate how hole was scaled.) Of OD OF 25 Number Well Contractor Signature License Number SEE REVERSE SIDE FOR ADDITIONAL INFORMATION
TYPE OR PRESS FIRMLY WITH BLACK INK PEN.       COMPLETE WITHIN 30 DAYS OF         WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.       1. Type of Well a. Driven Well Casing diam.	b. Bored Well Buried Slab [] Yes [] No Hole Diameter in to $R$ ; in to $R$ ; in to $R$ ; in to $R$ . Corribut Well PYC quaing Formation packet set at depth of $\frac{1}{200}$ , $R$ . Hole Diameter Opin to $R$ in to $R$ . Hole Diameter Opin to $R$ in to $R$ . d. Drilled Well Steel Casing - · · Mechanically Driven [] Yes [] No Hole Diameter in to $R$ .	<ul> <li>C. Well finished within [] Unconsolidated Materiais [] Bedrock</li> <li>f. Kind of Grayel Sand Pack Grain Size/Supplier # From (f). To (f).</li> </ul>	<ol> <li>Well Use Domestic [] Irrigation [] Commercial [] Livestock</li> <li>Monitoring [] Other</li> <li>Date Well Completed</li></ol>	9. Pump System Disinfected Ky Yes [ ] No 10. Name of Pump Company For For License # [0. Content of Pump Contractor Signature 11. Pump Installer Jun AC HIC License # [0. Content of Pump Contractor Signature License # [0. Content of Pump Contractor Signature License # [1. 5 44] Division of Environmental Health 255 W. Jefferson St.	Springfield. IL 62761 MPOINTANT NOTICE: This Alle agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 83-0863. DISCLOSURE OF THIS INFORMATION IS MANDATORY. This form has been approved by the Forms Management Center.

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PORT _ Date tebruary 22, 1999	ID WATERSURVEY WELL RECORD	y Name LOCK ODET Well + PULMP, JAC.	11) 15 Cert S. Lot N/A Elevation HAK. A.	r of the <u>NE</u> Quarter of the <u>Stud</u> Quarter r Pipe: 20. Screen:	$\frac{1}{6.625} \frac{1}{0.0} + \frac{1}{1} \frac{1}{60}$ Stot Size -	20. 0.257 Thick net of 157 315 Material 57. PETE at depth 615 A. to 680 A.	200 R. Puriping gpts for 1 bours.	30	30 100 ALE 160 IST	Ne 155 200	200 260	610 Pto					sheet if necessary	Matherly 102-002433	Signature / Licease Number
MEIT CONSTRUCTION RE	PE OR PREASE FIRMLY WITH BLACK INK PEN, THIS RM MUST BE COMPLETED WITHIN 30 DAYS OF COMPLETION D SENT TO THE APPROPRIATE HEALTH DEPARTMENT 11. Permit Number	Date Well, Completed JUNUAYU 28, 1999 13. Drilling Compa Use: Pf Domestic [] Imigation [] Commercial [] Livertock 14. Name of Person [] Monitoring [] Other	Type of Welt: a. Bored Welt: Hole Diameter in. Depth A. A. 17. Subdivision Na. Casing Diameter in Burnd Stary 1 1yes 1 1hh	b. Driven Well: Drive Pipe Diameterin. Depth A. 19. Casing and Lin. Casing Depth ABO A. 19. Casing and Lin. Casing Depth ABO A. 19. Casing and Lin. Casing Diameter 6 in. Type SM2 2.1 Ioint 8 Diameter 6 in. Type SM2 2.1 Ioint 8	king Grout: Overwized Verwith Toffth Toffth 6 Sbr 2	BENTONIAL ORDUT 10" 10 160 21. Water from 22. Static Level 34	Finished In; Unconsolidated [ ] Gravel Pack: [ ]Yea [ ]No Pumping Level Rock [ ] Grain Size 23 Farth Materials	Well Disinfected? West [ ]No	Dete Permanent Pump Installed YEDYU BULL 6, 1477 [1] OLD	License Number 102 - 002433	Pideas Adapter Installed? DYres []No	Altached to Casing - How? [] Screwed On [] Welded. XI Compression 51. Per-	Type of Well Cap VELMUN DEDOF Tank Working Cycle 9, 8 Relious Captive Air: MYesi I INo	Pump and Equipment Disinfected? MYca []No	aeral Comments: (If dry hole, fill out log & indicate how hole was sealed.)	inois Department of Public Health vision of Environmental Health - 525 W. Jefferson CO # 382 4/5	ringfield, IL 62761 Q 3.04140	ORTANT NOTICE. This State Agency in requesting disclosum of information that is necessary to complish the manutory purpose as outlised water Public Act 85-0863. Disclosure of this information	nandatory. This form has been approved by the Forms Management Center.

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**, SEE REVERSE SIDE FOR ADDITIONAL INFORMATION** 

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# APPENDIX C

# QUALITY ASSURANCE PROGRAM - TELEDYNE BROWN ENGINEERING, INC.

T	TELEDYNE BROWN ENGINEERING, INC.	
	A Teledyne Technologies Company	

Rev. 8 Effective October 26, 2005 Document K-QAM-1

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# **REVISION HISTORY**

Revision 7	Complete re-write	January 1, 2005	Bill Meyer
Revision 8	Updated organization chart, minor change to 1.0, 4.4, 7.5.3.2, 10.2.3, and 12.3		

#### Knoxville QAM Section Introduction

1.0

This Quality Assurance Manual (QAM) and related Procedures describes the Knoxville Environmental Services Laboratory's QA system. This system is designed to meet multiple quality standards imposed by Customers and regulatory agencies including:

NRC's 10 CFR 50 Appendix B NRC's Regulatory Guide 4.15 DOE's Order 414.1 DOE's QSAS ANSI N 42.23 ANSI N 13.30 NELAC Standard, Chapter 5

The Environmental Services (ES) Laboratory does low level radioactivity analyses for Power Plants and other customers. It primarily analyzes environmental samples (natural products from around plants such as milk), in-plant samples (air filters, waters), bioassay samples from customer's employees, and waste disposal samples (liquids and solids).

Potable and non-potable water samples are tested using methods based on EPA standards as cited in State licenses (see Procedure 4010). The listing [current as of initial printing of this Manual – see current index for revision status and additions / deletions] of implementing Procedures (SOPs) covering Administration, Methods, Counting Instruments, Technical, Miscellaneous, and LIMS is shown in Table 1-1. Reference to these Procedures by number is made throughout this QAM.

Number	Title
Part 1	Administrative Procedures
1001	Validation and Verification of Computer Programs for Radiochemistry Data Reduction
1002	Organization and Responsibility
1003	Control, Retention, and Disposal of Quality Assurance Records
1004	Definitions
1005	Data Integrity
1006	Job Descriptions
1007	Training and Certifications
1008	Procedure and Document Control
1009	Calibration System
1010	Nonconformance Controls
1011	10CFR21 Reporting
1012	Corrective Action and Preventive Action

#### Table 1-1

Number	Title
1013	Internal Audits and Management Reviews
1014	RFP, Contract Review, and Order Entry (formerly 4001)
1015	Procurement Controls
Part 2	Method Procedures
2001	Alpha Isotopic and Plutonium-241
2002	Carbon-14 Activity in Various Matrices
2003	Carbon-14 and Tritium in Soils, Solids, and Biological Samples; Harvey Oxidizer Method
2004	Cerium-141 and Cerium-144 by Radiochemical Separation
2005	Cesium-137 by Radiochemical Separation
2006	Iron-55 Activity in Various Matrices
2007	Gamma Emitting Radioisotope Analysis
2008	Gross Alpha and/or Gross Beta Activity in Various Matrices
2009	Gross Beta Minus Potassium-40 Activity in Urine and Fecal Samples
2010	Tritium and Carbon-14 Analysis by Liquid Scintillation
2011	Tritium Analysis in Drinking Water by Liquid Scintillation
2012	Radioiodine in Various Matrices
2013	Radionickel Activity in Various Matrices
2014	Phosphorus-32 Activity in Various Matrices
2015	Lead-210 Activity in Various Matrices
2016	Radium-226 Analysis in Various Matrices
2017	Total Radium in Water Samples
2018	Radiostrontium Analysis by Chemical Separation
2019	Radiostrontium Analysis by Ion Exchange
2020	Sulfur-35 Analysis
2021	Technetium-99 Analysis by Eichrom Resin Separation
2022	Total Uranium Analysis by KPA
2023	Compositing of Samples
2024	Dry Ashing of Environmental Samples
2025	Preparation and Standardization of Carrier Solutions
2026	Radioactive Reference Standard Solutions and Records
2027	Glassware Washing and Storage
2028	Moisture Content of Various Matrices
2029	Polonium-210 Activity in Various Matrices
2030	Promethium-147 Analysis

Number	Title
Part 3	Instrument Procedures
3001	Calibration and Control of Gamma-Ray Spectrometers
3002	Calibration of Alpha Spectrometers
3003	Calibration and Control of Alpha and Beta Counting Instruments
3004	Calibration and Control of Liquid Scintillation Counters
3005	Calibration and Operation of pH Meters
3006	Balance Calibration and Check
3008	Negative Results Evaluation Policy
3009	Use and Maintenance of Mechanical Pipettors
3010	Microwave Digestion System Use and Maintenance
Part 4	Technical Procedures
4001	Not Used
4002	QC Checks on Data
4003	Sample Regent and Control
4004	Data Package Preparation and Reporting
4005	Blank, Spike, and Duplicate Controls
4006	Inter-Laboratory Comparison Study Process
4007	Method Basis and Initial Validation Process
4008	Not Used
4009	MDL Controls
4010	State Certification Process
4011	Accuracy, Precision, Efficiency, and Bias Controls and Data Quality Objectives
4012	Not Used
4013	Not Used
4014	Facility Operation and Control
4015	Documentation of Analytical Laboratory Logbooks (formerly 1002)
4016	Total Propagated Uncertainty (formerly 1004)
4017	LIMS Operation
4018	Instrument Calibration System
4019	Radioactive Reference Material Standards
Part 5	Miscellaneous Procedures
5001	Laboratory Hood Operations
5002	Operation and Maintenance of Deionized Water System
5003	Waste Management
5004	Acid Neutralization and Purification System Operation Procedure

Part 6	LIMS
6001	LIMS Raw Data Processing and Reporting
6002	Software Development and/or Pilots of COTS Packages
6003	Software Change and Version Control
6004	Backup of Data and System Files
6005	Disaster Recovery Plan
6006	LIMS Hardware
6007	LIMS User Access
6008	LIMS Training
6009	LIMS Security

# 2.0 QUALITY SYSTEM

The TBE-ES QA system is designed to comply with multiple customer- and regulatory agency-imposed specifications related to quality. This quality system applies to all activities of TBE-ES that affect the quality of analyses performed by the laboratory.

#### 2.1 <u>Policy</u>

The TBE quality policy, given in Company Policy P-501, is "TBE will continually improve our processes and effectiveness in providing products and services that exceed our customer's expectations."

This policy is amplified by this Laboratory's commitment, as attested to by the title page signatures, to perform all work to good professional practices and to deliver high quality services to our customers with full data integrity. (See Section 4.0 and Procedure 1005).

#### 2.2 <u>Quality System Structure</u>

The Quality System is operated by the organizations described in Section 3.0 of this Manual. The Quality System is described in this Manual and in the Procedures Manual, both of which are maintained by the QA Manager. Procedures are divided into 6 sections – Administrative, Methods, Equipments, Technical, Miscellaneous, and LIMS. This Manual is structured as shown in the Table of Contents and refers to Procedures when applicable. Cross references to the various imposed quality specifications are contained in Appendices to this Manual.

#### 2.3 Quality System Objectives

The Quality System is established to meet the objective of assuring all operations are planned and executed in accordance with system requirements. The Quality System also assures that performance evaluations are performed (see Procedure 4006), and that appropriate verifications are performed (see Procedures in the 1000 and 4000 series) to further assure compliance. Verification includes

examination of final reports (prior to submittal to customers) to determine their quality (see Procedure 4004).

To further these objectives, various in-process assessments of data, as well as assessments of the system, via internal audits and management reviews, are performed. Both internal experts and customer / regulatory agencies perform further assessments of the system and compliance to requirements.

# 2.4 <u>Personnel Orientation, Training, and Qualification</u>

TBE provides indoctrination and training to employees and performs proficiency evaluation of technical personnel. This effort is described in Section 4.0.

# 3.0 ORGANIZATION, AUTHORITY, AND RESPONSIBILITY

TBE has established an effective organization for conducting laboratory analyses at the Knoxville Environmental Services Laboratory. The basic organization is shown in Figure 3-1. Detail organization charts with names, authorities, and responsibilities are given in Procedure 1002. Job descriptions are given in Procedure 1006.

This organization provides clearly established Quality Assurance authorities, duties, and functions. QA has the organizational freedom needed to:

- (1) Identify problems
- (2) Stop nonconforming work
- (3) Initiate investigations
- (4) Recommend corrective and preventive actions
- (5) Provide solutions or recommend solutions
- (6) Verify implementation of actions

All Laboratory personnel have the authority and resources to do their assigned duties and have the freedom to act on problems. The QA personnel have direct, independent access to Company management as shown in Figure 3-1.



Figure 3.1. Laboratory Organization

# 4.0 PERSONNEL ORIENTATION, DATA INTEGRITY, TRAINING, AND QUALIFICATION

# 4.1 <u>Orientation</u>

All laboratory personnel must receive orientation to the quality program if their work can affect quality. Orientation includes a brief review of customer- and regulatory agency-imposed quality requirements, the structure of the QAM, and the implementing procedures. The goal of orientation is to cover the nature and goals of the QA program.

# 4.2 Data Integrity

The primary output of the Laboratory is data. Special emphasis and training in data integrity is given to all personnel whose work provides or supports data delivery. The Laboratory Data Integrity Procedure (Procedure 1005) describes training, personnel attestations, and monitoring operations. Annual reviews are required.

# 4.3 <u>Training</u>

The Quality Assurance Manager (QAM) maintains a training matrix indicating which laboratory personnel need training in which specific Procedures. This matrix is updated when personnel change or change assignments. All personnel are trained per these requirements and procedures. This training program is described in Procedure 1007. The assigned responsibilities for employees are described in Procedure 1002 (See Section 3.0) on Organization and in Procedure 1006, Job Descriptions. Refresher training or re-training is given annually as appropriate.

#### 4.4 **Qualification**

Personnel are qualified as required by their job description. Management and non-analysts are evaluated based on past experience, education, and management's assessment of their capabilities. Formal qualification is required of analysts and related technical personnel who perform laboratory functions. Each applicable person is given training and then formally evaluated by the Operations Manager (or his designees) and by QA. Each analyst must initially demonstrate capability to perform each assigned analytical effort. Each year, thereafter, he or she must perform similar analyses on Interlab Comparison Samples (see Procedure 4006) or on equivalent blanks and spikes samples. Acceptable results extend qualifications (certification). Unacceptable results require retraining in the subject method / Procedures. (See Procedure 1007 for added information, records, forms, etc. used.)

#### 4.5 <u>Records</u>

Records of training subjects, contents, attendees, instructors, and certifications are maintained by QA.

# 5.0 CUSTOMER INTERFACES

# 5.1 Interface Personnel

The Laboratory has designated Program Managers as the primary interface with all customers. Other interfaces may be the QA Manager or the Lab Operations Manager.

# 5.2 Bid Requests and Tenders

The Program Managers respond to customer requests for bids and proposals per Procedure 1014 for bids, proposals, and contract reviews. They clarify customer requests so both the customer and the lab staff understand requests. As responses are developed, internal reviews are conducted to ensure that requirements are adequately defined and documented and to verify that the Laboratory has adequate resources in physical capabilities, personal skills, and technical information to perform the work. Accreditation needs are reviewed. If subcontracts are required to perform any analysis, the subcontractor is similarly evaluated and the client notified in writing of the effort. Most qualifications are routine with standard pricing and the review of these quotes is performed by the Program Manager. Larger or more complex quotes are reviewed by the Operations Manager and the QA Manager (or designees). Evidence of review is by initialing and dating applicable papers, signatures on quotations, or by memo.

# 5.3 <u>Contracts</u>

The Program Manager's receive contract awards (oral or written) and generate the work planning for initiation preparation (charge numbers, data structure or contents in LIMS, etc.). They review contracts for possible differences from quotations and, if acceptable, contracts are processed. Documentation of the review is by initials and date as a minimum. Contract changes receive similar reviews and planning.

#### 5.4 <u>TBE's Expectation of Customers</u>

TBE expects customers to provide samples suitable for lab analysis. These expectations include:

- Accurate and unambiguous identification of samples
- Proper collection and preservation of samples
- Use of appropriate containers free from external and internal contamination
- Integrity preservation during shipment and timely delivery of samples that are age sensitive
- Adequate sized samples that allow for retest, if needed
- Specification of unique MOA/MDC requirements
- Alerting the lab about abnormal samples (high activity, different chemical contents, etc.)
- Chain of custody initiation, when required.

# 5.5 <u>Customer Satisfaction</u>

TBE's quality policy centers on customer satisfaction (See 2.0). TBE will work to satisfy customers through full compliance with contract requirements, providing accurate data and properly responding to any questions or complaints. Customers are provided full cooperation in their monitoring of Laboratory performance. Customers are notified if any applicable State Accreditation is withdrawn, revoked, or suspended.

#### 5.5.1 <u>Customer Complaints</u>

Any customer complaints are documented and tracked to closure. Most complaints concern analysis data and are received by Program Managers. They log each such complaint, order retests for verification, and provide documented results to customers. Complaints may also be received by QA or Operations.

If complaints are other than re-test type, the nonconformance and corrective action systems (Sections 12 and 13) are used to resolve them and record all actions taken.

#### 5.5.2 Customer Confidentiality

All laboratory personnel maintain confidentiality of customer-unique information.

# 6.0 DOCUMENTATION GENERATION & CONTROL

# 6.1 <u>General</u>

The documentation generation and control system is detailed in Procedure 1008. An overview is given below. The basic quality system documents are described in Section 2.0.

# 6.2 <u>New Documentation</u>

Each Procedure and this QAM is written by appropriate personnel, validated if applicable (see Section 7.0), reviewed for adequacy, completeness, and correctness, and, if acceptable, accepted by the authorized approver [QA Manager, Operations Manager (or their designee)]. Both approvals are required if a Procedure affects both QA and Operations. (See Responsibilities in Section 3.0). These procedures control the quality measurements and their accuracy.

Each document carries a unique identification number, a revision level, dates, page numbers and total page count, and approver identification and sign off. If TBE writes code for software, the software is version identified and issued after Verification and Validation per Section 7.0.

#### 6.3 **Documentation Changes**

Each change is reviewed in the same manner and by the same people as new documentation. Revision identifications are updated and changes indicated by side bars, italicized words, or by revision description when practical. Obsolete revisions are maintained by QA after being identified as obsolete.

#### 6.4 **Documentation Lists and Distributions**

Computer indexes of documents are maintained by Quality showing the current authorized revision level of each document. These revisions are placed on the Laboratory server and obsolete ones are removed so that all personnel have only the current documents. If hard copies are produced and distributed, separate distribution lists are maintained indicating who has them and their revision level(s). Copies downloaded off the server are uncontrolled unless verified by the user (on the computer) to be the latest revision.

#### 6.5 <u>Other Documentation</u>

In addition to TBE-generated documentation, QA maintains copies of applicable specifications, regulations, and standard methods.

#### 6.6 **Documentation Reviews**

Each issued document is reviewed at least every third year by the approving personnel. This review determines continued suitability for use and compliance with requirements.

# 7.0 DESIGN OF LABORATORY CONTROLS

# 7.1 <u>General</u>

The Laboratory and its operating procedures are designed specifically for low level (environmental and in-plant) radioactive sample analysis. The various aspects of the laboratory design include the following which are discussed in subsequent paragraphs of this Section:

- (a) Facility
- (b) Technical Processes and Methods
- (c) Verification of Design of Processes, Methods, and Software.
- (d) Design of Quality Controls
- (e) Counting Instrument Controls

# 7.2 <u>Facility</u>

The facility was designed and built in 2000 to facilitate correct performance of operations in accordance with good laboratory practices and regulatory requirements. It provides security for operations and samples. It separates sample storage areas based on activity levels, separates wet chemistry from counting instrumentation for contamination control, and provides space and electronic systems for documentation, analysis, and record storage. Procedure 4014 describes the facility, room uses, layouts, etc.

# 7.3 <u>Technical Processes and Methods</u>

#### 7.3.1 Operational Flow

The laboratory design provides for sample receipt and storage (including special environmental provisions for perishable items) where samples are received from clients and other labs (see Section 9.0). The samples are logged into the computer based Laboratory Information Management System (LIMS) and receive unique identification numbers and bar code labels. (See Procedure 4017 for LIMS description and user procedures). The Program Managers then plan the work and assure LIMS contains any special instructions to analysts. Samples then go to sample preparation, wet chemistry (for chemical separation), and counting based on the radionuclides. See Procedures in the 2000 and 3000 series. Analysts perform the required tasks with data being entered into logbooks, LIMS, and counting equipment data systems as appropriate. Results are collected and reviewed by the Operations Manager and Program Managers and reports to clients are generated (See Section 14.0). All records (electronic or hard copy) are maintained in files or in back-up electronic copies (see Section 15.0). After the required hold periods and client notification and approval, samples are disposed of in compliance with regulatory requirements (see Procedures 5003 and 5004).

# 7.3.2 Methods

The laboratory methods documented in the 2000 and 3000 series of Procedures were primarily developed by senior TBE laboratory personnel based on years of experience at our prior facility in New Jersey. They have been improved, supplemented and implemented here. Where EPA or other accepted national methods exist (primarily for water analyses under State certification programs - see Procedure 4010), the TBE methods conform to the imposed requirements or State accepted alternate requirements. Any method modifications are documented and described in the Procedure. There are no nationally recognized methods for most other analysis methods but references to other method documents are noted where applicable.

# 7.3.3 Data Reduction and Analysis

Whenever possible automatic data capture and computerized data reduction programs are used. Calculations are either performed using commercial software (counting system operating systems) or TBE developed and validated software is used (see 7.4 below). Analysis of reduced data is performed as described in Section 14.0 and Procedure 4004.

# 7.4 Verification of Technical Processes, Methods, and Software

# 7.4.1 Operational Flow Verification

The entire QA Manual and related procedures describe the verification of elements of the technical process flow and the establishment of quality check points, reviews, and controls.

#### 7.4.2 Method Verifications

Methods are verified and validated per Procedure 4007 prior to use unless otherwise agreed to by the client. For most TBE methods initial validation occurred well in the past. New or significantly revised Methods receive initial validation by demonstration of their performance using known analytes (NIST traceable) in appropriate matrices. Sufficient samples are run to obtain statistical data that provides evidence of process capability and control, establishes detection levels (see procedure 4009), bias and precision data (see Procedure 4011). All method procedures and validation data are available to respective clients. Also see Section 7.5 below for the Demonstration of Capability program.

#### 7.4.3 Data Reduction and Analysis Verification

Data reduction and analysis verification is performed by personnel who did not generate the data. (See Section 14.0).

#### 7.5 Design of Quality Controls

# 7.5.1 General

There are multiple quality controls designed into the laboratory operations. Many of these are described elsewhere in this manual and include personnel qualification (Section 4.0), Document control (6.0), Sample identification and control (9.0), Use of reference standards (10.0), intra- and inter- laboratory tests (10.0), etc. This Section describes the basic quality control systems used to verify Method capability and performance.

# 7.5.2 Demonstration of Capability (D of C)

The demonstration of capability system verifies and documents that the method, analyst, and the equipment can perform within acceptable limits. The D of C is certified for each combination of analyte, method, and instrument type. D of C's are certified based on objective evidence at least annually. This program is combined with the analyst D of C program (See Section 4.0). Initial D of C's use the method validation effort as covered above. Subsequent D of C's use Inter-Laboratory samples (Procedure 4006) or, if necessary, laboratory generated samples using NIST traceable standards. If results are outside of control limits, redemonstration is required after investigation and corrective action is accomplished (See Sections 12.0 and 13.0)

#### 7.5.3 Process Control Checks

Process control checks are designed to include Inter-Lab samples, Intra-lab QC check samples, and customer provided check samples. 10% of laboratory analysis samples are for process control purposes.

**7.5.3.1 Inter- Lab Samples.** Inter-lab samples are procured or obtained from sources providing analytes of interest in matrices similar to normal client samples. These samples may be used for Demonstration of Capability of analyst's, equipment and methods. They also provide for independent insight into the lab's process capabilities. Any value reported as being in the warning zone (over 2 sigma) is reviewed and improvements taken. Any value failing (over 3 sigma) is documented on an NCR and formal investigation per Section 12.0 and 13.0 is performed. If root causes are not clearly understood and fixed, re-tests are required using lab prepared samples (See Procedure 4006).

**7.5.3.2 QC Samples.** QC samples, along with Inter-lab samples and customer check samples, are 10% of the annual lab workload for the applicable analyte and method. If batch processing is used, some specifications require specific checks with each batch or each day rather than as continuous process controls. (See Procedure 4005)

QC samples consist of multiple types of samples including:

- (a) Method blanks
- (b) Blank spikes
- (c) Matrix spikes

- (d) Duplicates
- (e) Tracers and carriers

Acceptance limits for these samples are given in Procedures or in lab standards. The number, frequency, and use of these sample types varies with the method, matrix, and supplemental requirements. The patterns of use versus method and the use of the resulting test data is described in Procedure 4005.

**7.5.3.3 Customer Provided Check Samples.** Customers may provide blind check samples and duplicates to aid in their evaluation of the Laboratory. When the lab is notified that samples are check samples their results are included in the QC sample percentage counts. Any reported problems are treated as formal complaints and investigated per Section 5.

#### 7.6 <u>Counting Instrument Controls</u>

The calibration of instruments is their primary control and is described in Section 11.0. In addition, counting procedures (3000 series) also specify use of background checks (method blank data is not used for this) to evaluate possible counting equipment contamination. Instrument calibration checks using a lab standard from a different source than the one used for calibration are also used. Background data can be used to adjust client and test data. Checks with lab standards indicate potential calibration changes.

# 8.0 PURCHASING AND SUBCONTRACT CONTROLS

# 8.1 <u>General</u>

Procurement and Subcontracts efforts use the Huntsville-based Cost Point computer system to process orders. The Laboratory-generated Purchase Requisitions are electronically copied into Purchase Orders in Huntsville. The Laboratory also specifies sources to be used. Procured items and services are received at the Laboratory where receiving checks and inspections are made. Laboratory Procedure 1015 provides details on the procurement control system at the Laboratory and references the Huntsville procedures as applicable.

# 8.2 <u>Source Selection</u>

Sources for procurements of items and services are evaluated and approved by QA as described in Procedure 1015. Nationally recognized catalog item sources are approved by the QA Manager based on reputation. Maintenance services by an approved distributor or the equipment manufacturing company are pre-approved. Sources for other services are evaluated by QA, based on service criticality to the quality system, by phone, mail out, or site visit.

Subcontract sources for laboratory analysis services are only placed with accredited laboratories (by NELAP, NUPIC, State, Client, etc.) as applicable for the type of analysis to be performed. QA maintains lists of approved vendors and records of evaluations performed.

# 8.3 **Procurement of Supplies and Support Services**

# 8.3.1 Catalog Supplies

The Laboratory procures reagents, processing chemicals, laboratory "glassware," consumables, and other catalog items from nationally known vendors and to applicable laboratory grades, purities, concentrations, accuracy levels, etc. Purchase Requisitions for these items specify catalog numbers or similar call-outs for these off-the-shelf items. Requisitions are generated by the personnel in the lab needing the item and are approved by the Operations or Production Manager. Reagents are analytical reagent grade only.

# 8.3.2 Support Services

Purchase Requisitions for support services (such as balance calibration, equipment maintenance, etc.) are processed as in 8.3.1 but technical requirements are specified and reviewed before approvals are given.

# 8.3.3 Equipment and Software

Purchase Requisitions for new equipment, software programs, and major facility modifications affecting the quality system are reviewed and approved by the Operations Manager and the QA Manager.

#### 8.4 <u>Subcontracting of Analytical Services</u>

When necessary, the Laboratory may subcontract analytical services required by a client. This may be because of special needs, infrequency of analysis, etc. Applicable quality and regulatory requirements are imposed in the Purchase Requisition and undergo a technical review by QA. TBE reserves the right of access by TBE and our client for verification purposes.

#### 8.5 Acceptance of Items or Services

Items and services affecting the quality system are verified at receipt based on objective evidence supplied by the vendor. Supply items are reviewed by the requisitioner and, if acceptable, are accepted via annotation on the vendor packing list or similar document. Similarly, equipment services are accepted by the requisitioning lab person. Calibration services are accepted by QA based on certification reviews. (See Section 11.0.)

Data reports from analytical subcontractors are evaluated by Program Managers and subsequently by the Operations Manager (or designee) as part of client report reviews.

Items are not used until accepted and if items or services are rejected, QA is notified and nonconformance controls per Section 12.0 are followed. Vendors may be removed from the approved vendor's list if their performance is unacceptable.

# 9.0 TEST SAMPLE IDENTIFICATION AND CONTROL

# 9.1 Sample Identification

Incoming samples are inspected for customer identification, container condition, chain of custody forms, and radioactivity levels. If acceptable, the sample information is entered into LIMS which generates bar coded labels for attachment to the sample(s). The labels are attached and samples stored in the assigned location. If environmental controls are needed (refrigeration, freezing, etc.), the samples are placed in these storage locations. If not acceptable, the Program Manager is notified, the customer contacted, and the problem resolved (return of sample, added data receipts, etc.). See Procedure 4003 for more information on sample receipt.

# 9.2 <u>LIMS</u>

The LIMS is used to schedule work, provide special information to analysts, and record all actions taken on samples. See Procedure 4017 and the 6000 series of procedures for more information on LIMS operations.

#### 9.3 <u>Sample Control</u>

The sample, with its bar coded label, is logged out to the applicable lab operation where the sample is processed per the applicable methods (Procedures 2000 and 3000). The LIMS-assigned numbers are used for identification through all operations to record data. Data is entered into LIMS, log books (kept by the analysts) or equipment data systems to record data. The combination of LIMS, logbooks, and equipment data systems provide the Chain of Custody data and document all actions taken on samples. Unused sample portions are returned to its storage area for possible verification use. Samples are discarded after required time limits are passed and after client notification and approval, if required.

# 10.0 SPECIAL PROCESSES, INSPECTION, AND TEST

#### 10.1 <u>Special Processes</u>

The Laboratory's special processes are the methods used to analyze a sample and control equipment. These methods are defined in Procedures in the 2000 and 3000 series. These processes are performed to the qualified methods (see Section 7.0) by qualified people (see 4.0).

#### 10.2 Inspections and Tests

The quality of the process is monitored by indirect means. This program involves calibration checks on counting equipments (see Section 11.0), intralaboratory checks, and inter-laboratory checks. In addition, some customers submit quality control check samples (blinds, duplicates, external reference standards). All generated data gets independent reviews.

#### 10.2.1 Intra Laboratory Checks (QC Checks)

The quantity and types of checks varies with the method, but basic checks which may include blanks, spiked blanks, matrix spikes, matrix spike duplicates, and duplicates are used as appropriate for customer samples. This process is described in Procedure 4005 and in Section 7.0.

#### 10.2.2 Inter Laboratory Checks

TBE participates in Inter-lab performance evaluation (check) programs with multiple higher level labs. These programs provide blind matrices for the types of matrix/analyte combinations routinely processed by the Lab, if available. This program is described in Procedure 4006.

#### 10.2.3 Data Reviews

Raw data and reports are reviewed by the Operations Manager, or designees. This review checks for data logic, expected results, procedure compliance, etc. (See Section 14.0).

#### 10.3 Control of Sampling of Samples

Samples for analysis are supplied by customers preferably in quantities sufficient to allow re-verification analyses if needed. The samples are prepared for analysis by analysts and then an aliquot (partial sample extraction) is taken from the homogeneous customer sample for the initial analysis. Methods specify standard volumes of sample material required. Sampling data is recorded in LIMS and/or logbooks.

#### 10.4 <u>Reference Standards / Material</u>

# 10.4.1 Weights and Temperatures

Reference standards are used by the Laboratory's calibration vendor to calibrate the Labs working instruments measuring weights and thermometers.

#### 10.4.2 Radioactive Materials

Reference radioactive standards, traceable to NIST, are procured from higher level laboratories. These reference materials are maintained in the standards area and are diluted down for use by laboratory analysts. All original and diluted volumes are fully traceable to source, procedure, analyst, dilution, and acquisition dates. See Section 11.0 and Procedure 1009.

# 11.0 EQUIPMENT MAINTENANCE AND CALIBRATION

# 11.1 General

There are two types of equipment used by the Laboratory: support equipment (scales, glassware, weights, thermometers, etc.) and instruments for counting. Standards traceable to NIST are used for calibration and are of the needed accuracy for laboratory operations. Procedures 1009, 4018, and 4019 describe the calibration and maintenance programs.

# 11.2 <u>Support Equipment</u>

Analytical support equipment is purchased with the necessary accuracies and appropriate calibration data. If needed, initial calibration by the Laboratory or its calibration vendor is performed. Recalibration schedules are established and equipment recalibrated by the scheduled date by a calibration vendor or by Laboratory personnel. Maintenance is performed, as needed, per manufacturer's manuals or lab procedures.

In addition to calibrations and recalibrations, checks are made on the continued accuracy of items as described in Procedure 1009. Records are maintained of calibration and specified checks.

# 11.3 Instruments

Instruments receive initial calibration using radioactive sources traceable to NIST. The initial calibration establishes statistical limits of variation that are used to set control limits for future checks and recalibration. This process is described in Procedure 4018. Instruments are maintained per Instrument Manual requirements. Recalibrations are performed per the Procedure.

Between calibrations, check sources are used to assure no significant changes have occurred in the calibration of items. Background checks are performed to check for possible radioactive contamination. Background values are used to adjust sample results. Hardware and software are safeguarded from adjustments that could invalidate calibrations or results.

#### 11.4 Nonconformances and Corrective Actions

If calibrations or checks indicate a problem, the nonconformance system (Section 12.0) and corrective action system (Section 13.0) are initiated to document the problem and its resolution. Equipment is promptly removed from service if questionable.

# 11.5 <u>Records</u>

Records of calibrations are maintained. Calibration certificates from calibration vendors are maintained by QA. Other calibration data and check data is maintained in log books, LIMS, or instrument software as appropriate and as described in Procedures 1009, 4018, and 4019.

# 12.0 NONCONFORMANCE CONTROLS

#### 12.1 <u>General</u>

The nonconformance control system is implemented whenever a nonconforming condition on any aspect of Laboratory analysis, testing, or results exist. The system takes graded actions based on the nature and severity of the nonconformance. Nonconforming items or processes are controlled to prevent inadvertent use. Nonconformances are documented and dispositioned. Notification is made to affected organizations, including clients. Procedure 1010 describes the procedures followed. Sample results are only reported after resolution.

#### 12.2 <u>Responsibility and Authority</u>

Each Laboratory employee has the responsibility to report nonconformances and the authority to stop performing nonconforming work or using nonconforming equipment. Laboratory supervision can disposition and take corrective actions on minor problems. Any significant problem is documented by QA using the Laboratory's NCR system per Procedure 1010. QA conducts or assures the conduct of cause analyses, disposition of items or data, and initiation of corrective action if the nonconformance could recur.

#### 12.3 10CFR21 Reporting

The QA Manager reviews NCRs for possible need of customer and/or NRC notification per the requirements of 10CFR21. Procedure 1011 is followed in this review and for any required reporting.

# 13.0 CORRECTIVE AND PREVENTIVE ACTIONS

# 13.1 <u>General</u>

The Laboratory takes corrective actions on significant nonconformances (see Section 12.0). It also initiates preventive and improvement actions per the Company Quality Policy (see Section 2.0). The procedures for Corrective Action/Preventive Action systems are contained in Procedure 1012.

# 13.2 Corrective Actions

Corrective actions are taken by Operations and Quality to promptly correct significant conditions adverse to quality. The condition is identified and cause analysis is performed to identify root causes. Solutions are evaluated and the optimum one selected that will prevent recurrence, can be implemented by the Laboratory, allows the Laboratory to meet its other goals, and is commensurate with the significance of the problem. All steps are documented, action plans developed for major efforts, and reports made to Management. QA verifies the implementation effectiveness. Procedure 1012 provides instructions and designates authorities and responsibilities.

#### 13.3 <u>Preventive Actions</u>

Preventive actions are improvements intended to reduce the potential for nonconformances. Possible preventive actions are developed from suggestions from employees and from analysis of Laboratory technical and quality systems by management. If preventive actions or improvements are selected for investigation, the issues, investigation, recommendations, and implementation actions are documented. Follow up verifies effectiveness.

# 14.0 RESULTS ANALYSIS AND REPORTING

#### 14.1 General

The Laboratory's role is to provide measurement-based information to clients that is technically valid, legally defensible, and of known quality.

#### 14.2 <u>Results Review</u>

The results obtained from analytical efforts are collected and reviewed by the Operations Manager and the Program Manager. This review verifies the reasonableness and consistency of the results. It includes review of sample and the related QC activity data. Procedure 4002 describes the process. Any deficiencies are corrected by re-analyses, recalculations, or corrective actions per Sections 12.0 and 13.0. Use of the LIMS with its automatic data loading features (see Procedure 4017) minimizes the possibility of transcription or calculation errors.

# 14.3 Reports

Reports range from simple results reporting to elaborate analytical reports based on the client requirements and imposed specifications and standards. (See Procedure 4004.) Reports present results accurately, clearly, unambiguously, objectively, and as required by the applicable Method(s). Reports include reproduction restrictions, information on any deviations from methods, and any needed data qualifiers based on QC data. If any data is supplied by analytical subcontractors (see Section 8.0), it is clearly identified and attributed to that Laboratory by either name or accreditation number.

If results are faxed or transmitted electronically, confidentiality statements are included in case of receipt by other than the intended client.

Reports are approved by the Program Manager and Operations Manager and record copies kept in file (See Section 15.0).

# 15.0 RECORDS

#### 15.1 <u>General</u>

The Laboratory collects generated data and information related to quality or technical data and maintains them as records. Records are identified, prepared, reviewed, placed in storage, and maintained as set forth in Procedure 1003.

#### 15.2 <u>Type of Records</u>

All original observations, calculations, derived data, calibration data, and test reports are included. In addition QA data such as audits, management reviews, corrective and preventive actions, manuals, and procedures are included.

#### 15.3 Storage and Retention

Records are stored in files after completion in the lab. Files are in specified locations and under the control of custodians. Filing systems provide for retrieval. Electronic files are kept on Company servers (with regular back up) or on media stored in fireproof file cabinets. Records are kept in Laboratory files for at least 2 years after the last entry and then in Company files for another year as a minimum. Some customers specify larger periods – up to 7 years – which is also met. Generic records supporting multiple customers are kept for the longest applicable period.

#### 15.4 <u>Destruction or Disposal</u>

Records may be destroyed after the retention period and after client notification and acceptance, if required. If the Laboratory closes, records will go in to company storage in Huntsville unless otherwise directed by customers. If the Laboratory is sold, either the new owner will accept record ownership or the records will go into Company storage as stated above.

#### 16.0 ASSESSMENTS

#### 16.1 <u>General</u>

Assessments consist of internal audits and management reviews as set forth in Procedure 1013.

#### 16.2 <u>Audits</u>

Internal audits are planned, performed at least annually on all areas of the quality system, and are performed by qualified people who are as independent as possible from the activity audited. (The Laboratory's small size inhibits full independence in some technical areas.) Audits are coordinated by the Quality Manager who assures audit plans and checklists are generated and the results documented. Reports include descriptions of any findings and provide the auditor's assessment of the effectiveness of the audited activity. Report data includes personnel contacted.

Audit findings are reviewed with management and corrective actions agreed to and scheduled. Follow up is performed by QA to verify accomplishment and effectiveness of the corrective action.

#### 16.3 <u>Management Reviews</u>

The Annual Quality Assurance Report, prepared for some clients, is the Management Review vehicle. These reports cover audit results, corrective and preventive actions, external assessments, and QC and inter-laboratory performance checks. The report is reviewed with Management by the QA Manager for the continued suitability of the Quality Program and its effectiveness. Any needed improvements are defined, documented, and implemented. Follow ups are made to verify implementation and effectiveness.

**Revision 1** 

# APPENDIX D

# LABORATORY ANALYTICAL REPORTS

L28597 1 of 111

# TELEDYNE BROWN ENGINEERING

A Teledyne Technologies Company

2508 Quality Lane Knoxville, TN 37931 865-690-6819 (Phone)

# Work Order #: L28597

# Exelon

May 18, 2006



Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville CT 06062

# Case Narrative - L28597 EX001-3ESPBRAID-06

05/18/2006 15:08

#### Sample Receipt

The following samples were received on May 11, 2006 in good condition, unless otherwise noted.

WG-BW-050906-JL-009 (L28597-11) tritium bottle was broken during shipment. L28597-11 is not being reported for tritium. Sample were scheduled for total strontium, tritium, and gamma per client instructions.

	Cross Reference To	able
Client ID	Laboratory ID	Station ID(if applicable)
WG-BW-050906-MS002	L28597-1	(
WG-BW-050906-MS-004	L28597-2	
WG-BW-050906-MS-006	L28597-3	
WG-BW-050906-MS-008	L28597-4	
WG-BW-050906-MS-010	L28597-5	
WG-BW-051006-MS-012	L28597-6	
WG-BW-050906-JL-001	L28597-7	
WG-BW-050906-JL-003	L28597-8	
WG-BW-050906-JL-005	L28597-9	
WG-BW-050906-JL-007	L28597-10	
WG-BW-051006-JL-009	L28597-11	
WG-BW-051006-JL-011	L28597-12	

#### Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method
Gamma Spectrometry	TBE-2007	EPA 901.1
H-3	TBE-2010	EPA 906.0
TOTAL SR	TBE-2018	EPA 905.0



# Case Narrative - L28597 EX001-3ESPBRAID-06

05/18/2006 15:08

#### **Gamma Spectroscopy**

#### **Quality Control**

Quality control samples were analyzed as WG3975.

**Duplicate Sample** 

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	QC Sample #
WG-BW-050906-	L28597-1	WG3975-1
MS002		

#### <u>H-3</u>

#### **Quality Control**

Quality control samples were analyzed as WG3978.

#### Method Blank

All blanks were within acceptance limits, unless otherwise noted.

#### **Duplicate Sample**

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	QC Sample #
WG-BW-050906-JL-001	L28597-7	WG3978-5



Case Narrative - L28597 EX001-3ESPBRAID-06

05/18/2006 15:08

#### TOTAL SR

#### **Quality Control**

Quality control samples were analyzed as WG3996.

Method Blank

All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

**Duplicate Sample** 

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client IDLaboratory IDQC Sample #WG-BW-050906-L28597-1WG3996-3MS002MS002MS002

#### **Certification**

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter

Operations Manager

L28597 5 of 111

# **Sample Receipt Summary**

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128597 8 of 111
Page 1 of 1

Charles, Rebecca

From:	Charles, Rebecca
Sent:	Friday, May 12, 2006 1:36 PM
То:	'Shaw, Kathy'; 'Zigmund.Karpa@exeloncorp.com'; 'Larry.Walton@exeloncorp.com'; 'rick.maldonado@exeloncorp.com': 'scott sklenar@ovelencerg.com';
Subject:	Acknowledgment of receipt

The COC requests tritium and Sr 89/90. As previously instructed, we have scheduled these samples for Total

Rebecca Charles Teledyne Brown Engineering Project Manager (865) 934-0379 (865) 934-0396 (fax)

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Charles, Rebecca

 From:
 Charles, Rebecca

 Sent:
 Friday, May 12, 2006 11:17 AM

 To:
 'Shaw, Kathy'; Julie Czech (jczech@craworld.com)

 Cc:
 'Larry.Walton@exeloncorp.com'; 'Zigmund.Karpa@exeloncorp.com'

Subject: sample receipt variance report

Sample WG-BW-050906-JL-009 received 5/11/06. The tritium bottle was broken in shipment. No sample remains.

Rebecca Charles Teledyne Brown Engineering Project Manager (865) 934-0379 (865) 934-0396 (fax)

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TELEDYNE BROWN ENGINEERING 5-12-062508 Quality Lane MNOXVIIIe, TN 37931-3133

ACKNOWLEDGEMENT

This is not an invoice

May 12, 2006

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville, CT 06062

The following sample(s) were received at Teledyne Brown Engineering Knoxville laboratory on May 11, 2006. The sample(s) have been scheduled for the analyses listed below and the report is scheduled for completion by May 18, 2006. Please review the following login information and pricing. Contact me if anything is incorrect or you have questions about the status of your sample(s).

Thank you for choosing Teledyne Brown Engineering for your analytical needs.

Sincerely, Rebecca Charles Project Manager (865)934-0379

Project ID: EX001-3ESPBRAID-06 P.O. #: 00411203 Release #: Contract#: 00411203 Kathy Shaw, FAX#:860-747-1900, kshaw@craworld.com

Client ID/ Station	Laboratory ID Analysis	Vol/Units Price	Start Collect End Collect Date/Time Date/Time
WG-BW-050906-MS002	L28597-1		05/09/06:1035
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-050906-MS-004	L28597-2		05/09/06:1125
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-050906-MS-006	L28597-3		05/09/06:1215
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-050906-MS-008	L28597-4		05/09/06:1410
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-050906-MS-010	L28597-5 Page 1	(05/09/06:1510

Client ID/ Station	Laboratory ID Analysis	Vol/Units Price	Start Collect End Collect Date/Time Date/Time
WG	GELI	108.00	
WG	H – 3	108.00	
WG	SR-90 (FAST)	140.00	
WG-BW-051006-MS-012	L28597-6		05/10/06:0930
WG	GELT	100 00	
WG	H-3	108.00	
WG	SR-90 (FAST)	140.00	
WG-BW-050906-JL-001	L28597-7		05/09/06-1055
WG			03/03/08:1035
WG	GELI	108.00	
WG	H-3	108.00	
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WG-BW-050906-JL-003	L28597-8		05/09/06:1210
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WG	SR-90 (FAST)	140.00	
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WG	SR-90 (FAST)	140.00	
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End of document

L28597 13 of 111

Internal Chain of Custody

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05/15/2006 09:41	+++++++++++++++++++++++++++++++++++++++	****	****	*****		
Sample # L28597-3		Containernum 1				
Prod GELI	Ana DW	lyst				
SR-90 (FAST)	GK					
н-3	EJ					
Relinquish Date Rel	inquish By		Received By			
05/11/2006 00:00			099999	Sample Custodian		
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05/18/06 14:55

Teledyne Brown Engineering Internal Chain of Custody

Sample # L28597-3 Containernum 2 Prod Analyst GELI D₩ SR-90 (FAST) GK н-3 ΕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian 05/12/2006 13:49 099999 Sample Custodian 030854 Donna Webb Donna Webb 05/15/2006 09:40 029965 030854 Kelly Wright 05/15/2006 09:41 Kelly Wright 030854 029965 Donna Webb Sample # L28597-4 Containernum 1 Prod Analyst GELI DW SR-90 (FAST) GK н-3 ЕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian Sample # L28597-4 Containernum 2 Prod Analyst GELI DW SR-90 (FAST) GK н-3 ЕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian 05/12/2006 13:49 099999 Sample Custodian 030854 Donna Webb 05/15/2006 09:40 Donna Webb 029965 030854 Kelly Wright 05/15/2006 09:41 029965 Kelly Wright 030854 Donna Webb Sample # L28597-5 Containernum 1 Prod Analyst GELI DW SR-90 (FAST) GK н-3 ЕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian Sample # L28597-5 Containernum 2 Prod Analyst GELI DW SR-90 (FAST) GK н-3 ЕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian 05/12/2006 13:49 Sample Custodian 030854 099999 Donna Webb

L28597 16 of 111 Page: 3 of 5 05/18/06 14:55 Teledvne Brown Engineering Internal Chain of Custody Containernum 2 Sample # L28597-5 Received By Relinguish Date Donna Webb 029965 Kelly Wright 05/15/2006 09:40 030854 030854 Donna Webb Kelly Wright 05/15/2006 09:41 029965 Sample # L28597-6 Containernum 1 Prod Analyst GELI DW SR-90 (FAST) GK н-з ЕJ Received By Relinquish Date Relinquish By 099999 Sample Custodian 05/11/2006 00:00 Containernum 2 Sample # L28597-6 Analyst Prod DW GELI SR-90 (FAST) GK н-3 EJ Relinquish Date Relinquish By Received By 099999 Sample Custodian 05/11/2006 00:00 030854 Donna Webb Sample Custodian 05/12/2006 13:49 099999 Donna Webb 029965 Kelly Wright 05/15/2006 09:40 030854 Kelly Wright 030854 Donna Webb 05/15/2006 09:41 029965 Sample # L28597-7 Containernum 1 Prod Analyst GELI DW SR-90 (FAST) GK н-3 ЕJ Relinquish Date Relinquish By Received By 099999 Sample Custodian 05/11/2006 00:00 Sample # L28597-7 Containernum 2 Analyst Prod GELI DW SR-90 (FAST) GK н-3 EJ Relinquish Date Relinquish By Received By 099999 Sample Custodian 05/11/2006 00:00 030854 Donna Webb Sample Custodian 05/12/2006 13:49 099999 029965 Kelly Wright Donna Webb 05/15/2006 09:40 030854 030854 Donna Webb Kelly Wright 05/15/2006 09:41 029965 Sample # L28597-8 Containernum 1 Prod Analyst GELI DW SR-90 (FAST) GK

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05/18/06 14:55		Teledyne Brown Engineerin	ŋġ	Page: 4 of 5
		Internal Chain of Custod	У	
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н-3	Ed	Ţ		
Relinquish Date Rel	inquish By		Received By	
05/11/2006 00:00			099999	Sample Custodian
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Prod GELI	Ar Di	alyst 7		
SR-90 (FAST)	GF	C C C C C C C C C C C C C C C C C C C		
н-3	EJ	r		
Relinquish Date Rel	inquish By		Received By	
05/11/2006 00:00			099999	Sample Custodian
05/12/2006 13:49	099999	Sample Custodian	030854	Donna Webb
05/15/2006 09:40	030854	Donna Webb	029965	Kelly Wright
05/15/2006 09:41	029965	Kelly Wright	030854	Donna Webb
**************************************	* * * * * * * * * * *	**************************************	*****	****
Prod GELI	An DW	alyst		
SR-90 (FAST)	GK			
н-3	EJ			
Relinquish Date Rel:	inquish By		Received By	
05/11/2006 00:00			099999	Sample Custodian
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Prod	An	alyst		
GELI	DW			
SK-90 (FAST)	GK			
n-J	 E9			
05/11/2006 00.00	Inquish By		Received By	Sample Custodian
05/12/2006 13:49	000000	Sample Custodian	030854	Doppo Webb
05/15/2006 09:40	030854	Donna Webb	020054	Kolly Wright
05/15/2006 09:41	020065	Kelly Wright	029965	Neily Wright
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SR-90 (FAST)	GK DW			
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05/11/2006 00:00	The second second second second second second second second second second second second second second second se		099999 Иссетуед ВХ	Sample Custodian
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Prod	Ana	alyst		
GELI	DW	_		

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Teledyne Brown Engineering Internal Chain of Custody

Sample # L28597-10 Containernum 2 SR-90 (FAST) GK н-3 EJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian 05/12/2006 13:49 Sample Custodian 099999 030854 Donna Webb 05/15/2006 09:40 Donna Webb 030854 029965 Kelly Wright 05/15/2006 09:41 Kelly Wright 029965 030854 Donna Webb Sample # L28597-11 Containernum 1 Prod Analyst GELI DW SR-90 (FAST) GK Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian Sample # L28597-11 Containernum 2 Prod Analyst GELI DW SR-90 (FAST) GK Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian 05/12/2006 13:49 099999 Sample Custodian 030854 Donna Webb 05/15/2006 09:40 030854 Donna Webb 029965 Kelly Wright 05/15/2006 09:41 Kelly Wright 029965 030854 Donna Webb ************************** Sample # L28597-12 Containernum 1 Prod Analyst GELI DWSR-90 (FAST) GK н-3 ΕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian Sample # L28597-12 Containernum 2 Prod Analyst GELI DW SR-90 (FAST) GK H-3 ЕJ Relinquish Date Relinquish By Received By 05/11/2006 00:00 099999 Sample Custodian 05/12/2006 13:49 Sample Custodian 099999 030854 Donna Webb 05/15/2006 09:40 030854 Donna Webb 029965 Kelly Wright 05/15/2006 09:41 Kelly Wright 029965 030854 Donna Webb

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

****	*****	L2859	7	
L28597-1	WG	WG-BW-050006-M9000	****	* * * * * * * * * * * * * * * * * * * *
Process step	Prod	MG BM 000900-MS002	Apolitat	
Login	<u></u>		DMADQUATT	Date
Aliquot	GELT		PMARSHALL	05/11/06
Aliquot	Н-З		ET.	05/12/06
Aliquot	SR-90) (FAST)	CK	05/1//06
Count Room	GELT		KO T	05/12/06
Count Room	Н-З		KOT	05/13/06
Count Room	SR-90) (FAST)	KO T	05/17/06
******	******	*****	*****	US/18/06
L28597-2	WG	WG-BW-050906-MS-00	4	~ ^ ^ * * * * * * * * * * * * * * * * *
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/11/06
Aliquot	GELI		D₩	05/12/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	
Count Room	GELI		KOJ	05/13/06
Count Room	Н-З		KOJ	05/17/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
******	*****	* * * * * * * * * * * * * * * * * * * *	*****	****
L28597-3	WG	WG-BW-050906-MS-006	5	
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/11/06
Aliquot	GELI		DW	05/12/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	
Count Room	GELI		KOJ	05/13/06
Count Room	Н-З		KOJ	05/17/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
*****	*****	*****	*****	*****
L28597-4	WG	WG-BW-050906-MS-008		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/11/06
liquot	GELI		DW	05/12/06
Aliquot	Н-З		EJ	05/17/06
liquot	SR-90	(FAST)	GK	
Count Room	GELI		KOJ	05/13/06
Count Room	H-3		KOJ	05/17/06
ount Room	SR-90	(FAST)	KOJ	05/18/06
*****	******	*****	****	* * * * * * * * * * * * * * * * * * * *
28597-5	WG	WG-BW-050906-MS-010		
rocess step	Prod		Analyst	Date
ogin			PMARSHALL	05/11/06
liquot	GELI		DW	05/12/06
liquot	Н-З		EJ	05/17/06
liquot	SR-90	(FAST)	GK	
ount Room	GELI		KOJ	05/13/06

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28597

L28597-5	WG	WG-BW-050906-MS-010)	
Count Room	Н-З		KOJ	05/17/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
*******	*****	* * * * * * * * * * * * * * * * * * * *	*****	*****
L28597-6	WG	WG-BW-051006-MS-012	2	
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/11/06
Alíquot	GELI		DW	05/12/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	
Count Room	GELI		KOJ	05/13/06
Count Room	Н-З		KOJ	05/17/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
********	******	*****	*****	*****
L28597-7	WG	WG-BW-050906-JL-001		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/11/06
Aliquot	GELI		DW	05/12/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	
Count Room	GELI		KOJ	05/13/06
Count Room	Н-З		KOJ	05/17/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
**********	******	*****	****	****
L28597-8	WG	WG-BW-050906-JL-003		
L28597-8 Process step	WG Prod	₩G-BW-050906-JL-003	Analyst	Date
L28597-8 Process step Login	WG Prod	WG-BW-050906-JL-003	<u>Analyst</u> PMARSHALL	<u>Date</u> 05/11/06
L28597-8 <u>Process step</u> Login Aliquot	WG Prod GELI	WG-BW-050906-JL-003	<u>Analyst</u> PMARSHALL DW	<u>Date</u> 05/11/06 05/12/06
L28597-8 Process step Login Aliquot Aliquot	WG Prod GELI H-3	WG-BW-050906-JL-003	<u>Analyst</u> PMARSHALL DW EJ	Date 05/11/06 05/12/06 05/17/06
L28597-8 <u>Process step</u> Login Aliquot Aliquot Aliquot	WG Prod GELI H-3 SR-90	WG-BW-050906-JL-003 (FAST)	<u>Analyst</u> PMARSHALL DW EJ GK	<u>Date</u> 05/11/06 05/12/06 05/17/06
L28597-8 <u>Process step</u> Login Aliquot Aliquot Aliquot Count Room	WG Prod GELI H-3 SR-90 GELI	WG-BW-050906-JL-003 (FAST)	<u>Analyst</u> PMARSHALL DW EJ GK KOJ	<u>Date</u> 05/11/06 05/12/06 05/17/06 05/13/06
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room	WG Prod GELI H-3 SR-90 GELI H-3	WG-BW-050906-JL-003 (FAST)	<u>Analyst</u> PMARSHALL DW EJ GK KOJ KOJ	<u>Date</u> 05/11/06 05/12/06 05/17/06 05/13/06 05/17/06
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room	WG Prod GELI H-3 SR-90 GELI H-3 SR-90	WG-BW-050906-JL-003 (FAST)	<u>Analyst</u> PMARSHALL DW EJ GK KOJ KOJ KOJ	<u>Date</u> 05/11/06 05/12/06 05/17/06 05/13/06 05/17/06 05/18/06
L28597-8 Process step Login Aliquot Aliquot Count Room Count Room Count Room	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ******	WG-BW-050906-JL-003 (FAST) (FAST)	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ	<pre>Date 05/11/06 05/12/06 05/17/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ	<pre>Date 05/11/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ KOJ Analyst PMARSHALL	<u>Date</u> 05/11/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<u>Date</u> 05/11/06 05/12/06 05/13/06 05/13/06 05/13/06 05/18/06 ************************************
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI H-3	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 WG Prod GELI H-3 SR-90	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI	WG-BW-050906-JL-003 (FAST) (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/13/06 05/13/06 05/13/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3	WG-BW-050906-JL-003 (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/12/06 05/13/06 05/13/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 WG Prod GELI H-3 SR-90 GELI H-3 SR-90 SR-90	<pre>WG-BW-050906-JL-003 (FAST) (FAST) ************************************</pre>	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 K-90	<pre>WG-BW-050906-JL-003 (FAST) (FAST) (FAST) (FAST) (FAST)</pre>	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 MG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 K*****	<pre>WG-BW-050906-JL-003 (FAST) (FAST) (FAST) (FAST) (FAST) (FAST)</pre>	Analyst PMARSHALL DW EJ GK KOJ KOJ ************************************	<pre>Date 05/11/06 05/12/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************</pre>
L28597-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 K***** WG Prod	WG-BW-050906-JL-003 (FAST) ************************************	Analyst PMARSHALL DW EJ GK KOJ KOJ KOJ ************************************	<u>Date</u> 05/11/06 05/12/06 05/13/06 05/13/06 05/17/06 05/18/06 ************************************

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Aliquot

Count Room

Count Room

Count Room

SR-90 (FAST)

SR-90 (FAST)

GELI

Н-З

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L28597

L28597-10	WG	WG-BW-050906-JL-007		
Aliquot	GELI		DW	05/12/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	
Count Room	GELI		KOJ	05/14/06
Count Room	Н-З		КОЈ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
*****	*****	*****	* * * * * * * * * * * * * * * * * *	****
L28597-11	WG	WG-BW-051006-JL-009		
Process step	Prod		Analyst	Date
Login			RCHARLES	05/11/06
Aliquot	GELI		DW	05/12/06
Aliquot	SR-90	(FAST)	GK	,,
Count Room	GELI		KOJ	05/14/06
Count Room	SR-90	(FAST)	KOJ	05/18/06
*******	*****	*****	******	****
L28597-12	WG	WG-BW-051006-JL-011		
Process step	Prod		Analyst	Date
Login			RCHARLES	05/11/06
Aliquot	GELI		DW	05/12/06
Aliquot	Н-З		EJ	05/17/06

GK

KOJ

KOJ

KOJ

05/14/06

05/18/06

05/18/06

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Analytical Results Summary

port of Analysis	05/18/06 14:52
Repot	05



Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Solitest Stop: Collect Stop: Description: Lastop: Collect Stop: Description: Lastop: Collect Stop: Description: Lastop: Collect Stop: Collect Stop: LIMS Number: Lastop: Collect Stop: Collect Stop: LIMS Number: Lastop: Units Receive Date: Goint Collect Stop: Conc 2 Signa MDC Units Reterence Gount Count Count Count Count Signa Volume: Listop: Joint Listop: Listop: Count Count Count Count Count Count Count Count Count Signa Volume:	Sample ID: WO	G-BW-05090(6-MS002			Collect	t Start: 05	5/09/2006 10:	:35		Matrix: G	round Wat	ter		(MG)
Radiomuclide SOP# Activity Conc Date Count Count <th>Description: Description: LIMS Number: L20</th> <th>8597-1</th> <th></th> <th></th> <th></th> <th>Collec Receive</th> <th>t Stop: 5 Date: 02</th> <th>5/11/2006</th> <th></th> <th>% N</th> <th>Volume: foisture:</th> <th></th> <th></th> <th></th> <th></th>	Description: Description: LIMS Number: L20	8597-1				Collec Receive	t Stop: 5 Date: 02	5/11/2006		% N	Volume: foisture:				
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	H-3	2010	2.88E+02	1.21E+02	1.69E+02	pCi/L		10	lm		05/17/06	09	M	+	
	FOTAL SR	2018	7.43E-01	6.08E-01	1.04E+00	pCi/L	-	450	m	05/09/06 10:35	05/18/06	100	Z	- 1	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	MN-54	2007	8.72E-01	1.70E+00	2.89E+00	pCi/L	-	3655.18	ml	05/09/06 10:35	05/13/06	28800	Ser	211	No
TE-59 2007 $3.86E+00$ $3.64E+00$ $6.36E+00$ $6.36E+00$ pCi/L 3655.18 mi $05/09/06 10.35$ $05/13/06$ 28800 $5ec$ U No CO-60 2007 $6.51E-02$ $2.16E+00$ $3.52E+00$ pCi/L 3655.18 mi $05/09/06 10.35$ $05/13/06$ 28800 $5ec$ U No CO-60 2007 $5.14E-01$ $3.94E+00$ $6.51E+02$ $3.52E+00$ pCi/L 3655.18 mi $05/09/06 10.35$ $05/13/06$ 28800 $5ec$ U No CN-65 2007 $1.54E+00$ $1.87E+00$ $3.15E+00$ pCi/L 3655.18 mi $05/09/06 10.35$ $05/13/06$ 28800 $5ec$ U No CN-95 2007 $1.54E+00$ $1.87E+00$ $3.15E+00$ pCi/L 3655.18 mi $05/09/06 10.35$ $05/13/06$ 28800 $5ec$ U No CN-95 2007 $2.72E-01$ $3.27E+00$ $3.14E+00$ pCi/L 3655.18 mi $05/09/06 10.35$ $05/13/06$ 28800 $5ec$ U No CN-13 2007 $3.23E+00$ $3.14E+00$ $2.14E+00$	20-58	2007	-9.43E-01	1.79E+00	2.89E+00	pCi/L		3655.18	lm	05/09/06 10-35	02/13/06	78800	Ser	0	NIC
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	²E-59	2007	3.86E+00	3.64E+00	6.36E+00	pCi/L		3655.18	ml	05/09/06 10-35	05/13/06	78800	Ser	> =	No
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	CO-60	2007	6.51E-02	2.16E+00	3.52E+00	pCi/L	-	3655 18	u lu	05/09/06 10:35	02/13/06	28800	San		No.
VB-95 2007 $1.54E+00$ $1.87E+00$ $3.15E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $2R-95$ 2007 $2.72E-01$ $3.27E+00$ $5.33E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $2R-95$ 2007 $2.72E-01$ $3.74E+00$ $3.14E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $5.313E+00$ $3.74E+00$ $3.14E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No 5.137 2007 $5.79E-01$ $1.91E+00$ $3.18E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $3A-140$ 2007 $4.73E+00$ $7.39E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $A-140$ 2007 $4.73E+00$ $2.28E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $A-140$ 2007 $4.73E+00$ $2.248E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ 28800 Sec U No $A-140$ 2007 $1.61E+00$ $2.48E+00$ pCi/L 3655.18 ml $05/09/0610:35$ $05/13/06$ No <td< td=""><td>ZN-65</td><td>2007</td><td>5.14E-01</td><td>3.94E+00</td><td>6.56E+00</td><td>pCi/L</td><td></td><td>3655.18</td><td>u lu</td><td>05/09/06 10:35</td><td>02/13/00</td><td>78800</td><td>Ser</td><td>0 11</td><td>No</td></td<>	ZN-65	2007	5.14E-01	3.94E+00	6.56E+00	pCi/L		3655.18	u lu	05/09/06 10:35	02/13/00	78800	Ser	0 11	No
JR-95 2007 2.72E-01 3.27E+00 5.33E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No JS-134 2007 3.23E+00 3.74E+00 3.14E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No JS-137 2007 5.79E-01 1.91E+00 3.14E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No JS-137 2007 5.79E-01 1.91E+00 3.18E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No JA-140 2007 4.73E+00 1.23E+01 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No A-140 2007 4.73E+00 1.23E+01 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No A-140 2007 1.61E+00 2.38E+00 pCi/L 3655.18 <td>VB-95</td> <td>2007</td> <td>1.54E+00</td> <td>1.87E+00</td> <td>3.15E+00</td> <td>pCi/L</td> <td></td> <td>3655.18</td> <td>l la</td> <td>05/09/06 10:35</td> <td>05/13/06</td> <td>78800</td> <td>Ser</td> <td>0 11</td> <td>No</td>	VB-95	2007	1.54E+00	1.87E+00	3.15E+00	pCi/L		3655.18	l la	05/09/06 10:35	05/13/06	78800	Ser	0 11	No
C5-134 2007 3.23E+00 3.74E+00 3.14E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No C5-137 2007 5.79E-01 1.91E+00 3.18E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No C5-137 2007 5.79E-01 1.91E+00 3.18E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No 3A-140 2007 4.73E+00 1.23E+01 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No A-140 2007 1.61E+00 2.48E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No	ZR-95	2007	2.72E-01	3.27E+00	5.33E+00	pCi/L		3655.18	l m	05/09/06 10:35	05/13/06	28800	Ser	0 2	No
CS-137 2007 5.79E-01 1.91E+00 3.18E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No 3A-140 2007 4.73E+00 7.39E+00 1.23E+01 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No A-140 2007 4.73E+00 7.39E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No	JS-134	2007	3.23E+00	3.74E+00	3.14E+00	pCi/L	-	3655.18	m	05/09/06 10:35	05/13/06	28800	Sec		No
3A-140 2007 4.73E+00 7.39E+00 1.23E+01 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec U No A-140 2007 1.61E+00 2.48E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 2ec U No	CS-137	2007	5.79E-01	1.91E+00	3.18E+00	pCi/L		3655.18	ml	05/09/06 10:35	05/13/06	28800	Ser	0 11	No
A-140 2007 1.61E+00 2.48E+00 4.25E+00 pCi/L 3655.18 ml 05/09/06 10:35 05/13/06 28800 Sec 11 No	3A-140	2007	4.73E+00	7.39E+00	1.23E+01	pCi/L	-	3655.18	m	05/09/06 10:35	05/13/06	28800	Sec		No
	A-140	2007	1.61E+00	2.48E+00	4.25E+00	pCi/L		3655.18	lm	05/09/06 10:35	05/13/06	28800	Sec	0 1	No

Flag Values U = + =

Compound/Analyte not detected or less than 3 sigma

R

Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification ł

П U* High Spec

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High recovery Low recovery 11

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

Kathy Shaw

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Conestoga-Rovers & Associates

Kathy Shaw

EX001-3ESPBRAID-06

Water (WG)	unt Count ne Units Flag Values	+	. II W 00	00 Sec 11 No	600 Sec 11 No	00 Sec 11 No	00 Sec 11 No	11* No	00 Sec []*	00 Sec 11 No	100 Sec 11* No	00 Sec 11 No	00 Sec 11 No	00 Sec 11 No	
Matrix: Groun Volume: Moisture:	Count C Date T	05/17/06	5 05/18/06 1	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	5 05/13/06 28	
%	t Reference Date		05/09/06 11:2	05/09/06 11:2	05/09/06 11:2	05/09/06 11:2	05/09/06 11:2	$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
)9/2006 11:25 11/2006	Aliquot Aliquo Volume Units	10 ml	450 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	3606.78 ml	
Sample ID:WG-BW-050906-MS-004Collect Start: 05/09/2006 11:25Matrix: Ground Water(WG)Station:Station:Volume:Volume:(WG)Description:Receive Date: 05/11/2006% Moisture:%	Units #	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	<u> </u>
	MDC	1.68E+02	1.24E+00	2.77E+00	2.65E+00	5.58E+00	2.88E+00	6.75E+00	2.89E+00	4.76E+00	3.33E+00	3.02E+00	1.16E+01	3.75E+00	
	Uncertainty 2 Sigma	1.20E+02	6.84E-01	1.66E+00	1.63E+00	3.37E+00	1.68E+00	3.76E+00	1.92E+00	3.11E+00	3.05E+00	1.77E+00	6.88E+00	2.29E+00	2 15ELAA
Sample ID:WG-BW-050906-MS-004Collect Start:05/09/2006 11:25Matrix:Station:Station:Collect Stop:Volume:Description:Receive Date:05/11/2006% Moisture:LIMS Number:L28597-2% Moisture:	Activity Cone	2.85E+02	3.75E-01	2.46E-01	1.06E-02	1.22E-01	1.15E+00	8.08E+00	2.98E+00	6.41E-01	8.25E+00	1.50E+00	4.55E+00	-4.40E-01	COLUZION
	SOP#	2010	2018	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Sample 1D: Station: Description: LJMS Number:	Radionuclide	H-3	TOTAL SR	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	CS-134	CS-137	BA-140	LA-140	TH_778

Flag Values U = + U* = High = Spec =

Compound/Analyte not detected or less than 3 sigma

Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery

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Bolded text indicates reportable value.

L28597 24 of 111

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Sample ID: WC	-RW-05000	E MS DOG		and a second second second second second second second second second second second second second second second	:							Constant and the Property of the American Station		
Station:		DOD-CITY-D			Collec	t Start: 0	5/09/2006 12:	15		Matrix: Gr	ound Wate	ar	(MG)	
Description:					Collec	t Stop:				/olume:				
LIMS Number: L28:	597-3				Keceivi	e Date: 0	5/11/2006		W %	oisture:				
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sioma	MDC	Units	Run #	Aliquot	Aliquot	Reference	Count	Count	Count		
			D			ŧ	Aunue	CINES	Date	Date	Time	Units	Flag Values	
H-3	2010	1.35E+02	1.15E+02	1.74E+02	pCi/L		10	۱ ۳		05/17/02	07		1 L	T
TOTAL SR	2018	-1.50E+00	1.02E+00	1.79E+00	nCi/I	-	450		05/00/05 10.15	00//1/20	00	Z ;		Ţ
MN-54	2007	1.31E+00	2.11E+00	3 548+00	pour nCi/I		3537.00	111	C1:21 00/60/20	90/81/00	400	Z	D	
CO-58	2005	1 275 100		00 11-00	pci/r		60.2600	m	05/09/06 12:15	05/13/06	28800	Sec	U No	
EE CO	1007	-1.5/E+00	2.0/E+00	3.27E+00	pCi/L		3532.09	ml	05/09/06 12:15	05/13/06	28800	Sec	ll Nn	1
re-39	7007	4.69E+00	4.22E+00	7.32E+00	pCi/L		3532.09	E I	05/09/06 12-15	05/13/06	78800	Car		T
CO-60	2007	2.50E-01	2.25E+00	3.73E+00	nCi/I.		3532 00	1	05/00/06 12:15	100/01/20	00000	202	0 N0	1
ZN-65	2007	7.83E+00	5 73E+00	8 67F+00	1/:Ju	~	10.2000	I	C1:21 00/60/C0	00/61/00	78800	Sec	U No	
NB-95	2007	1 10F+00	2 60F+00	2 01 11 00	hour		60.2000	IM	CI:21 00/60/C0	05/13/06	28800	Sec	U No	
ZR-95	2002	2 076 00	1011-100	00157100	brit		5252.09	ī	05/09/06 12:15	05/13/06	28800	Sec	U No	1
	1007	3.02ETUU	4.ULE+00	6.54E+00	pCi/L		3532.09	Ш	05/09/06 12:15	05/13/06	28800	Sec	11 No	Т
C0-104	7007	7.87E+00	4.11E+00	4.27E+00	pCi/L		3532.09	lm	05/09/06 12.15	05/13/06	78800	Coo	11*	T
CS-137	2007	1.64E+00	2.30E+00	3.91E+00	pCi/L		3532.09	i la	05/00/06 12:15	00/01/20	00007	200	0 NO	
BA-140	2007	2.45E+00	9.06E+00	1.50E+01	pCi/L		3532.09	ml	05/00/06 12.12	00/01/00	00007	200	N0 	Γ
LA-140	2007	2.91E+00	2.83E+00	5.01E+00	pCi/L	-	3532.09	un lu	05/09/06 12.12	00/01/00	00000	Sec	No 	
		WALLAND IN THE AVERAGE AND AND AND AND AND AND AND AND AND AND				-		1111	C1.21 00/00/00	00/01/00	2000	Sec	No	

Compound/Analyte not detected or less than 3 sigma Flag Values U = +

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Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma R

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification ll

11 U* High L H

Low recovery 11

High recovery 11

Bolded text indicates reportable value.

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**** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

Yes = Peak identified in gamma spectrum



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Kathy Shaw

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Report c	05/18/

Kathy Shaw

LIMS Number:

Radionuclide

TOTAL SR

H-3

MN-54

CO-58

FE-59

CO-60 ZN-65 NB-95

ZR-95

Station: Description:

EVOUL-2FSPRRAID

Conestoga-Rovers & Associates

(MG)

					EAL	JUI-3ESI	PBRAID-06						
Sample ID: Station:	WG-BW-050900	6-MS-008			Collec	t Start: 0	5/09/2006 14	:10		Matrix: G	round Wat	er	
Description: S Number:	L28597-4				Collec Receiv	tt Stop: e Date: 0	5/11/2006		M %	Volume: loisture:			
nuclide	SOP#	Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count	Count	
	2010	7.75E+02	1 368+00	1 \$15.00	5.5					Date	1 HILE	CILLES	
, SR	2018	-1 27F+00	5 88E 01	1 0/10/10/	bCI/F		10	ml		05/17/06	60	M	+
	2002	1 50E 01	10-70010	1.00£+00	pCi/L		450	lm	05/09/06 14:10	05/18/06	400	N	
	2007	0.000-01	2.10E+00	3.46E+00	pCi/L		3425.05	m	05/09/06 14:10	05/13/06	2800	Ser	2
	1007	0.00E-UI	2.105+00	3.49E+00	pCi/L		3425.05	lm I	05/09/06 14-10	05/13/06	00000	300	2
and a second second second second second second second second second second second second second second second	7007	1.70E+00	4.27E+00	7.15E+00	nCi/l		3175 05		01.11 00/00/20	00/01/00	78800	Sec	
, (2007	1.40E+00	2.26E+00	3.87E+00	Print PUI/I		2425.00	E,	01:41 00/00/00	05/13/06	28800	Sec	
	2007	6.17E+00	5.77E+00	8 58F+00	how n		CU.C24C	Ĩ.	05/09/06 14:10	05/13/06	28800	Sec	Þ
(2007	2.94E+00	2.13E+00	3 71 F+00			5425.05	TE .	05/09/06 14:10	05/13/06	28800	Sec	Þ
	2007	-2.13E+00	3.84E+00	6 13E+00	рсил 2017		3425.05	In .	05/09/06 14:10	05/13/06	28800	Sec	D
	2007	7.62E+00	5.00E+00	4 33F+00	pcut		3425.05	m	05/09/06 14:10	05/13/06	28800	Sec	D
	2007	1.10E+00	2.26E+00	3.82E+00			3425.05	E.	05/09/06 14:10	05/13/06	28800	Sec	'n
	2007	3.31E+00	9.31E+00	1.54E+01	hCVL		5420.05 2425.05	E.	05/09/06 14:10	05/13/06	28800	Sec	D
	2007	9.08E-01	3.16E+00	5.26E+00	pCi/L		5420.UJ	E -	05/09/06 14:10	05/13/06	28800	Sec	D

No No No No No

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28800 28800

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05/09/06 14:10

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5.26E+00

LA-140

BA-140

CS-134 CS-137

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No

Flag Values

Flag Values

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II

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11

11 U* High Spec

Low recovery I

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High recovery I H

Bolded text indicates reportable value.

12 of 4 Page

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis

unless otherwise noted

No = Peak not identified in gamma spectrum



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Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

Sample ID: WG Station: Description: LIMS Number: L28:	-BW-050906 597-5	-MS-010			Collect Collect Receive	Start: 0: Stop: Date: 0:	5/09/2006 15: 5/11/2006	10	M %	Matrix: G Volume: oisture:	round Wat	L.		(MG)	a
Aadionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag	Values	-
-3	2010	1.84E+02	1.14E+02	1.68E+02	pCi/L		10	ml		05/17/06	60	М	+		II.
OTAL SR	2018	-7.29E-01	6.07E-01	1.05E+00	pCi/L		450	ml	05/09/06 15:10	05/18/06	400	X	D		
1N-54	2007	1.06E+00	1.94E+00	3.25E+00	pCi/L		3496.9	lm	05/09/06 15:10	05/13/06	28800	Sec	D	No	1
0-58	2007	-7.72E-01	1.86E+00	3.01E+00	pCi/L		3496.9	ml	05/09/06 15:10	05/13/06	28800	Sec	U	No	1
E-59	2007	2.61E+00	3.71E+00	6.31E+00	pCi/L		3496.9	lm	05/09/06 15:10	05/13/06	28800	Sec	Ŋ	No	1
09-00	2007	-2.53E-01	1.93E+00	3.17E+00	pCi/L		3496.9	ml	05/09/06 15:10	05/13/06	28800	Sec	N	No	1
N-65	2007	7.66E+00	4.90E+00	7.47E+00	pCi/L		3496.9	ml	05/09/06 15:10	05/13/06	28800	Sec	n*	No	1
IB-95	2007	3.44E+00	1.89E+00	3.34E+00	pCi/L		3496.9	m	05/09/06 15:10	05/13/06	28800	Sec	n*	No	1
.R-95	2007	-2.27E+00	3.21E+00	5.18E+00	pCi/L		3496.9	ml	05/09/06 15:10	05/13/06	28800	Sec	U	No	
S-134	2007	3.05E+00	3.01E+00	3.51E+00	pCi/L		3496.9	lm	05/09/06 15:10	05/13/06	28800	Sec	n	No	
S-137	2007	1.64E+00	2.03E+00	3.42E+00	pCi/L		3496.9	lm	05/09/06 15:10	05/13/06	28800	Sec	n	No	
IA-140	2007	1.57E+00	7.73E+00	1.30E+01	pCi/L		3496.9	Ш	05/09/06 15:10	05/13/06	28800	Sec	Ŋ	No	
A-140	2007	1.97E+00	2.67E+00	4.60E+00	pCi/L		3496.9	Ē	05/09/06 15:10	05/13/06	28800	Sec	n	No	1
H-228	2007	5.59E+00	3.31E+00	5.05E+00	pCi/L		3496.9	- Tæ	05/09/06 15:10	05/13/06	28800	Sec	+	Yes	The second second second second second second second second second second second second second second second se

Compound/Analyte not detected or less than 3 sigma

Activity concentration exceeds MDC and 3 signal, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

Flag Values U = + U* = High = Spec =

Low recovery 11 ЧГ

Bolded text indicates reportable value. High recovery II

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L28597 27 of 111

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG-B	W-051006-	-MS-012			Collect	: Start: 05	5/10/2006 09:	30		Matrix: Gr	ound Wate	-		(MG)
Station:					Collect	t Stop:			~	'olume:				
Description:					Receive	Date: 05	5/11/2006		W %	oisture:				
LIMS Number: L2859	7-6													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Va	lues
H-3	2010	4.80E+01	1.06E+02	1.70E+02	pCi/L		10	ml		05/17/06	60	M	N	
TOTAL SR	2018	-3.00E-01	3.01E-01	5.16E-01	pCi/L		450	m	05/10/06 09:30	05/18/06	400	M	n	
MN-54	2007	6.31E-01	2.13E+00	3.55E+00	pCi/L		3641.01	m	05/10/06 09:30	05/13/06	28800	Sec	n	No
CO-58	2007	-1.11E-01	2.14E+00	3.52E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	U	No
FE-59	2007	3.03E+00	4.22E+00	7.20E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	D	No
CO-60	2007	4.33E-01	2.25E+00	3.72E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	U	No
ZN-65	2007	1.05E+01	5.79E+00	8.94E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	n*	No
NB-95	2007	1.77E+00	2.54E+00	3.68E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	n	No
ZR-95	2007	-1.82E+00	4.00E+00	5.95E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	U	°Z
CS-134	2007	1.43E+01	5.31E+00	4.83E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	U*	°Z
CS-137	2007	3.84E+00	2.32E+00	4.00E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	n	No
BA-140	2007	-2.73E+00	8.63E+00	1.41E+01	pCi/L		3641.01	Ш	05/10/06 09:30	05/13/06	28800	Sec	n	No
LA-140	2007	5.31E-02	2.78E+00	4.59E+00	pCi/L		3641.01	ml	05/10/06 09:30	05/13/06	28800	Sec	U	No
		THE REPORT OF TH												

Compound/Analyte not detected or less than 3 sigma Flag Values U = + U * = U * = High = C = = H =

Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value

MDC exceeds customer technical specification

Bolded text indicates reportable value. Low recovery High recovery

12 Page 6 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company



Conestoga-Rovers & Associates EX001-3ESPBRAID-06

Sample ID: WG Station: Description:	-BW-050906	-JL-001			Collec Collec	t Start: 0 t Stop:	5/09/2006 10	:55		Matrix: G Volume:	round Wat	cr		(MG)
LIMS Number: L28	597-7				Keceiv	e Date: 0	5/11/2006		%0 W	loisture:				
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Val	nes
H-3	2010	1.69E+02	1.22E+02	1.82E+02	pCi/L		10	m		05/17/06	60	M	n	
TOTAL SR	2018	-3.61E-02	5.56E-01	9.19E-01	pCi/L		450	ml	05/09/06 10:55	05/18/06	400	X	N	-
MN-54	2007	3.83E-01	2.31E+00	3.86E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	N	No
CO-58	2007	-1.06E+00	2.52E+00	4.10E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	n	No
FE-59	2007	6.05E+00	5.12E+00	8.87E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	N	No
CO-60	2007	1.96E-01	2.47E+00	4.08E+00	pCi/L		3592.71	m	05/09/06 10:55	05/13/06	28800	Sec	D	No
ZN-65	2007	7.76E+00	5.50E+00	9.61E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	D	No
NB-95	2007	2.51E+00	2.35E+00	4.01E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	n	No
ZR-95	2007	-1.88E+00	4.07E+00	6.45E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	n	No
CS-134	2007	1.03E+01	4.82E+00	4.66E+00	pCi/L		3592.71	ml	05/09/06 10:55	05/13/06	28800	Sec	*D	No
CS-137	2007	4.96E-01	2.57E+00	4.24E+00	pCi/L		3592.71	Ш	05/09/06 10:55	05/13/06	28800	Sec	n	No
BA-140	2007	1.42E+00	9.94E+00	1.66E+01	pCi/L		3592.71	m	05/09/06 10:55	05/13/06	28800	Sec	n	No
LA-140	2007	3.30E+00	3.30E+00	5.87E+00	pCi/L		3592.71	m	05/09/06 10:55	05/13/06	28800	Sec		No

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds eustomer technical specification

Flag Valucs U = + U* = High = Spec =

High recovery Low recovery 1 лн

Bolded text indicates reportable value.

12 Page 7 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

Kathy Shaw

sport of Analysis	05/18/06 14:52
Rep	

Conestoga-Rovers & Associates

Kathy Shaw

EX001-3ESPBRAID-06

		(Jw)			ag Values				No	No	No	No	N	NN	No	No	No	NIA
				at	ts Fl.	+	- I						n	n	n	U	n	
	Vater	10111		t Cou	Cui	Σ	V	Ser (Sec (Sec								
	Tround V			Coun	Time	60	400	28800	28800	28800	28800	28800	28800	28800	28800	28800	28800	28800
	Matrix: (Volume:	foisture:	Count	Date	05/17/06	05/18/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06	05/13/06
			V %	Reference	naic		05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10	05/09/06 12:10
	:10			Aliquot Units	SHED	ml	ml	ml	ml	Ш	Ш	'n	m	[m	m	E .	E	lm
	t: 05/09/2006 12		:: 05/11/2006	Aliquot Volume		10	450	3650.39	3650.39	3650.39	3650.39	3650.39	3650.39	3650.39	3650.39	3650.39	962025	3620.39
	lect Start	lect Stop	ive Date	Run #														
	Coll	Coll	Kece	Units	E.C	bCI/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	bCI/L	bCI/F	hcirt	bci/r	hci/I	hour I	pertr
				MDC	1 57E4 00	1.0/E702	1.81E+UU	2.83E+00	2.6/E+00	2.4/E+UU	2./4E+00	0.20E+00	5 00F+00	2 QAFTAD	2.74E100	1.16E+01	3 48F+00	AA . TOL
				Uncertainty 2 Sigma	1 226402	1 065200	1 200-100	1.00E+00	3 04E+00	1 58ETOO	3 495-400	1 65E+00	2.89E+00	2.77E+00	1.67E.+00	6.88E+00	1.97E+00	
11 003	-11-003			Activity Conc	4.43E+02	-7 96F-01	8 80F 01	-1 765+00	3 00F+00	-1 07E-01	2.99E+00	3.58E-01	1.32E+00	3.78E+00	-3.20E-01	-3.18E+00	4.60E-01	
BW DEDDD	0060c0- M (T-)		597-8	SOP#	2010	2018	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	
Samule ID- WC	Station:	Description:	LIMS Number: L28.	Radionuclide	H-3	TOTAL SR	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	CS-134	CS-137	BA-140	LA-140	

No

D

Flag Values U =

1 1 1

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma II

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification ll + U* High Spec

Low recovery 11

High recovery 11

Н 1

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

unless otherwise noted

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company Report of Analysis



L28597

Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

Description: Station:

Matrix: Ground Water Volume: % Moisture: Collect Start: 05/09/2006 14:15 Receive Date: 05/11/2006 Collect Stop: Sample ID: WG-BW-050906-JL-005

(MG)

de SOP													
A CONTRACTOR OF A CONTRACTOR O	2# Activit Conc	y Uncertainty c 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag V	alues
201	10 1.18E+4	02 1.11E+02	1.70E+02	pCi/L		10	m		05/17/06	60	M	11	
201	18 7.68E-(01 6.71E-01	1.06E+00	pCi/L		450	lm	05/09/06 14:15	05/18/06	400	E N	- II	
200)7 1.43E-(01 2.12E+00	3.46E+00	pCi/L		3611.89	l lu	05/09/06 14·15	05/14/06	78800	Ser		Nico
200	17 -2.34E+	00 2.12E+00	3.26E+00	pCi/L		3611.89	ml I	05/09/06 14-15	00/11/20	78800	Ser		No No
200)7 1.78E+(00 4.04E+00	6.78E+00	pCi/L		3611.89	m	05/09/06 14·15	02/11/00	28800	Ser		No
200)7 3.66E-(01 2.16E+00	3.60E+00	pCi/L	-	3611.89	u lu	05/09/06 14-15	05/11/00	28800	San		NI.
200)7 7.56E+(00 5.59E+00	8.46E+00	pCi/L	-	3611.89	ml	05/09/06 14·15	05/11/00	78800	Ser	> =	No
200	17 5.58E-(01 2.02E+00	3.36E+00	pCi/L		3611.89	I I	05/09/06 14-15	02/11/00	78800	Sec	0 11	No
200	17 9.82E-(01 3.66E+00	6.08E+00	pCi/L		3611.89	lm	05/09/06 14:15	05/14/06	28800	Sec		No
200	17 6.20E+(00 4.63E+00	3.96E+00	pCi/L		3611.89	lm!	05/09/06 14-15	05/14/06	28800	Sec	> =	No
200	17 5.28E-C	01 2.19E+00	3.66E+00	pCi/L	-	3611.89	u lm	05/09/06 14-15	02/11/00	28800	Sec	0	No
200	17 1.50E+(00 9.48E+00	1.56E+01	pCi/L	-	3611.89	m	05/09/06 14:15	05/14/06	28800	Ser		No No
200	17 7.72E-C	01 3.05E+00	5.14E+00	pCi/L		3611.89	m	05/09/06 14:15	05/14/06	28800	Sec	2	NO

Flag Values U =

+

Compound/Analyte not detected or less than 3 sigma 11

Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 1

П

l U* High Spec L

Low recovery II

High recovery 1

Bolded text indicates reportable value.

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L28597 31 of 111

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

unless otherwise noted

MDC - Minimum Detectable Concentration

Report of Analysis



Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

		in the second second second second second second second second second second second second second second second	· · · · · ·	T						1	1	1	in a subsection of the section of th	
(MG)	ag Values			No	No	No	ON	ON	ON	ON	NI VI	N.C.	No	NON
	F	-+	- 11		211			> *I		> =	> *I		- - -	
5	Count Units	M	Σ	Sec	Ser	Ser	Ser	Sec	Ser	Ser	Sec	Ser	Ser	Sec
ound Wate	Count Time	60	400	28800	28800	28800	28800	28800	28800	78800	78800	78800	78800	28800
Matrix: Gr /olume: oisture:	Count Date	05/18/06	05/18/06	05/14/06	05/14/06	05/14/06	05/14/06	05/14/06	05/14/06	05/14/06	02/11/00	02/11/00	02/11/00	05/14/06
- W %	Reference Date		05/09/06 15:25	05/09/06 15:25	05/09/06 15:25	05/09/06 15-25	05/09/06 15:25	05/09/06 15:25	05/09/06 15:25	05/09/06 15:25	05/09/06 15-25	05/09/06 15-25	05/09/06 15:25	05/09/06 15:25
25	Aliquot Units	lm	m	m	ml	lm	m	mi	m	m	m l	l m	- lm	m
5/09/2006 15: 5/11/2006	Aliquot Volume	10	450	3672.74	3672.74	3672.74	3672.74	3672.74	3672.74	3672.74	3672.74	3672.74	3672.74	3672.74
Start: 0 Stop: Date: 0	Run #		-					-			-	-	-	-
Collect Collect Receive	Units	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
	MDC	1.49E+02	7.66E-01	3.37E+00	3.44E+00	7.18E+00	3.73E+00	8.93E+00	3.69E+00	6.18E+00	4.59E+00	3.70E+00	1.61E+01	5.23E+00
	Uncertainty 2 Sigma	1.45E+02	4.64E-01	2.03E+00	2.09E+00	4.09E+00	2.25E+00	5.42E+00	2.15E+00	3.77E+00	3.70E+00	2.12E+00	9.63E+00	3.10E+00
JL-007	Activity Conc	8.93E+02	-1.02E-02	8.75E-01	3.31E-01	5.58E+00	1.07E-01	1.49E+01	2.36E+00	-1.36E-01	1.24E+01	2.84E+00	5.93E+00	1.46E+00
/ G-BW-050906- 28597-10	SOP#	2010	2018	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Sample ID: W Station: Description: LIMS Number: L2	Radionuclide	H-3	TOTAL SR	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	CS-134	CS-137	BA-140	LA-140

Flag Values U = = U* = = High = Spec = = H = =

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery

High recovery

Bolded text indicates reportable value.

12 Page 10 of

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

unless otherwise noted

MDC - Minimum Detectable Concentration



Kathy Shaw

ort of Analysis	05/18/06 14:52
Report	05/1

Conestoga-Rovers & Associates

Kathy Shaw

EX001-3ESPBRAID-06

Sample ID: Station:	WG-BW-051006	6-JL-009			Collec	t Start: C)5/10/2006 09:	:20		Matrix: G	round Wat	er	(DAV)
Description:					Collec	st Stop:			**	/olume:		5	
LIMS Number:	L28597-11				Receiv	e Date: ()5/11/2006		% W	oisture:			
Radionuclide	#dUS	Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	1	, c	
	# 100	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Lount	Flag Values
TOTAL SR	2018	-2.63E-01	9.18E-01	1 53R±00	11:24								50nm - 9m -
MN-54	2007	1 13F+00	1 775-00	00.00.00	pur p		450	m	05/10/06 09:20	05/18/06	400	M	
CO-58	1000	5 001 01	1.1/12700	00+766.7	pCi/L		3661.65	ml	05/10/06 09:20	05/14/06	28800	Ser	11
FF_50	1007	-0.90E-01	1.//E+00	2.88E+00	pCi/L		3661.65	lm	05/10/06 09-20	05/14/06	00000	200	
	7007	6.01E+00	3.64E+00	6.43E+00	pCi/L		3661.65	lm	05/10/06 00-20	00/11/20	00007	200	No No
CO-00	2007	1.23E+00	1.91E+00	3.25E+00	<u></u>		3661 65	1	07.70 00 10 1 100	00/141/00	78800	Sec	No
ZN-65	2007	5.68E+00	4 46F+00	00 TILY	1100		C0.100C	Ē	05/10/06 09:20	05/14/06	28800	Sec	U No
NB-95	2007	2.69E+00	1 74F+00	3 DKF-D0			3661.65	ml	05/10/06 09:20	05/14/06	28800	Sec	U No
ZR-95	2007	-2.09E+00	2.97E+00	4 78F+00	bCI/T		3661.65	E	05/10/06 09:20	05/14/06	28800	Sec	U No
CS-134	2007	3.24E-01	3.11E+00	3 17 F+00	pure pure		501.005	ml.	05/10/06 09:20	05/14/06	28800	Sec	U No
CS-137	2007	1.72E+00	1.95E+00	3 79F+00	bCl/L		5001.005	m	05/10/06 09:20	05/14/06	28800	Sec	U No
BA-140	2007	3.38E+00	7 30F+00	1.04E+01	hci/r		3001.65	m	05/10/06 09:20	05/14/06	28800	Sec	U No
LA-140	2007	-7 00F-01	2 61E+00	10-74-77	bci/T		3661.65	ш	05/10/06 09:20	05/14/06	28800	Sec	U No
	· · ·		0017710-7	4.425E+UU	brit		3661.65	mI	05/10/06 09:20	05/14/06	28800	Sec	
Comment: 1	I ritium sampl	le lost in transi	ii.								-	222	0.140

Flag Values U =

Compound/Analyte not detected or less than 3 sigma 11 11

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma П

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification H + U* Spec

Low recovery 11

High recovery lí ЧL

Bolded text indicates reportable value.

12 Page 11 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

unless otherwise noted

BROWN ENGINEERING, INC. A Teledyne Technologies Company



L28597

Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

Sample ID:	WG-BW-051006	-JL-011			Collec	t Start: 0.	5/10/2006 09.	25		Matrix: Gr	ound Wate	cr		(MG)
Station:					Collec	t Stop:			-	/olume:				~
Description:					Receive	e Date: 0	5/11/2006		Μ%	oisture:				
LIMS Number: 1	L28597-12													
Dedicanalida	He Co	Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	Count	Count		
raulomachiae	#JOC	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Units	Flag Va	lues
H-3	2010	5.93E+01	9.34E+01	1.46E+02	pCi/L		10	m		05/18/06	60	Ν	11	
TOTAL SR	2018	-6.58E-02	6.30E-01	1.04E+00	pCi/L		450	lm	05/10/06 09:25	05/18/06	400	s Z		
MN-54	2007	9.64E-01	2.01E+00	3.37E+00	pCi/L		3738.23	m	05/10/06 09:25	05/14/06	28800	Sec	> 11	No
CO-58	2007	1.08E+00	2.00E+00	3.37E+00	pCi/L		3738.23	lm	05/10/06 09:25	05/14/06	28800	Sec		No
FE-59	2007	-1.30E+00	3.90E+00	6.35E+00	pCi/L		3738.23	m	05/10/06 09:25	05/14/06	28800	Sec		No
CO-60	2007	2.85E-01	1.97E+00	3.25E+00	pCi/L		3738.23	lm	05/10/06 09:25	05/14/06	28800	Sec		No
ZN-65	2007	5.61E+00	4.34E+00	7.60E+00	pCi/L		3738.23	m	05/10/06 09:25	05/14/06	28800	Sec		No
NB-95	2007	4.39E-01	1.96E+00	3.27E+00	pCi/L		3738.23	ml	05/10/06 09:25	05/14/06	28800	Sec	- II	No
ZR-95	2007	-2.40E-01	3.45E+00	5.70E+00	pCi/L		3738.23	lm	05/10/06 09:25	05/14/06	28800	Sec) []	No
CS-134	2007	3.89E+00	4.05E+00	3.72E+00	pCi/L		3738.23	mi	05/10/06 09:25	05/14/06	28800	Sec		No
CS-137	2007	1.38E-01	2.19E+00	3.57E+00	pCi/L		3738.23	ml	05/10/06 09-25	05/14/06	28800	Sec	D 12	No
BA-140	2007	-1.14E-01	8.65E+00	1.43E+01	pCi/L	-	3738.23	ml	05/10/06 09:25	05/14/06	28800	Sec		No
LA-140	2007	9.53E-01	2.79E+00	4.69E+00	pCi/L		3738.23	ml	05/10/06 09:25	05/14/06	28800	Sec	n	No
									AND ADDRESS ADDRES			And a second second second second second second second second second second second second second second second		

Flag Values U =

Activity concentration exceeds MDC and 3 signa, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Compound/Analyte not detected or less than 3 sigma 11 ll H High L H

li

1

Low recovery 11

High recovery H

12 of Page 12

MDC - Minimum Detectable Concentration

unless otherwise noted

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

Bolded text indicates reportable value.

L28597 35 of 111

QC Results Summary

QC Sumn 5/18/	1ary Report 2006 3:49:14PN	Ā	for L28597			<pre>k</pre>	TELEDYN BROWN ENGI	
				Н-3				Aundamo es
				Method Blank Sumn	nary			
<u>TBE Sample ID</u> WG3978-1	<u>Radionuclide</u> H-3	<u>Matrix</u> WO	Count Date/Time 05/17/2006 12:59		Blank Result < 1.810E+00	<u>Units</u> pCi/Total		<u>Qualifier</u> <u>P/F</u> U P
				LCS Sample Summ	ary			
<u>TBE Sample ID</u> WG3978-2	Radionuclide H-3	<u>Matrix</u> WO	Count Date/Time 05/18/2006 6:21	Softee Value 5.05E+002	LCS Result 4.240E+02	Units S pCi/Total	i <mark>pike Recovery</mark> 84.0	RangeQualifierP/F70-130+P
Spike ID: 3H-04 Spike conc: 5.05E Spike Vol: 1.00E	706-1 +002 -000							
				Duplicate Summar	y.			
TBE Sample ID WG3978-5 L28597-7	<u>Radionuclide</u> H-3	<u>Matrix</u> WG	Count Date/Time 05/17/2006 13:56	Original Result < 1.820E+02	DUP Result < 1.710E+02	<u>Units</u> pCi/L	RPD	RangeQualifierP/F<30
+ U Compoi time < 5 time	Result ind/analyte was analyze s the MDC are not eval	d, peak nc uated	t identified and/or no	t detected above MDC				Page: 1
** Nuclide *** Spiking P Pass F Fail NE Not eva	not detected level < 5 times activity luated							

QC Summary Report

3:49:14PM 5/18/2006

L28597 for



L28597

H-3

Associated Samples for

WG3978

L28597-2 L28597-3 L28597-4 L28597-5 L28597-6 L28597-7

CLIENTID

WG-BW-050906-MS002
WG-BW-050906-MS-004
WG-BW-050906-MS-006
WG-BW-050906-MS-008
WG-BW-050906-MS-010
WG-BW-051006-MS-012
WG-BW-050906-JL-001
WG-BW-050906-JL-003
WG-BW-050906-JL-005
WG-BW-050906-JL-007
WG-BW-051006-JL-011

L28597-10 L28597-12

L28597-9 L28597-8

+) * *

Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC

< 5 times the MĎC are not evaluated

Nuclide not detected

Spiking level < 5 times activity

Pass Fail Not evaluated

К К К К К К К



Page:

2

QC Sumn 5/18	nary Report 2006 3:49:14Pt	Σ	for L28597			*	TELEDYN BROWN ENGI	NEERING
				TOTAL SR			м телециие кесплаюдие	ег котрану
				Method Blank Sumn	nary			
<u>TBE Sample ID</u> WG3996-1	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WO	Count Date/Time 05/18/2006 4:02		Blank Result < 4.500E-01	<u>Units</u> pCi/Total		<u>Qualifier</u> <u>P/F</u> U P
				LCS Sample Summ	ary			
<u>TBE Sample ID</u> WG3996-2	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WO	Count Date/Time 05/18/2006 4:02	Spike Value 5.84E+001	LCS Result 6.640E+01	<u>Units</u> <u>Sp</u> pCi/Total	<u>ike Recovery</u> 113.8	<u>Range</u> Qualifier <u>P/F</u> 70-130 + P
Spike ID: 90SR- Spike conc: 2.34E Spike Vol: 2.50E	011905 +002 -001							•
				Duplicate Summar	ry			
TBE Sample ID WG3996-3 L28597-1	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WG	Count Date/Time 05/18/2006 4:02	Original Result < 1.040E+00	DUP Result < 1.770E+00	DCi/L	<u>RPD</u>	<u>Range</u> Qualifier <u>P/F</u> <30 ** NE
+ Positive U Compo * <5 tim ** Nuclide *** Spiking	Result und/analyte was analyze as the MDC are not eval not detected level < 5 times activity	ed, peak no luated	t identified and/or no	t detected above MDC				Page: 3
F Fail NE Not eva	duated							

QC Summary Report

L28597

for

3:49:14PM 5/18/2006

L28597

SR-90 (FAST)

WG3996 Associated Samples for

SAMPLENUM

CLIENTID

L28597-1	WG-BW-050906-MS002
L28597-2	WG-BW-050906-MS-004
L28597-3	WG-BW-050906-MS-006
L28597-4	WG-BW-050906-MS-008
L28597-5	WG-BW-050906-MS-010
L28597-6	WG-BW-051006-MS-012
L28597-7	WG-BW-050906-JL-001
L28597-8	WG-BW-050906-JL-003
L28597-9	WG-BW-050906-JL-005
L28597-10	WG-BW-050906-JL-007
L28597-11	WG-BW-051006-JL-009
L28597-12	WG-BW-051006-JL-011

1

Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated Nuclide not detected

+ D * * * a u U

Spiking level < 5 times activity

Pass Fail Not evaluated

4

Page:



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Raw Data

Raw Data Sheet (rawdata) May 18 2006, 03:06 pm

Work Order: L28597

Analyst ЪЩ 日日 뎚 년 БЦ Ы БJ БJ EJ Б ЪВ Decay & Ingrowth Factor .207 .209 .201 .232 .209 .207 .192 .224 .206 .209 .213 BÉÉ. 60 60 60 60 60 dt (min) 60 60 60 60 60 60 Bkg 1.67 1.67 1.67 **1.67** 1.67 1.67 1.67 1.67 counts 1.67 1.32 1.32 Bkg Page: l 60 60 60 Sample 60 dt (min) 60 60 60 60 60 60 60 counts 179 Total 179 **136** 339 151 113 143 232 133 327 96 Counter LS7 LS7 LS7 LS7 LS7 LS7 LS7 LS7 LS7 LS7 LS7 ß 17-may-06 17:06 17-may-06 20:16 17-may-06 17-may-06 17-may-06 17-may-06 22:23 17-may-06 23:26 18-may-06 02:38 Mount Count Weight Recovery Date/time 17-may-06 17-may-06 18-may-06 15:00 16:03 18:10 19:13 21:20 01:34 0 0 0 o 0 0 0 0 0 0 0 Date/time Milking Project : EX001-3ESPBRAID-06 Scavenge Date/time 10 ml MDC: 1.74E+02 * Customer: Exelon 10 ml MDC: 1.82E+02 * MDC: 1.69E+02 MDC: 1.68E+02 10 ml MDC: 1.51E+02 10 ml MDC: 1.68E+02 10 ml MDC: 1.57E+02 10 ml MDC: 1.49E+02 MDC: 1.46E+02 MDC: 1.7E+02 10 ml MDC: 1.7E+02 Volume/ Aliquot 10 ml 10 ml 10 ml 10 mI Reference Date/time Activity: 2.88E+02 * Error: 1.21E+02 Activity: 7.75E+02 * Error: 1.36E+02 L28597-5 H-3 Activity: 1.84E+02 * Error: 1.14E+02 Activity: 4.43E+02 * Error: 1.22E+02 Activity: 2.85E+02 * Error: 1.2E+02 Activity: 8.93E+02 * Error: 1.45E+02 Activity: 1.35E+02 Error: 1.15E+02 128597-4 H-3 Activity: 1.69E+02 Error: 1.22E+02 Error: 1.06E+02 Activity: 1.18E+02 Error: 1.11E+02 L28597-10 H-3 Activity: 5.93E+01 Error: 9.34E+01 Run Analysis н-3 н-3 н-3 Е-н H-3 н-3 н-3 н-3 H-3 WG-BW-050906-MS-008 WG-BW-050906-WS-010 WG-BW-050906-MS-004 WG-BW-050906-MS-006 WG-BW-051006-MS-012 WG-BW-050906-JL-001 WG-BW-050906-JL-005 WG-BW-050906-JL-003 WG-BW-050906-MS002 WG-BW-050906-JL-007 WG-BW-051006-JL-011 Activity: 4.8E+01 # Nuclide: H-3 L28597-6 L28597-12 Sample ID Client ID L28597-1 L28597-2 L28597-3 L28597-8 L28597-7 L28597-9

L28597 41 of 111

Raw Data Sheet (rawdata) May 18 2006, 03:06 pm

Work Order: <u>128597</u> Customer: <u>Exelon</u>

Ingrowth Decay & Factor .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 999 .351 .347 .345 .362 .349 .346 .356 .35 .347 .354 .352 REE. 200 200 400 400 400 (min) 400 400 400 400 400 400 Bkg đť 170 167 300 305 280 315 268 291 292 262 counts 264 Bkg dt (min) 100 100 400 400 400 400 400 400 400 Sample 400 400 counts Total 114 232 207 226 267 265 256 350 98 261 251 Counter YLB Y3A YIC A1D Y2A Y2B Y2C YJA Y3B ¥ЗD X2A 8 18-may-06 15:23 18-may-06 04:06 18-may-06 18-may-06 04:06 18-may-06 04:06 18-may-06 04:06 18-may-06 04:06 18-may-06 L8-may-06 18-may-06 04:02 18-may-06 Recovery Date/time Count 04:06 04:06 15:23 04:06 117.20 100.00 112.63 32.80 53.23 53.23 59.41 70.16 31.72 34.95 54.57 Weight Mount 0 0 0 0 0 0 0 0 0 0 0 Date/time Date/time Scavenge Milking 17-may-06 15:50 17-may-06 17-may-06 17-may-06 17-may-06 17-may-06 17-may-06 17-may-06 17-may-06 Project : EX001-3ESPBRAID-06 15:50 15:50 15:50 17-may-06 15:50 17-may-06 15:50 15:50 15:50 15:50 15:50 15:50 MDC: 1.04E+00 MDC: 1.05E+00 MDC: 1.06E+00 MDC: 1.24E+00 MDC: 1.79E+00 MDC: 5.16E-01 MDC: 9.19E-01 MDC: 1.81E+00 MDC: 1.06E+00 MDC: 7.66E-01 MDC: 1.53E+00 Volume/ Aliquot 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 09-may-06 09-may-06 09-may-06 09-may-06 Activity: -7.29E-01 Error: 6.07E-01 h L28597-6 TOTAL SR 10-may-06 WG-BW-051006-MS-012 09:30 <u>Error: 3.01E-01 h</u> TOTAL SR 09-may-06 Activity: -3.61E-02 Error: 5.56E-01 h L28597-8 TOTAL SR 09-may-06 09-may-06 ACTIVITY: 7.688-01 Error: 6.71E-01 A L28597-10 TOTAL SR 09-may-06 09-may-06 10-may-06 Reference Date/time Activity: -1.5E+00 Error: 1.02E+00 10:35 11:25 12:15 14:10 10:55 Error: 6.08E-01 Error: 6.84E-01 Activity: -1.27E+00 Error: 5.88E-01 15:10 <u>Activity: -7.968-01 Error: 1.068+00</u> L28597-9 TOTAL SR 09-ma 12:10 14:15 15:25 Activity: -1.02E-02 Error: 4.64E-01 09:20 Activity: -2.63E-01 Error: 9.18E-01 TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR SR TOTAL SR TOTAL Analysis SR-90 (FAST) WG-BW-050906-MS-006 WG-BW-050906-MS-010 WG-BW-050906-MS-004 WG-BW-050906-MS-008 Activity: 3.75E-01 WG-BW-050906-JL-001 WG-BW-050906-JL-003 WG-BW-050906-JL-005 Activity: 7.43E-01 WG-BW-050906-JL-007 WG-BW-050906-MS002 WG-BW-051006-JL-009 Activity: -3E-01 Run # L28597-11 L28597-1 L28597-4 L28597-5 L28597-2 L28597-3 Sample ID L28597-7 Client ID Nuclide:

L28597 42 of 111

Page: 2

Analyst GK

GK

GK

GK

GK

GK

Яg

В

GK

В

В

GK

.999

.345

400

289

100

284

X2B

18-may-06 04:02

55.11

0

17-may-06

15:50

MDC: 1.04E+00

450 ml

10-may-06

TOTAL SR

09:25

Activity: -6.58E-02 Error: 6.3E-01

WG-BW-051006-JL-011

L28597-12

L28597 43 of 111

Sec. Re	view: Ana	alyst: 2)	LIMS: _	<u> </u>	=======				
VAX/VMS TBE07 P	Teledyne H -10768B HpC	Brown Eng Ge ******	. Labor **** Aq	atory uisit	Gamma Ro ion Date	eport: 15- /Time: 14-	MAY-2006 MAY-2006	02:51 18:50	:04.66 :50.56
LIMS No	., Customer	r Name, C	lient I	D: WG	WG3975-:	1 EX BRAID			
Sample Sample Quantit Start C End Cha MDA Con	ID : 07 Type : WC y : 3. hannel : 40 nnel : 40 stant : 0.	7WG3975-1 3 65520E+0) En)90 Pk 00 Li	0 L ergy To Srch S brary U	l : ens: sed: 1	1.30000 5.00000 LIBD	Smple Dat Geometry BKGFILE Real Time Live time	e: 9-MAY- : 0735L0 : 07BG05 : 0 08:0 : 0 08:0	2006 : 90904 0506M 0:05.0 0:00.0	10:35:00.0 F 58 20
Pk It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 6 2 1 3 1 4 3 5 1 6 1 7 1 8 1 9 1 10 1 11 1 12 1	66.29* 139.70* 198.49* 241.83 294.97* 351.92* 500.08 595.27 609.43* 911.00* 1120.26* 1764.81*	285 248 439 106 121 119 59 235 119 55 53 42	638 934 670 545 498 407 247 331 268 99 107 60	1.22 1.43 2.22 1.51 1.29 1.16 1.39 4.56 1.71 2.22 2.08	133.42 280.30 397.91 484.61 590.93 704.84 1001.22 1191.62 1219.96 1823.10 2241.54	7.23E-01 2.09E+00 1.98E+00 1.61E+00 1.61E+00 1.43E+00 9.97E-01 9.80E-01 7.31E-01 6.26E-01	9.90E-03 8.61E-03 1.52E-02 3.68E-03 4.20E-03 4.13E-03 2.03E-03 8.16E-03 4.14E-03 1.90E-03 1.84E-03	16.7 24.5 12.2 41.7 39.4 34.9 51.5 17.2 33.1 43.7 47.4	2.56E+00 2.31E+00 1.29E+01 1.09E+00 2.47E+00 2.49E+00 7.21E-01 1.23E+01 1.99E+00 2.31E+00 1.49E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	ρĊi/L	%Error
AC-228	835.50		1.75	7.791E-01	Tiir	ne Not Found	
	911.07	55	27.70*	7.305E-01	6.937E+00	6.950E+00	87.36

Flag: "*" = Keyline

Summary of Nuclide Activity Sample ID : 07WG3975-1	L28597 44 of 111 Page : 2 Acquisition date : 14-MAY-2006 18:50:50					
Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identifie	12 10 ed by NID 2 16.67%					
Nuclide Type : natural						
Uncorrected Nuclide Hlife Decay pCi/L AC-228 5.75Y 1.00 6.937E+00	Decay Corr Decay Corr 2-Sigma pCi/L 2-Sigma Error %Error Flags 6.950E+00 6.071E+00 87.36					
Total Activity : 6.937E+00	6.950E+00					
Grand Total Activity : 6.937E+00	6.950E+00					
Flags: "K" = Keyline not found "E" = Manually edited	"M" = Manually accepted "A" = Nuclide specific abn. limit					
Unidentified Energy Lines Sample ID : 07WG3975-1 L28597 45 of 111

Sample	e ID : 0	7WG3975-	1		Ac	anisi	tion	data	7 4 3 4 7 4 7 4	Pag	ge :	3
It E	nerav	Area	Dleanal	TTTTTTTTTTTTT		quibi	CION	uale :	⊥4-MAY	-2006 1	8:50:	50
_		ALCA	вкдпа	FWHM	Channel	Left	Ρw	Cts/Sec	: %Err	%Eff	Fla	as
6	66.29	285	638	1.22	133 10	100	10	-				_~
1 1	39.70	248	934	1 43	280 20		16 9	9.90E-03	33.5	7.23E-	01	
1 1	98.49	439	670	2 22	200.30	276	10 8	3.61E-03	48.9	2.09E+	00	
3 2-	41.83	106	515	2.22	397.91	392	10 1	L.52E-02	24.5	1 98E+	00	
1 2	94.97	101	243	1.51	484.61	474	16 3	3.68E-03	83 4			
1 3	51 92	110	498	1.29	590.93	586	11 4	20E-03	700	1.0UE+	00 T	
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1 5		235	331	4.56	1191.62	1187	1/ 0		~ * * *	1.13E+	00	
)9.43	119	268	1.71	1219.96	1214	12 /	147 03	34.4	9.97E-	01	
	20.26	53	107	2.08	2241 54	2024 2024	10 1	.14E-03	66.1	9.80E-0	01	
1 1/6	54.81	42	60	3.05	3530.16	3500	17 1	.84E-03	94.9	6.26E-0	01	
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Summary	of Nuc	lide Act	ivity									
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Number	of uni	Jentifie	in spe	ectrum		-	12					
Number	of line		a lines	5		-	10					
		s tenta	cively	ıdenti	fied by i	NID	2	16.	678			
Nuclide	Type :	natural							0,0			
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			Inc	orroat	wta	Mean						
Nuclide	Hli	fe De	7110		ed Decay	y Corr	с – Е	ecay Co	rr 2-	-Siama		
AC-228	5.7	'5Y 1	on c	PCI/L	pq	Ci/L	2 -	Sigma E	rror 🦻	Error	Flaga	
		L	.00 6.	937日+0	0 6.95	50E+00		6.071E+	00 8	37.36	rays	
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Grand	l Total	Activity	7 · C		~							
		ICCTVIC)	. 6.	937日+0(6.95	0E+00						
Flags: "	K" = Ke	yline no	t found	7	11 7 4 11		_					
н	E'' = Mai	nually e	dited	<i>.</i>	"M" ==	Manua	ally	accepte	ed			
T C		-			- A - =	NUCL	ide ;	specific	abn.	limit		
Interfer	ence Rep	port										
No inter	ference	correct	ion per	formed								
Combi	.		Por	r or med	L							
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- 1												
Ider	ntified	Nuclide	S									
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AC-228	~	0 - 0 -				(PCT	/ 山/					
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						/						

BE - 7				L28597	46 of 111
NA-24	6.582E+00	1.343E+01	2.268E+01		
K-40	3 960E+02	8.074E+02	1.296E+03	0.000E+00	0.290
CR-51	-1 907E+00	2.380E+01	4.363E+01	0.000E+00	-0.317
MN-54	-5 900E 01	1.503E+01	2.343E+01		0.091
CO-57	2.900E-01	1.555E+00	2.542E+00	0.000E+00	-0.810
CO-58	-4 785E 01	1.373E+00	2.310E+00	0.000E+00	-0.232
FE-59		1.584E+00	2.539E+00	0.000E+00	0.124
CO-60		3.368E+00	5.623E+00	0.000E+00	-0.188
ZN-65	5 324E + 00	1.744E+00	2.924E+00	$\begin{array}{c} 0.000 \pm 0.00 \end{array}$	0.138
SE-75	-9 6978 01	4.273E+00	6.409E+00	0.000E+00	0.157
SR-85	1 8198.01	2.036E+00	3.303E+00	0.000 ± 00	0.831
Y-88		2.016E+00	3.990E+00		-0.294
NB-94	2.0275+00 2.6527 01	1.899E+00	2.799E+00	$\begin{array}{c} 0.000 \pm 00 \\ 0.000 \pm 00 \end{array}$	4.560
NB-95	2.052E-01	1.558E+00	2.583E+00	0.000E+00	-0.939
ZR-95	$-5.879 \overline{E} + 00$	1.644E+00	2.848E+00	0.000E+00	0.103
MO-99	-9463E+00	2.960E+00	4.439E+00	$\begin{array}{c} 0.000 \text{E} + 00 \\ 0.000 \text{E} + 00 \end{array}$	0.869
RU-103		4.685E+01	7.621E+01	0.000E+00	-1.324
RU-106	5 600 - 00	2.017E+00	2.904E+00	0.000E+00	-0.124
AG-110m	-6 584E 01	1.490E+01	2.420E+01	0.000E+00	0.370
SN-113	-5 615E 01	1.494E+00	2.435E+00	0.000E+00	0.231
SB-124	-3 673 - 01	2.007E+00	3.270E+00	0.000E+00	-0.270
SB-125	$-8 221E_{-01}$	3.686E+00	2.625E+00	0.000E+00	-0.172
TE-129M	8 5828-01	4.521E+00	7.328E+00	0.000E+00	-0.140
I-131	-2579E+00	1.944E+01	3.196E+01	0.000E+00	-0.112
BA-133	2.5752+00 2.646E+00	2.403E+00	3.846E+00	0 000E+00	0.269
CS-134	2.051E+00	2.439E+00	3.591E+00	0.000E+00	-0.670
CS-136	-1.185E+00	3.652E+00	2.834E+00	0.000E+00	0.737
CS-137	1,429E-01	2.04/E+00	3.238E+00	0.000E+00	0.724
CE-139	4.867E - 01	1.653E+00	2.748E+00	0.000E+00	-0.366
BA-140	6.226E+00	1.469E+00	2.424E+00	0.000E+00	0.052
LA-140	$1.059E \pm 0.0$	7.267E+00	1.232E+01	0.000E+00	0.201
CE-141	2.200E+00	2.515E+00	4.259E+00	$0.000E\pm00$	0.505
CE-144	3.956E+00	3.012E+00	4.384E+00	0.000E+00	0.249
EU-152	-6.476E+00	1.248E+01	1.807E+01	$0.000E \pm 0.0$	0.502
EU-154	9.263E-01	5.567E+00	7.777E+00	0.000E+00	0.219
RA-226	-1.711E+00	2.8/4E+00	4.842E+00	0.000E+00	-0.833
TH-228	5.616E+00	3.915E+01	6.254E+01	0.000E+00	0.191
TH-232	6.937E+00	3.370E+00	5.159E+00	$0.000E_{-00}$	-0.027
U-235	4.728E-01	0.060E+00	1.137E+01	$0.000E \pm 00$	T.089
U-238	-1.941E+02	1.287E+01	1.799E+01	$0.000E \pm 00$	U.610
AM-241	8.502E+00	1.065E+02	2.827E+02	0.000E + 00	0.026
	2.0020+00	1.330E+01	1.982E+01	0.000E+00	-0.687
			_	~·000E+00	U.429

					т.2	8597 47 of 111
A,07WG39	75-1	,05/15/2006	02:51,05/09,	/2006 10:35	3 6555,00 40	
B,07WG39	75-1	,LIBD	,06	5/23/2005 07:2	5,055 <u>6</u> 400,W(9 WG3975-1 EX
C, AC-228	,YES,	6.950E+00,	6.071E+00,	8.800E+00.	0 790	t
C,BE-/	,NO,	6.582E+00,	1.343E+01,	2.268E+01.	0.790	
C, NA-24	,NO,	-4.109E+02,	8.074E+02,	1.296E+03.	-0 317	
C, K=40	,NO,	3.960E+00,	2.380E+01,	4.363E+01,	0.091	
C, CR-51	,NO,	-1.897E+01,	1.503E+01,	2.343E+01,,	-0.810	
C, MIN-54	, NO ,	-5.900E-01,	1.555E+00,	2.542E+00,,	-0.232	
C, CO = 57	, NO ,	2.861E-01,	1.373E+00,	2.310E+00,,	0.124	
C, CO-56 C FF-50	, NO , NO	-4.785E-01,	1.584E+00,	2.539E+00,	-0.188	
C, EE=39	, NO ,	7.774E-01,	3.368E+00,	5.623E+00,,	0.138	
$C_{\rm ZN-65}$, NO , NO	4.601E-01,	1.744E+00,	2.924E+00,,	0.157	
C_{SE-75}	, NO , NO	5.324E+00,	4.273E+00,	6.409E+00,	0.831	
C SR_{85}	, NO ,	-9.697E-01,	2.036E+00,	3.303E+00,,	-0.294	
C V - 88	, NO , NO	1.819E+01,	2.016E+00,	3.990E+00,,	4.560	
C.NR-94	, NO , NO	-2.627E+00,	1.899E+00,	2.799E+00,,	-0.939	
C. NB-95	, NO , NO	2.652E-01,	1.558E+00,	2.583E+00,,	0.103	
$C_{\rm r}ZR - 95$, NO , NO	2.4/4E+00,	1.644E+00,	2.848E+00,,	0.869	
C. MO-99	, NO , NO	-5.8/9E+00,	2.960E+00,	4.439E+00,,	-1.324	
C.RU-103	,NO , NO	-9.463E+00,	4.685E+01,	7.621E+01,,	-0.124	
C, RU-106	, NO , NO	1.075E+00,	2.017E+00,	2.904E+00,,	0.370	
C,AG-110m	NO ,	-6 594E 01	1.490E+01,	2.420E+01,,	0.231	
C, SN-113	NO ,	-0.004E-UL,	1.494E+00,	2.435E+00,,	-0.270	
C,SB-124	, NO	-3 672E 01	2.007E+00,	3.270E+00,,	-0.172	
C,SB-125	, NO	-8 221E 01	3.686E+00,	2.625E+00,,	-0.140	
C, TE-129M	, NO	8582E+00	4.521E+00,	7.328E+00,,	-0.112	
C,I-131	. NO	$-2579E_{00}$	1.944E+01,	3.196E+01,,	0.269	
C,BA-133	, NO	$2.575 \pm 00,$ 2.646 \x\00	2.403E+00,	3.846E+00,,	-0.670	
C,CS-134	, NO .	2.0400+00, 2.051F+00	2.439E+00,	3.591E+00,,	0.737	
C,CS-136	, NO .	-1 185E+00	3.652E+00,	2.834E+00,,	0.724	
C,CS-137	NO .	1 429E = 01	2.047E+00,	3.238E+00,,	-0.366	
C,CE-139	, NO ,	4.867E - 01	1.055E+00,	2.748E+00,,	0.052	
C,BA-140	, NO ,	6.226E+00	1.469E+00, 7.267E+00	2.424E+00,,	0.201	
C,LA-140	,NO ,	1.059E+00	7.207E+00, 2.515E.00	1.232E+01,,	0.505	
C,CE-141	,NO ,	2.200E+00	2.010E+00,	4.259E+00,,	0.249	
C,CE-144	,NO ,	3.956E+00	1 2/2E+00,	4.384E+00,,	0.502	
C,EU-152	,NO ,	-6.476E+00	5 5670,00	1.807E+01,,	0.219	
C,EU-154	,NO,	9.263E-01	2.3076+00, 2.874E+00	/.//E+00,,	-0.833	
C,RA-226	,NO,	-1.711E+00.	3 915E+00,	4.842E+00,,	0.191	
C,TH-228	,NO,	5.616E+00.	$3.370E\pm00$	0.254E+U1,,	-0.027	
C,TH-232	,NO,	6.937E+00.	$6.060E \pm 00$	ン・エンメビキリU,, 1 127日・01	1.089	
C,U-235	,NO,	4.728E-01.	$1.287E \pm 01$	エ・エンノビキリ上,, 1 700日、01	0.610	
C,U-238	,NO,	-1.941E+02.	1.865E+02	エ・/ソフロ+U上,, 2 807ロ・00	0.026	
C,AM-241	,NO,	8.502E+00.	$1.330E \pm 01$	4.04/5+U2,, 1.9005.01	-0.687	
	-		-,000HTUL,	工,90乙巴+01,,	0.429	

Sec	. Re	eview: An	alyst:	LIMS: _	\checkmark				L28597	48 of 1
=== VAX TBE	==== /VMS 04 B	5 Teledyne 2-40312B Hp	======================================	======= . Labor **** Ac	atory uisit	Gamma R ion Date	======================================	========= MAY-2006 MAY-2006	====== 17:48:4 08:52:2	0.15 9.10
LIM	s No	o., Custome	r Name, C	lient I	D: WG	L28597-	1 EX BRAID			
Sam Sam Qua Sta End MDA	ple ple ntit rt C Cha Con	ID : 0 Type : W Ty : 3 Channel : 9 Innel : 4 Instant : 0	4L28597-1 G .65520E+0 0 En 090 Pk .00 Li	0 L ergy Tc Srch S brary U	ol : Sens: Jsed:	1.70000 5.00000 LIBD	Smple Dat Geometry BKGFILE Real Time Live time	e: 9-MAY- : 0435L0 : 04BG05 : 0 08:0 : 0 08:0	2006 10 90804 0506MT 0:04.93 0:00.00	:35:00.0
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 2	6	63.42* 66.32*	78 231	871 778	1.42 1.41	127.40 133.20	5.54E-01 6.47E-01	2.70E-03 8.04E-03	72.0 2 22.7	.51E+00
3 4 5	3 1 1	92.72*	68 55	668 663	1.11 1.28	155.38	9.99E-01 1.39E+00	2.34E-03 1.91E-03	70.5 1 90.5 1	.73E+00 .57E+00
5 6 7	1 1 1	185.67* 198 50*	156 57 208	726 522 501	0.88	280.47 371.94	1.82E+00 1.73E+00	5.41E-03 1.98E-03	32.2 2 77.7 9	.84E+00 .35E-01
, 8 9	1 1	238.53*	208 67 113	454 529	1.40	477.67	1.68E+00 1.52E+00	7.22E-03 2.33E-03	23.0 9 63.2 3	.63E-01 .19E+00
10 11	1 5	352.22* 497.39	202	400	1.29 1.50	705.05	1.32E+00 1.17E+00 9.02E-01	7.01E-03	44.9 3 23.6 3	.05E+00 .91E+00
12 13	5 1	500.19 596.04	45 113	170 232	1.36	1001.01	8.98E-01 7.86E-01	1.55E-03	43.34 51.1 29.38	70F-01
14 15	1 1	609.31* 911.49*	211 19	200 121	2.00	1219.23 1823.51	7.73E-01 5.66E-01	7.31E-03 6.44E-041	17.4 3 156.2 1	.59E+00 .74E+00
16 17 18	1 1 1	969.78* 1460.94* 1764 27*	25 13	56 65	2.79 1.96	1940.06 2922.07	5.39E-01 3.92E-01	8.55E-04 4.58E-041	71.1 2	.07E+00 .72E-01
ΤU	1	I/VI·4/"	34	44	5.27	JJ40.43	3.43E-01	工.16比-03	52.9 1	.52E+00

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĆi/L	%Error
K-40	1460.81	13	10.67*	3.920E-01	8.100E+00	8.100E+00	327.98
RA-226	186.21	57	3.28*	1.727E+00	2.582E+01	2.582E+01	155 34
AC-228	835.50		1.75	6.054E-01	Li	ne Not Found	
	911.07	19	27.70*	5.655E-01	3.039E+00	3.043E+00	312 45
TH-228	238.63	67	44.60*	1.521E+00	2.542E+00	2.552E+00	126 31
	240.98		3.95	1.511E+00	T.i.	he Not Found	±20:51
TH-232	583.14		30.25	7.993E-01	I.ii	he Not Found	
	911.07	19	27.70*	5.655E-01	3.039E+00	3 039E+00	312 15
	969.11	25	16.60	5.386E-01	7.073E+00	7 073E+00	1/2 29
U-235	143.76		10.50*	1.822E+00	Lii	e Not Found	
	163.35		4.70	1.796E+00	T.ir	he Not Found	
	185.71	57	54.00	1.727E+00	1.569E+00	1 569F±00	155 24
					2.2000100		エンフ・コキ

205.31		4.70	1.652E+00		Line Not	Found	
Nuclide Type: fissio	n			Uncorrect	ed Decay	Corr	2-Sigma

K0-103 497.08 36 89.00* 9.020E-01 1.152E+00 1.238E	RU-103 497.08 36 89.00* 9	.020E-01 1.152E+00	рС1/L 1.238E+00	%Error 86.53
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Flag: "*" = Keyline

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Summary Sample	of Nuclide ID : 04L285	Activit 97-1	ty	Acquisitic	on date : 13-MA	Pag Y-2006 0	e:2 8:52:29
Total Number Number	number of 1 of unident of lines to	ines in ified li entative	spectrum ines ely identifie	18 12 d by NID 6	33.33%		
Nucliae	Type : nati	iral					
Nuclide K-40 RA-226 AC-228 TH-228 TH-232 U-235	Hlife 1.28E+09Y 1600.00Y 5.75Y 1.91Y 1.41E+10Y 7.04E+08Y	Decay 1.00 1.00 1.00 1.00 1.00 1.00	Uncorrected pCi/L 8.100E+00 2.582E+01 3.039E+00 2.542E+00 3.039E+00 1.569E+00	Decay Corr pCi/L 8.100E+00 2.582E+01 3.043E+00 2.552E+00 3.039E+00 1.569E+00	Decay Corr 2-Sigma Error 26.57E+00 4.012E+01 9.507E+00 3.223E+00 9.494E+00 2.437E+00	2-Sigma %Error 327.98 155.34 312.45 126.31 312.45 155.34	Flags K
	Total Acti	vity :	4.411E+01	4.413E+01			
Nuclide	Type : fiss	ion					
Nuclide RU-103	Hlife 39.35D	Decay 1.07	Uncorrected pCi/L 1.152E+00	Decay Corr pCi/L 1.238E+00	Decay Corr 2-Sigma Error 1.071E+00	2-Sigma %Error 86.53	Flags
	TOTAL ACTI	vity :	1.152E+00	1.238E+00			
Grand	Total Acti	vity :	4.526E+01	4.536E+01			
Flags: " "	K" = Keylin E" = Manual	e not fo ly edite	ound ed	"M" = Manual "A" = Nuclid	ly accepted le specific abn	. limit	

Unidentified Energy Lines Sample ID : 04L28597-1 Page : 3 Acquisition date : 13-MAY-2006 08:52:29 Ιt Energy Bkgnd FWHM Channel Left Pw Cts/Sec %Err Area %Eff Flags 6 63.42 78 871 1.42 127.40 123 14 2.70E-03 **** 6 5.54E-01 66.32 231 778 1.41 133.20 123 14 8.04E-03 45.4 6.47E-01 3 77.40 68 668 155.38 142 17 2.34E-03 **** 1.11 1 9.99E-01 92.72 55 663 1.28 186.01 183 8 1.91E-03 **** 1 1.39E+00 139.94 156 726 280.47 277 8 5.41E-03 64.4 0.88 1 198.50 1.82E+00208 397.61 393 9 7.22E-03 46.1 591 1.07 1 295.39 1.68E+00 113 591.40 584 13 3.91E-03 89.8 529 1.80 1 352.22 1.32E+00202 400 705.05 698 14 7.01E-03 47.1 1.29 5 500.19 1.17E+0045 170 1.36 1001.01 993 13 1.55E-03 **** 1 596.04 8.98E-01 113 232 1.54 1192.69 1187 13 3.92E-03 58.7 7.86E-01 1 609.31 211 200 2.00 1219.23 1212 14 7.31E-03 34.7 1 1764.27 7.73E-01 34 3.27 3528.43 3519 16 1.16E-03 **** 44 3.43E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 18 Number of unidentified lines 12 Number of lines tentatively identified by NID 6 33.33% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr Nuclide 2-Sigma Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags K-40 1.28E+09Y 1.00 8.100E+00 8.100E+00 26.57E+00 RA-226 327.98 1600.00Y 1.00 2.582E+01 TH-2281.91Y1.002.542E+002.552E+00TH-2321.41E+10Y1.004.938E+004.938E+00 2.582E+01 4.012E+01 155.34 3.223E+00 126.31 6.906E+00 139.84 ---------Total Activity : 4.140E+01 4.141E+01 Nuclide Type : fission Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr Nuclide 2-Siqma Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags RU-103 39.35D 1.07 1.152E+00 1.238E+00 1.071E+00 86.53 -----------Total Activity : 1.152E+00 1.238E+00 Grand Total Activity : 4.256E+01 4.265E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report Interfering Interfered ------Nuclide Line Nuclide Line

TH-232 911.07 AC-228 911.07

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40 RU-103 RA-226	8.100E+00 1.238E+00 2.582E+01	2.657E+01 1.071E+00 4.012E+01	2.835E+01 2.909E+00 6.325E+01	0.000E+00 0.000E+00 0.000E+00	$0.286 \\ 0.426 \\ 0.408$
TH-232	2.552E+00 4.938E+00	3.223E+00 6.906E+00	4.843E+00 1.088E+01	0.000E+00 0.000E+00	0.527
Non-	Identified Nuclid	es			
	Key-Line				
Nuclide	Activity K.: (pCi/L) Ide	L. Act error ed	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-2.251E+00	1.494E+01	2.427E+01	0.000E+00	-0 093
NA - 24	-1.388E+02	1.815E+02	2.865E+02	0.000E+00	-0 485
CR-51	-1.200E+01	1.594E+01	2.532E+01	0.000E+00	-0.474
MN - 54	8.716E-01	1.703E+00	2.887E+00	0.000E+00	0.474
CO-57	-3.527E-01	1.540E+00	2.542E+00	0.000E+00	-0 129
0-58	-9.434E-01	1.788E+00	2.891E+00	0.000E+00	-0.226
FE-59	3.862E+00	3.641E+00	6.357E+00	0.000E+00	0.520
CO-60	6.514E-02	2.156E+00	3.523E+00	0.000E+00	0.000
ZN-65	5.142E-01	3.944E+00	6.564E+00	0.000E+00	0.010
SE-75	-2.739E-01	2.268E+00	3.725E+00	0 000E+00	0.076
SR-85	1.540E+01	2.216E+00	4.267E+00	0,000E+00	-0.074
Y-88	-4.675E-01	2.135E+00	3.462E+00	0.000E+00	0 125
NB-94	6.189E-01	1.729E+00	2.869E+00	0.000E+00	-0.135
NB-95	1.541E+00	1.873E+00	3.152E+00	0.000E+00	0.216
ZR-95	2.717E-01	3.271E+00	5.333E+00	0.000E+00	0.409
MO-99	~2.571E+01	3.537E+01	5.543E+01	0.000E+00	0.051
RU-106	1.350E+00	1.596E+01	2.642E+01	0.000E+00	-0.464
AG-110m	2.442E+00	1.717E+00	2.991E+00	0.000 ± 00	0.051
SN-113	-9.249E-02	2.199E+00	3.641E+00	0.000E+00	-0.025
SB-124	5.935E-01	3.828E+00	2.915E+00	0.0005+00	-0.025
SB-125	-4.868E+00	4.892E+00	7.773E+00	0,0008+00	0.204
TE-129M	5.495E+00	2.066E+01	3.420E+01	0,0005+00	-0.626
1-131	8.168E-01	2.328E+00	3.924E+00	0.000E+00	0.161
BA-133	4.461E+00	2.602E+00	3.992E+00	0 000F+00	1 110
CS-134	3.233E+00	3.737E+00	3.136E+00	0.000E+00	1,118
CS-136	-3.229E-01	2.064E+00	3.393E+00	0.000 ± 00	1.031
CS-137	5.787E-01	1.911E+00	3.179E+0.0	0.000 ± 00	-0.095
CE-139	7.444E-01	1.629E+00	2.686E+00	0.000E+00	0.182
BA-140	4.725E+00	7.394E+00	1.230E+01	0.000 ± 00	0.277
LA-140	1.608E+00	2.479E+00	4.249E+00	0.000 ± 00	0.384
CE-141	1.413E+00	3.378E+00	4.830E+00	0.000E+00	0.378
CE-144	1.560E+00	1.388E+01	2.059E+01	$\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $	0.292
EU-152	-1.323E+01	6.780E+00	8.460E+00	$\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $	0.076
EU-154	4.395E-01	3.232E+00	5.377E+00		-1.564
AC-228	3.043E+00	9.507E+00	$1.227E \pm 01$		0.082
V-235	7.503E+00	1.421E+01	$2.041F\pm01$		0.248
U-238	1.036E+02	1.979E+02	3 316F±00		0.368
AM-241	1.885E+01	1.600E+01	2.365E+01	0.000E+00 0.000E+00	0.312 0.797

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A,04L285	97-1	,05/14/2006	17.10 05/00				
B,04L285	97-1	, 1, I BD	±/:40,05/09	/2006 10:35,	3.655E+00,WG	L28597-1	ΕX
C,K-40	, YES	8 1005,00	,0.	3/14/2005 09:04	4,0435L090804		
C, RU-103	YES	1 229E+00	2.657E+01,	2.835E+01,,	0.286		
C.RA-226	VFC	1.230E+00,	1.071E+00,	2.909E+00,,	0.426		
C TH-228	, TEO,	2.582E+01,	4.012E+01,	6.325E+01,,	0.408		
C TH_220	, ied,	2.552E+00,	3.223E+00,	4.843E+00.	0 527		
C PF. 7	, IES,	4.938E+00,	6.906E+00,	1.088E+01.	0 454		
C, DE = 7	, NO ,	-2.251E+00,	1.494E+01,	2.427E+01	-0.092		
C, NA - 24	,NO,	-1.388E+02,	1.815E+02,	2.865E+02	-0.495		
C, CR-51	,NO,	-1.200E+01,	1.594E+01,	2.532E+01	-0.400		
C,MN-54	,NO,	8.716E-01,	1.703E+00.	$2.887E \pm 00$	-0.4/4		
C, CO-57	,NO,	-3.527E-01,	1.540E+00	2.0075+00,, 2.5422,00	0.302		
C,CO-58	,NO,	-9.434E-01,	1.788E+00	2.5420+00,,	-0.139		
C,FE-59	,NO,	3.862E+00.	$3 641 E \pm 00$	4.091E+00,,	-0.326		
C,CO-60	,NO,	6.514E-02.	2.156E+00	0.357E+00,,	0.608		
C,ZN-65	,NO,	5.142E-01	3,91/E,00,	3.523E+00,,	0.018		
C,SE-75	,NO,	-2.739E-01	$2.269 \pm 00,$	6.564E+00,,	0.078		
C,SR-85	, NO	$1.540E_{-01}$	2.200E+00,	3.725E+00,,	-0.074		
C,Y-88	NO .	$-4.675F_{-01}$	2.216E+00,	4.267E+00,,	3.609		
C,NB-94	NO	6 189E 01	2.135E+00,	3.462E+00,,	-0.135		
C,NB-95	, NO	1 5/1 E + 00	1.729E+00,	2.869E+00,,	0.216		
C, ZR-95	NO	2717001	1.873E+00,	3.152E+00,,	0.489		
C, MO-99	NO ,	2.717E-01	3.271E+00,	5.333E+00,,	0.051		
C.RU-106	, NO , NO	-2.571E+01,	3.537E+01,	5.543E+01,,	-0.464		
C. AG-110m	, NO , NO	1.350E+00,	1.596E+01,	2.642E+01,,	0.051		
C SN - 113	, NO , NO	2.442E+00,	l.717E+00,	2.991E+00,,	0 816		
$C SR_{124}$, NO ,	-9.249E-02,	2.199E+00,	3.641E+00.	-0.025		
$C, DD \perp 24$ $C \ CD \perp 125$, NO ,	5.935E-01,	3.828E+00,	2.915E+00.	0 204		
C, DD = 120	,NO ,	-4.868E+00,	4.892E+00,	7.773E+00	-0 626		
C, IE = IZ9M	,NO ,	5.495E+00,	2.066E+01,	3.420E+01	0.020		
C, I - I 3 I	,NO ,	8.168E-01,	2.328E+00,	$3.924E\pm00$	0.101		
C, BA-133	,NO,	4.461E+00,	2.602E+00.	3 992F±00	0.208		
C, CS-134	,NO,	3.233E+00,	3.737E+00	3 1368,00	1.118		
C, CS-136	,NO,	-3.229E-01,	2.064E+00	3 3925,00	1.031		
C,CS-137	,NO ,	5.787E-01,	1.911E+00	3.395E+00,, 3.170E+00,,	-0.095		
C,CE-139	,NO,	7.444E-01,	$1 629E \pm 00$	3.1/9E+00,,	0.182		
C,BA-140	,NO,	4.725E+00.	7 394E+00	2.686E+00,,	0.277		
C,LA-140	,NO,	1.608E+00	$2 470 \pi \cdot 00$	1.230E+01,,	0.384		
C,CE-141	,NO ,	1.413E+00	2.479E+00,	4.249E+00,,	0.378		
C,CE-144	,NO ,	1.560E+00	1 200 - 01	4.830E+00,,	0.292		
C,EU-152	NO .	-1 323E+01	1.388E+U1,	2.059E+01,,	0.076		
C,EU-154	NO	4 395E 01	6.780E+00,	8.460E+00,,	-1.564		
C, AC-228	NO ,	$3 042 \pm 00$	3.232E+00,	5.377E+00,,	0.082		
C,U-235	NO ,	7 FOST 00	9.507E+00,	1.227E+01,,	0.248		
C.U-238	$N \cap$	1.000日+00,	⊥.421E+01,	2.041E+01,,	0.368		
C.AM-241	$N \cap$	1.005H-02,	1.979E+02,	3.316E+02,,	0.312		
-1-1 717	, 110 ,	工.885년+01,	1.600E+01,	2.365E+01,	0.797		
				, ,			

Sec. Review: Analyst: LIMS: V

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 14-MAY-2006 17:49:32.24 TBE07 P-10768B HpGe ******* Aquisition Date/Time: 13-MAY-2006 08:52:47.42 _ _ _ _ _ _ _ . ------_ _ _ _ _ _ _ _ _ _

LIMS No., Customer Name, Client ID: WG L28597-2 EX BRAID

Sample ID : 07L285	97-2	Smple Date.	9-MAV-2006 11.25.00 0
Sample Type : WG		Geometry :	07351.090904
Quantity : 3.6068	0E+00 L	BKGFILE ·	078G050506MT
Start Channel : 40	Energy Tol : 1.30000	Real Time ·	$0.08 \cdot 00 \cdot 05.79$
End Channel : 4090	Pk Srch Sens: 5.00000	Live time ·	0 08:00:00 00
MDA Constant : 0.00	Library Used: LIBD		0.00.00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 12	7 1 1 1 1 1 1 1 1 1	66.22* 139.75* 185.75* 198.53* 238.61* 242.14 295.21* 351.83* 595.96 609.58* 768.59 1764.88*	343 254 139 240 145 100 180 331 191 339 52 41	661 878 738 803 612 549 492 538 222 242 183 54	1.48 1.02 1.89 1.31 1.29 1.00 1.00 1.27 2.16 1.54 2.81 2.93	133.29 280.40 372.43 397.99 478.17 485.25 591.41 704.67 1193.01 1220.25 1538.29 3530.30	7.21E-01 2.09E+00 2.02E+00 1.98E+00 1.82E+00 1.80E+00 1.61E+00 1.43E+00 9.96E-01 9.80E-01 8.29E-01	1.19E-02 8.83E-03 4.82E-03 8.33E-03 5.04E-03 3.48E-03 6.27E-03 1.15E-02 6.62E-03 1.18E-02 1.81E-03	14.4 22.6 39.0 23.7 33.8 41.7 24.8 16.7 17.2 12.1 59.0	2.16E+00 1.91E+00 1.05E+01 3.36E+00 4.44E+00 1.61E+00 7.07E-01 1.12E+00 9.39E-01 8.19E+00 8.70E-01
						0000.00		エ・モモロー () ろ	4フ・フ	エ・コムビキリリ

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

NT	-				Uncorrected	Decay Corr	2-Sigma
Nucliae	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Frror
RA-226	186.21	139	3.28*	2021E+00	$5 445 E_{\pm} 01$		70 01
TH-228	238 63	1/5	11 60+	1 0150.00		5.445E+U1	/8.04
	200.00	140	44.00*	1.8158+00	4.668E+00	4.687E+00	67.64
	240.98	100	3.95	1.801E+00	3.668E+01	3.683E+01	83.36

Flag: "*" = Keyline

L28597 55 of 111

Total number of lines in spectrum 12	
Number of lines tentatively identified by NID 3 25.00%	
Nuclide Type : natural	
Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flag RA-226 1600.00Y 1.00 5.445E+01 5.445E+01 4.250E+01 78.04 TH-228 1.91Y 1.00 4.668E+00 4.687E+00 3.170E+00 67.64	ls
Total Activity : 5.912E+01 5.914E+01	
Grand Total Activity : 5.912E+01 5.914E+01	
Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit	

L28597 56 of 111 Unidentified Energy Lines Page : Sample ID : 07L28597-2 Acquisition date : 13-MAY-2006 08:52:47 It Energy Area Bkqnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags 7 66.22 343 661 1.48 133.29 122 15 1.19E-02 28.8 7.21E-01 139.75 1 254 878 1.02 280.40 276 9 8.83E-03 45.2 2.09E+00 1 198.53 240 803 1.31 397.99 393 10 8.33E-03 47.4 1.98E+00 1 295.21 180 492 1.00 591.41 587 9 6.27E-03 49.6 1.61E+00 1 351.83 331 538 1.27 704.67 698 14 1.15E-02 33.5 1.43E+00 1 595.96 191 222 2.16 1193.01 1187 12 6.62E-03 34.5 9.96E-01 1 609.58 339 242 1.54 1220.25 1215 13 1.18E-02 24.3 9.80E-01 768.59 1 52 183 2.81 1538.29 1531 15 1.81E-03 **** 8.29E-01 1 1764.88 41 54 3530.30 3522 16 1.44E-03 99.7 2.93 4.54E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 12 Number of unidentified lines 9 Number of lines tentatively identified by NID 3 25.00% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr Nuclide 2-Sigma Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags RA-226 1600.00Y 1.00 5.445E+01 5.445E+01 4.250E+01 78.04 TH-228 1.91Y 1.00 5.006E+00 5.026E+00 3.153E+00 62.74 ----------Total Activity : 5.946E+01 5.948E+01 Grand Total Activity : 5.946E+01 5.948E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Activity Act error MDA MDA error Nuclide Act/MDA (pCi/L) (pCi/L) RA-226 5.445E+01 4.250E+01 5.730E+01 0.000E+00 TH-228 0.950 5.026E+00 3.153E+00 4.629E+00 0.000E+00 1.086 ---- Non-Identified Nuclides ----

> Key-Line Activity

> > (pCi/L)

Nuclide

K.L. Act error

Ided

MDA

(pCi/L)

MDA error

Act/MDA

3

L28597 57 of 111

BE-7	-5.601E+00	1.380E+01	$2 266E \cdot 01$		
NA-24	-3.309E+01	1 638E+02	2.200E+01	0.000E+00	-0.247
K-40	-5.963E+00	$2.353E_{\pm}01$	2.0/3E+UZ	0.000E+00	-0.124
CR-51	-1.003E+01	$1 484E\pm01$	4,2/5E+UL 2,2E2E+01	0.000E+00	-0.139
MN-54	2.455E-01	1 659E+00	2.353E+01	0.000E+00	-0.426
CO-57	3.186E-01	1 436 - 00	2.771E+00	0.000E+00	0.089
CO-58	1.061E-02	1 631 - 00	2.4168+00	0.000E+00	0.132
FE-59	1.221E-01	3 3705+00	2.653E+00	0.000E+00	0.004
CO-60	1.147E+00	1 679E+00	5.577E+00	0.000E+00	0.022
ZN-65	8,082E+00		2.878E+00	0.000E+00	0.399
SE-75	-8 322E-01	3.757E+00	6.752E+00	0.000E+00	1.197
SR-85	1 925F±01	2.084E+00	3.388E+00	0.000E+00	-0.246
Y-88	$3 817E_{-01}$	2.024E+00	4.035E+00	0.000E+00	4.770
NB-94	-5 8/9E - 01	1.920E+00	3.169E+00	0.000E+00	0.120
NB-95	$2 979 \overline{E} 0 1$	1.60/E+00	2.613E+00	0.000E+00	-0.224
ZR - 95	5 409E 01	1.919E+00	2.887E+00	0.000E+00	1.032
MO - 99		3.109E+00	4.757E+00	0.000E+00	0.135
RII-103	1 612046400	3.360E+01	5.450E+01	0.000E+00	-0.169
RU-106		⊥.686E+00	2.877E+00	0.000E+00	0.561
AG = 110m	-9.960E+00	1.546E+01	2.366E+01	0.000E+00	-0.421
SN_{-113}	4.909E-01	1.594E+00	2.673E+00	0.000E+00	0.184
SR 113	-2.803E+00	2.140E+00	3.381E+00	0.000E+00	~0 829
	1.889E+00	3.495E+00	2.723E+00	0.000E+00	0 694
DD-125 TT 120M	3.416E-01	4.622E+00	7.554E+00	0.000E+00	0 045
IG-IZ9M T 101	2.643E+01	1.918E+01	3.249E+01	0.000E+00	0.040
	-6.399E-01	2.210E+00	3.624E+00	0.000E+00	-0.177
DA-133	6.840E+00	2.569E+00	3.993E+00	0.000E+00	1 712
CS = 134	8.252E+00	3.047E+00	3.333E+00	0.000E+00	1.713
CS - 136	-1.602E+00	1.931E+00	3.019E+00	0.000E+00	2.470 -0 521
CS-137	1.496E+00	1.770E+00	3.022E+00	0.000E+00	-0.33I
CE-139	-2.067E+00	1.479E+00	2.349E+00	$0.000E\pm00$	0.495
BA-140	4.548E+00	6.882E+00	1.158E+01	0.000E+00	-0.880
LA-140	-4.398E-01	2.294E+00	3.750E+00	0.000E+00	0.393
CE-141	-2.788E-02	3.164E+00	4.501E+00	0.000E+00	-0.117
CE-144	-6.946E+00	1.309E+01	1.847E+01	0.000E+00	-0.006
EU-152	-1.354E+01	5.952E+00	7.639E+00	0.000E+00	-0.376
EU-154	-2.177E+00	2.988E+00	4 929E+00	0.000E+00	-1.773
AC-228	-8.186E-01	6.806E+00	$1 115E_{-01}$	0.000E+00	-0.442
TH-232	-8.175E-01	6.797E+00	$\frac{1}{1} \frac{1}{4} \overline{\nu} \cdot 01$	0.0008+00	-0.073
U-235	-2.865E-01	1.362E+01	1 9020,01	U.UUUE+00	-0.073
U-238	-7.038E+01	1.899E+02	1,2V3E+V1 2,000E+00	U.UUUE+00	-0.015
AM-241	1.091E+00	1 426F±01	ム・フロレビ+UZ つ - DOFT 01	U.UUUE+00	-0.236
		7.120D+01	2.U05E+U1	U.000E+00	0.052

L28597 58 of 111

A,07L2859	97-2	,05/14/2006	17:49.05/09	/2006 11.25	3 6075,00 100		
B,07L2859	97-2	,LIBD	, ,	6/23/2005 07.26	072EL00004	Б28597-2	ΕX
C,RA-226	,YES,	5.445E+01,	4.250E+01.	5 730F±01	,07351090904		
C,TH-228	,YES,	5.026E+00,	3.153E+00	4 629E+00	0.950		
C,BE-7	,NO,	-5.601E+00,	1.380E+01	$2 266 \mathbb{F} + 01$	1.086		
C,NA-24	,NO,	-3.309E+01	1 638E±02	2.200E+01,,	-0.24/		
C,K-40	, NO ,	-5.963E+00	$2353F\pm01$	4 275E+02,	-0.124		
C,CR-51	, NO ,	-1.003E+01	1.484E+01	4.275E+01,	-0.139		
C,MN-54	, NO	2.455E-01	1 659ELOO	2.353E+01,	-0.426		
C,CO-57	NO .	3 186E - 01	1.436E+00,	2.771E+00,,	0.089		
C, CO-58	NO .	1 061E = 02	1,430E+00,	2.416E+00,,	0.132		
C,FE-59	NO	1 221E - 01	1.031E+00,	2.653E+00,,	0.004		
$C_{-}CO_{-}60$	NO ,	$1 1 4 7 \overline{E} + 00$	$3.370\pm00,$	5.577E+00,,	0.022		
C.ZN-65	NO ,	$\frac{1}{2} \cdot \frac{1}{2} 1.078E+00,	2.878E+00,,	0.399			
C.SE-75	NO ,	-8 322E 01	3.75/E+00,	6.752E+00,,	1.197		
C.SR-85	, NO , NO	1 O	2.084E+00,	3.388E+00,,	-0.246		
C. Y-88	, NO , NO	1.925E+01,	2.024E+00,	4.035E+00,,	4.770		
C NR-94	, NO , NO	5.81/E-UI,	1.920E+00,	3.169E+00,,	0.120		
C NR-95	, NO ,	-3.849E-UL,	1.607E+00,	2.613E+00,,	-0.224		
C ZR_{95}	, INO ,	2.979E+00,	1.919E+00,	2.887E+00,,	1.032		
C MO_{-99}	, NO ,	6.408E-01,	3.109E+00,	4.757E+00,,	0.135		
C, $MO = 39$, NO , NO	-9.204E+00,	3.360E+01,	5.450E+01,,	-0.169		
C, RU-103	, NO ,	1.613E+00,	1.686E+00,	2.877E+00,,	0.561		
C, RU-106	, NO ,	-9.960E+00,	1.546E+01,	2.366E+01,,	-0.421		
C, AG-110m	,NO,	4.909E-01,	1.594E+00,	2.673E+00,,	0.184		
C, SN-113	,NO,	-2.803E+00,	2.140E+00,	3.381E+00,,	-0.829		
C, SB-124	,NO,	1.889E+00,	3.495E+00,	2.723E+00,,	0.694		
C,SB-125	,NO,	3.416E-01,	4.622E+00,	7.554E+00,,	0.045		
C, TE-129M	,NO,	2.643E+01,	1.918E+01,	3.249E+01,,	0.814		
C,1-131	,NO,	-6.399E-01,	2.210E+00,	3.624E+00,	-0.177		
C, BA-133	,NO,	6.840E+00,	2.569E+00,	3.993E+00,	1.713		
C,CS-134	,NO,	8.252E+00,	3.047E+00,	3.333E+00.	2.476		
C,CS-136	,NO,	-1.602E+00,	1.931E+00,	3.019E+00.	-0.531		
C,CS-137	,NO,	1.496E+00,	1.770E+00,	3.022E+00,	0.495		
C,CE-139	,NO,	-2.067E+00,	1.479E+00,	2.349E+00.	-0.880		
C,BA-140	,NO,	4.548E+00,	6.882E+00,	1.158E+01.	0.393		
C,LA-140	,NO,	-4.398E-01,	2.294E+00,	3.750E+00	-0.117		
C,CE-141	,NO ,	-2.788E-02,	3.164E+00,	4.501E+00	-0 006		
C,CE-144	,NO,	-6.946E+00,	1.309E+01,	1.847E+01	-0.376		
C,EU-152	,NO,	-1.354E+01,	5.952E+00	7 639E+00	-0.376		
C,EU-154	,NO,	-2.177E+00,	2.988E+00	4 929FL00	-1.113		
C,AC-228	,NO,	-8.186E-01,	6.806E+00	1 115R+01			
C,TH-232	,NO,	-8.175E-01.	6.797E+00	1 11/E 01	-0.073		
C,U-235	, NO ,	-2.865E-01	$1 362E \pm 01$	エ・エエキロキVエ,, 1 QA2セ・A1	-0.073		
C,U-238	,NO,	-7.038E+01	$1 899F \pm 02$	1, 303E+01,	-0.015		
C,AM-241	, NO	1.091E+00	$\pm \cdot 0)) \pm + 0 Z_{i}$	2.90UE+UZ,, 2.00EF2.01	-0.236		
	, /	×.05.00,	工・サムロロナリエ,	∠.U&5E+U⊥,,	0.052		

Sec. Review:

Analyst: LIMS: V

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 14-MAY-2006 17:50:35.22 TBE10 12892256 HpGe ******** Aquisition Date/Time: 13-MAY-2006 08:52:59.77

LIMS No., Customer Name, Client ID: WG L28597-3 EX BRAID

Sample ID Sample Type	: :	10L28597-3 WG		Smple Date:	9-MAY-2006 12:15:00.0
Quantity Start Channel End Channel MDA Constant	: : :	3.53210E+00 L 80 Energy Tol : 1.3000 4090 Pk Srch Sens: 5.0000 0.00 Library Used: LIBD	0	BKGFILE : Real Time : Live time :	1035L091004 10BG050506MT 0 08:00:04.82 0 08:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec ⁹	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 2 3 4 5 11 12 13 4 15 16	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	66.57* 92.73* 139.76 186.03* 198.31* 238.71* 295.32* 352.07* 583.29* 595.86 609.10* 768.54 1120.89* 1237.97* 1407.68 1460.58*	256 9 287 10 147 31 156 347 19 113 235 47 99 42 43 22	1110 895 838 714 681 702 657 341 182 169 289 138 94 50 23 53	1.81 1.11 1.53 1.51 1.61 0.89 1.86 1.48 1.22 1.20 1.26 1.81 3.00 1.83 2.42 2.20	132.38 184.73 278.86 371.47 396.04 476.90 590.19 703.77 1166.60 1191.76 1218.26 1537.44 2242.93 2477.37 2817.22	6.42E-01 1.30E+00 1.68E+00 1.59E+00 1.55E+00 1.40E+00 1.21E+00 1.07E+00 7.18E-01 7.06E-01 6.94E-01 5.79E-01 4.33E-01 4.01E-01 3.65E-01	8.88E-03 3.09E-0463 9.96E-03 3.53E-0453 5.10E-03 1.09E-0316 5.42E-03 1.21E-02 1.21E-02 1.21E-02 1.21E-03 1.93E-03 2.15E-03 1.65E-03 2.45E-03 1.44E-03 3.50E-03 2	<pre>%Err 26.0 32.3 19.1 11.0 35.6 54.3 37.0 2.8 6.3 23.3 51.7 88.8 8.8 5.6</pre>	Fit 2.58E+00 1.77E+00 1.85E+00 1.41E+00 9.69E-01 1.87E+00 2.51E+00 2.51E+00 1.27E+00 3.56E-01 2.90E+00 6.46E-01 2.74E+00 1.17E+00 1.89E+00
17	1	1764.73*	41	54	2.65	3532.36	3.13E-01	1.43E-03 4	0.5	1.70E+00 8.87E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Fnorm	7	0 - 1		Uncorrected	Decay Corr	2-Sigma
V 40	Energy	Area	∛Abn	%Eff	pCi/L	pĈi/L	%Frror
K-40	1460.81	22	10.67*	3.559E-01	1.516E+01		001 0F
RA-226	186.21	10	3 28*	1 59/10,00		T. JI05+01	221.05
TH-228	238 63	21	44 604	1.0946+00	5.165E+00	5.165E+00	1022.04
220	230.03	21	44.60*	⊥.400E+00	1.336E+00	1.342E+00	328 52
	240.98		3.95	1.392E+00	T.ir	Not Found	520.52
U-235	143.76		10.50*	1.683E+00	Tir	Not Found	
	163.35		1 70	1 (000 00		le Not Found	
	100 71	1.0	4.70	1.659E+00	Lir	ie Not Found	
	T02./T	± 0	54.00	1.594E+00	3.137E-01	3 1378-01	1000 04
	205.31		4.70	1 5248+00	T		1022.04
			±•,0	1.0240400	Llr	le Not Found	

Flag: "*" = Keyline

Summary of Nuclide Activity Sample ID : 10L28597-3 Page : 2 Acquisition date : 13-MAY-2006 08:52:59 Total number of lines in spectrum 17 Number of unidentified lines 12 Number of lines tentatively identified by NID 5 29.41% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide Hlife Decay pCi/L pĊi/L 2-Sigma Error %Error Flags K-40 1.28E+09Y 1.00 1.516E+01

 1.516E+01
 3.352E+01
 221.05

 5.165E+00
 52.79E+00
 1022.04

 1.242E+02
 52.79E+00
 1022.04

 RA-226 1600.00Y 1.00 5.165E+00 TH-228 1.336E+001.342E+004.408E+00328.523.137E-013.137E-0132.06E-011022.04K 1.91Y 1.00 U-235 7.04E+08Y 1.00 _____ _____ Total Activity : 2.198E+01 2.198E+01 Grand Total Activity : 2.198E+01 2.198E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit

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0.220

Unidentified Energy Lines Sample ID : 10L28597-3

Page : 3 Acquisition date : 13-MAY-2006 08:52:59

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	66.57 92.73 139.76 198.31 295.32 352.07 583.29 595.86 609.10 768.54 1120.89 1237.97 1407.68 1764.73	256 9 287 147 156 347 19 113 235 47 99 42 43 41	1110 895 838 681 657 341 182 169 289 138 94 50 23 54	1.81 1.11 1.53 1.61 1.86 1.48 1.22 1.20 1.26 1.81 3.00 1.83 2.42 2.65	132.38 184.73 278.86 396.04 590.19 703.77 1166.60 1191.76 1218.26 1537.44 2242.93 2477.37 2817.22 3532.36	128 181 275 392 583 699 1162 1188 1212 1532 2232 2472 2813 3522	10 8 9 14 11 10 14 12 22 10 10 18	8.88E-03 $3.09E-04$ $9.96E-03$ $5.10E-03$ $5.42E-03$ $1.21E-02$ $6.77E-04$ $3.93E-03$ $8.15E-03$ $1.65E-03$ $3.45E-03$ $1.44E-03$ $1.50E-03$ $1.43E-03$	52.1 **** 38.2 71.3 74.1 25.6 **** 46.6 35.6 **** 57.7 77.5 51.3 98.8	6.42E-0 1.30E+0 1.68E+0 1.55E+0 1.21E+0 1.07E+0 7.18E-0 7.06E-0 6.94E-0 5.79E-0 4.33E-0 4.01E-0 3.65E-0 3.13E-0	01 00 00 00 00 00 00 00 00 00 00 00 00 0
Sum	mary of Nu	uclide Act	ivity								
Tot Nur Nucl Nucl K-40 RA-2 TH-2 G Flag Inte	tal number nber of un nber of li lide Type ide H 1.28E 226 1600 228 1 Tota tand Tota s: "K" = 1 "E" = 1 rference 1	c of lines identifie nes tenta : natural : natural : life De +09Y 1 .00Y 1 .00Y 1 .91Y 1 l Activity l Activity Keyline no Manually of Report	in spe d lines tively Wt Unc cay .00 1. .00 5. .00 1. y : 2. y : 2. y : 2. pt foun edited	ectrum identi cd Mean correct pCi/L 516E+0 336E+0 166E+0 166E+0 d	fied by wtd ed Deca 1 1.5 0 5.1 0 1.3 1 2.1 1 2.1 1 2.1	NID Mean y Cor Ci/L 16E+0 65E+0 42E+0 67E+0 67E+0 67E+0 67E+0 7 67E+0 7 67E+0 7 67E+0 7 67E+0 7 67E+0 7 6 7 8 7 8 7 8 7 8 7 8 7 8 9 8 9 8 9 8 9 9 9 9	17 12 5 r 1 0 0 - 1 1 1 1 1 1	29. Decay Co 2-Sigma E 3.352E+ 52.79E+ 4.408E+	41% rr 2 rror 00 10 00 3 ed c abn.	2-Sigma %Error 1 221.05 022.04 328.52 limit	flags
No i	nterferend	ce correct	cion pe	rforme	d						
Comb	ined Activ	vity-MDA F	Report								
	Identifie	ed Nuclide	es								
Nucl	ide	Activity (pCi/L)		Act ei	rror	M (pC	DA i/L)	IDA er	ror A	ct/MDA
K-40 RA-22 TH-22	26 28	1.516E+01 5.165E+00 1.342E+00		3.352E 5.279E 4.408E	E+01 E+01 E+00	3.52 8.18 6.09	7E+ 7E+ 5E+	01 0 01 0 00 0	.000E .000E	+00 +00 +00	0.430 0.063 0.220

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-3.205E+00		1.767E+01	2.891E+01	0.000E+00	-0.111
NA-24	-3.831E+02		2.056E+02	2.978E+02	0.000E+00	-1.286
CR-51	-1.474E+01		1.917E+01	3.071E+01	0.000E+00	-0.480
MN - 54	1.309E+00		2.109E+00	3.538E+00	0.000E+00	0.370
CO-57	-2.008E-01		2.074E+00	3.435E+00	0.000E+00	-0.058
CO-58	-1.368E+00		2.072E+00	3.269E+00	0.000E+00	-0.419
FE-59	4.690E+00		4.222E+00	7.315E+00	0.000E+00	0.641
CO-60	2.495E-01		2.252E+00	3.734E+00	0.000E+00	0.067
ZN-65	7.834E+00		5.732E+00	8.668E+00	0.000E+00	0.904
SE-75	2.158E+00		2.814E+00	4.740E+00	0.000E+00	0.455
SR-85	1.612E+01		2.526E+00	4.829E+00	0.000E+00	3.337
Y-88	5.248E-02		2.288E+00	3.754E+00	0.000E+00	0.014
NB-94	4.605E-01		1.989E+00	3.311E+00	0.000E+00	0.139
NB-95	1.099E+00		2.688E+00	3.806E+00	0.000E+00	0.289
ZR-95	3.015E+00		4.007E+00	6.536E+00	0.000E+00	0.461
MO - 99	-4.047E+00		4.222E+01	6.907E+01	0.000E+00	-0.059
RU-103	3.670E+00		2.266E+00	3.926E+00	0.000E+00	0.935
RU-106	-1.320E+01		2.028E+01	3.191E+01	0.000E+00	-0.414
AG-110m	6.481E-01		2.093E+00	3.508E+00	0.000E+00	0.185
SN-113	1.400E+00		2.716E+00	4.595E+00	0.000E+00	0.305
SB-124	-3.139E+00		5.267E+00	3.435E+00	0.000E+00	-0.914
SB-125	-3.040E-01		5.926E+00	9.807E+00	0.000E+00	-0.031
TE-129M	-2.072E+01		2.465E+01	3.950E+01	0.000E+00	-0.525
I-131	2.922E+00		2.956E+00	4.952E+00	0.000E+00	0.590
BA-133	9.135E+00		3.655E+00	5.541E+00	0.000E+00	1.649
CS-134	7.866E+00		4.108E+00	4.265E+00	0.000E+00	1.844
CS-136	-1.096E+00		2.407E+00	3.833E+00	0.000E+00	-0.286
CS-137	1.644E+00		2.299E+00	3.914E+00	0.000E+00	0.420
CE-139	3.709E-01		2.094E+00	3.441E+00	0.000E+00	0.108
BA-140	2.448E+00		9.060E+00	1.496E+01	0.000E+00	0 164
LA-140	2.911E+00		2.828E+00	5.014E+00	0.000E+00	0 581
CE-141	5.820E-01		4.408E+00	6.217E+00	0.000E+00	0 094
CE-144	-8.661E+00		1.875E+01	2.614E+01	0.000E+00	-0.331
EU-152	-7.793E+00		7.700E+00	1.054E+01	0.000E+00	-0 740
EU-154	-7.534E-01		4.329E+00	7.158E+00	0.000E+00	-0 105
AC-228	-2.206E-01		8.183E+00	1.323E+01	0.000E+00	-0.017
TH-232	-2.203E-01		8.172E+00	1.321E+01	0.000E+00	-0 017
U-235	1.769E+00		1.896E+01	2.648E+01	0.000E+00	0 067
U-238	1.338E+02		2.300E+02	3.903E+02	0.000E+00	0 343
AM-241	-4.704E+00		1.904E+01	2.871E+01	0.000E+00	-0.164

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A,10L2859	97-3	,05/14/2006	17:50,05/09	/2006 12:15.	3 532E+00 WG	1,28597-2	ΓV
B,10L2859	97-3	,LIBD	, 0 (6/09/2005 08.0)4 10351.091004	120377-3	ĽΛ
С,К-40	,YES,	1.516E+01,	3.352E+01,	3.527E+01.	0 430		
C,RA-226	,YES,	5.165E+00,	, 5.279E+01,	8.187E+01	0.063		
C,TH-228	,YES,	1.342E+00,	4.408E+00.	6.095E+00	0.005		
C,BE-7	,NO ,	-3.205E+00,	1.767E+01.	2.891E+01	~0.111		
C,NA-24	,NO,	-3.831E+02,	2.056E+02	$2.000 \pm 0100 \pm 02, 0$	_1 296		
C,CR-51	,NO,	-1.474E+01,	1.917E+01	$3 071F \pm 01$	-1.200		
C,MN-54	,NO,	1.309E+00,	2.109E+00	3.538E+00	-0.400		
C,CO-57	,NO,	-2.008E-01,	2.074E+00	3 435E+00	-0.059		
C,CO-58	,NO,	-1.368E+00,	2.072E+00	3 269E±00,,	-0.058		
C,FE-59	,NO ,	4.690E+00.	4 222E+00	$7 315 E_{100}$	~0.419		
C,CO-60	,NO ,	2.495E-01	2 252E + 00	7.5150+00,,	0.641		
C, ZN-65	, NO	7.834E+00	5, 732E+00,	$3.734\pm00,$	0.067		
C,SE-75	NO .	2.158E+00	$2.81/E_{+00}$	0.000E+UU,,	0.904		
C, SR-85	NO .	1.612E+01	2.0140+00, 2.5260+00	4.740E+00,,	0.455		
C,Y-88	, NO	5.248E-02	2.5200+00,	4.829E+00,,	3.337		
C, NB-94	. NO	4 605F-01	2.200E+00,	3.754E+00,,	0.014		
C.NB-95	NO ,	1,0005H 01, 1 099F,00	1.909E+00,	3.311E+00,,	0.139		
C, ZR-95	NO ,	3.015E+00,	2.000E+00,	3.806E+00,,	0.289		
C. MO-99	, NO ,	-1 047E+00,	4.00/E+00,	6.536E+00,,	0.461		
C RII-103	,NO ,	-4.0476+00,	4.222E+01,	6.907E+01,,	-0.059		
C RU-106	, NO , NO	1, 220E+00,	2.266E+00,	3.926E+00,,	0.935		
$C \Delta G = 110m$, NO , NO	-1.520E+01,	2.028E+01,	3.191E+01,,	-0.414		
C SN - 113	, NO ,	0.401E-UL,	2.093E+00,	3.508E+00,,	0.185		
$C SB_{124}$, NO ,	1.400E+00,	2.716E+00,	4.595E+00,,	0.305		
C, SD=124	, NO ,	-3.139E+00,	5.267日+00,	3.435E+00,,	-0.914		
C, DB = 120M	,NO ,	-3.040E-01,	5.926E+00,	9.807E+00,,	-0.031		
C T 121	, NO ,	~2.0/2E+01,	2.465E+01,	3.950E+01,,	-0.525		
$C, I^{-}LSL$, NO ,	2.922E+00,	2.956E+00,	4.952E+00,,	0.590		
C, BA=133	,NO ,	9.135E+00,	3.655E+00,	5.541E+00,,	1.649		
C, CS-134	,NO ,	7.866E+00,	4.108E+00,	4.265E+00,,	1.844		
C, CS = 136	,NO ,	-1.096E+00,	2.407E+00,	3.833E+00,,	-0.286		
C, CS = 137	,NO ,	1.644E+00,	2.299E+00,	3.914E+00,,	0.420		
C, CE = 139	,NO ,	3.709E-01,	2.094E+00,	3.441E+00,,	0.108		
C, BA-140	,NO ,	2.448E+00,	9.060E+00,	1.496E+01,,	0.164		
C, LA-140	,NO ,	2.911E+00,	2.828E+00,	5.014E+00,,	0.581		
C, CE-141	,NO,	5.820E-01,	4.408E+00,	6.217E+00,,	0.094		
C, CE-144	,NO,	-8.661E+00,	1.875E+01,	2.614E+01,,	-0.331		
C,EU-152	,NO,	-7.793E+00,	7.700E+00,	1.054E+01,,	-0.740		
C,EU-154	,NO,	-7.534E-01,	4.329E+00,	7.158E+00,,	-0.105		
C,AC-228	,NO,	-2.206E-01,	8.183E+00,	1.323E+01	-0.017		
C, TH-232	,NO ,	-2.203E-01,	8.172E+00,	1.321E+01,.	-0.017		
C,U-235	,NO,	1.769E+00,	1.896E+01,	2.648E+01	0.067		
C,U-238	,NO,	1.338E+02,	2.300E+02,	3.903E+02.	0.343		
C,AM-241	,NO,	-4.704E+00,	1.904E+01,	2.871E+01	-0.164		
				= / /	~ •		

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Sec. Review:

DIZ T+

Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 15-MAY-2006 02:52:20.84 TBE10 12892256 HpGe ******** Aquisition Date/Time: 14-MAY-2006 18:52:04.86 LIMS No., Customer Name, Client ID: WG L28597-9 EX BRAID

 Sample ID
 : 10L28597-9
 Smple Date: 9-MAY-2006 14:15:00.0

 Sample Type
 : WG
 Geometry : 1035L091004

 Quantity
 : 3.61190E+00 L
 BKGFILE : 10BG050506MT

 Start Channel
 : 80
 Energy Tol : 1.30000
 Real Time : 0 08:00:04.64

 End Channel
 : 4090
 Pk Srch Sens: 5.00000
 Live time : 0 08:00:00.00

T 17	тC	Ellergy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	1 1 1 1 1 1 1 1 1 1 1 1 1	66.56* 139.77 185.76* 198.30* 238.60* 241.77 294.89* 352.01* 499.97 596.14 609.04* 911.23* 1120.32* 1238.06* 1764.57*	126 234 17 171 6 83 166 145 49 123 200 7 50 42 22	924 931 537 658 377 284 419 354 160 246 163 69 70 85 30	1.30 1.77 0.93 1.43 1.33 0.86 1.62 1.29 1.46 2.05 1.81 1.96 2.04 3.48 2.34	132.36 278.88 370.92 396.01 476.67 483.02 589.34 703.66 999.81 1192.32 1218.15 1823.12 2241.77 2477.54 3532.03	6.41E-01 1.68E+00 1.59E+00 1.55E+00 1.40E+00 1.39E+00 1.21E+00 1.07E+00 8.11E-01 7.06E-01 6.94E-01 5.07E-01 4.33E-01 4.01E-01 3.13E-01	$\begin{array}{c} 4.37E-03\\ 8.11E-03\\ 5.78E-042\\ 5.94E-03\\ 2.06E-046\\ 2.87E-03\\ 5.75E-03\\ 5.75E-03\\ 1.72E-03\\ 4.28E-03\\ 6.93E-03\\ 2.35E-042\\ 1.73E-03\\ 1.46E-03\\ 7.50E-04\end{array}$	$\begin{array}{r} 45.2\\ 25.2\\ 257.1\\ 31.2\\ 539.9\\ 31.8\\ 25.6\\ 28.7\\ 46.6\\ 30.1\\ 16.3\\ 76.2\\ 40.0\\ 58.3\\ 72.1 \end{array}$	8.63E-01 1.07E+00 9.78E-01 2.32E+00 2.99E+00 5.63E+00 9.50E-01 1.10E+00 1.54E+00 1.95E+00 2.22E+00 9.23E-01 2.46E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide RA-226 AC-228 TH-228 U-235	Energy 186.21 835.50 911.07 238.63 240.98 143.76 163.35 185.71 205.31	Area 17 6 83 17	<pre>%Abn 3.28* 1.75 27.70* 44.60* 3.95 10.50* 4.70 54.00 4.70</pre>	<pre>%Eff 1.594E+00 5.422E-01 5.069E-01 1.401E+00 1.389E+00 1.683E+00 1.659E+00 1.594E+00 1.524E+00</pre>	Uncorrected Decay Corr pCi/L pCi/L 8.274E+00 8.274E+00 Line Not Found 1.254E+00 1.256E+00 2.472E-01 2.485E-01 3.919E+01 3.940E+01 Line Not Found 5.026E-01 5.026E-01	2-Sigma %Error 514.16 552.46 1279.71 63.53 514.16
			4.70	エ・5乙4ビ+00	Line Not Found	

Flag: "*" = Keyline

Summary of Nuclide Activity	Page : 2
Sample ID : 10L28597-9	Acquisition date : 14-MAY-2006 18:52:04
Total number of lines in spectrum	15
Number of unidentified lines	11
Number of lines tentatively identifie	ed by NID 4 26.67%
Nuclide Type : natural	
Uncorrected Nuclide Hlife Decay pCi/L RA-226 1600.00Y 1.00 8.274E+00 AC-228 5.75Y 1.00 1.254E+00 TH-228 1.91Y 1.01 2.472E-01 U-235 7.04E+08Y 1.00 5.026E-01 Total Activity :	Decay Corr pCi/L 8.274E+00 2-Sigma Error %Error Flags 42.54E+00 514.16 1.256E+00 2.485E-01 5.026E-01 1.028E+01 Decay Corr 2-Sigma Error Flags 514.16 514.16 514.16 K
Grand Total Activity : 1.028E+01	1.028E+01
Flags: "K" = Keyline not found	"M" = Manually accepted
"E" = Manually edited	"A" = Nuclide specific abn. limit

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Unidentified Energy Lines Sample ID : 10L28597-9

Page : 3 Acquisition date : 14-MAY-2006 18:52:04 It Energy Area Bkqnd Channel Left Pw Cts/Sec %Err FWHM %Eff Flags 1 66.56 126 924 1.30 132.36 129 8 4.37E-03 90.4 6.41E-01 1 139.77 234 931 1.77 278.88 274 10 8.11E-03 50.4 1.68E+00 1 198.30 171 658 1.43 396.01 391 10 5.94E-03 62.4 1.55E+00 1 294.89 166 419 1.62 589.34 585 10 5.75E-03 51.2 1.21E+00 1 352.01 145 354 1.29 703.66 699 10 5.05E-03 57.5 1.07E+001 499.97 49 160 1.46 999.81 996 8 1.72E-03 93.2 8.11E-01 1 596.14 123 246 2.05 1192.32 1185 16 4.28E-03 60.2 7.06E-01 1 609.04 200 163 1.81 1218.15 1212 11 6.93E-03 32.6 6.94E-01 1 1120.32 50 70 2241.77 2236 12 1.73E-03 80.0 2.04 4.33E-01 1 1238.06 42 85 2477.54 2465 20 1.46E-03 **** 3.48 4.01E-01 1 1764.57 22 30 2.34 3532.03 3526 14 7.50E-04 **** 3.13E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 15 Number of unidentified lines 11 Number of lines tentatively identified by NID 4 26.67% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags RA-226 1600.00Y 1.00 8.274E+00 8.274E+00 42.54E+00 514.16 AC-228 5.75Y 1.00 1.254E+00 1.256E+00 6.939E+00 552.46 TH-228 1.91Y 1.01 2.472E-01 2.485E-01 31.80E-01 1279.71 ----------Total Activity : 9.775E+00 9.778E+00 Grand Total Activity : 9.775E+00 9.778E+00 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Activity Act error MDA MDA error Act/MDA Nuclide (pCi/L) (pCi/L) RA-226 8.274E+00 4.254E+01 7.883E+01 0.000E+00 0.105 AC-228 1.256E+00 6.939E+00 1.210E+01 0.000E+00 0.104 TH-228 2.485E-01 3.180E+00 5.902E+00 0.000E+00 0.042

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Act error Ided	MDA (pCi/L)	MDA error	Act/MDA
BE-7	7.817E+00	1.798E+01	3 0057.01		
NA-24	-2.718E+02	8.256E+02	1 3298,02	0.000E+00	0.260
K-40	1.910E+01	2.961E+01	$5 612 \overline{P} + 01$	0.000E+00	-0.205
CR-51	-1.939E+01	1.926E+01	3.064E+01	0.000E+00	0.340
MN-54	1.426E-01	2.116E+00	3.457E+01	0.000E+00	-0.633
CO-57	-1.180E+00	1.973E+00	3.237E+00	0.000E+00	0.041
CO-58	-2.335E+00	2.115E+00	3 263E+00	0.000E+00	-0.364
FE-59	1.784E+00	4.042E+00	6 776F+00	0.000E+00	-0.716
CO-60	3.661E-01	2.160E+00	3.595E+00	0.000E+00	0.263
ZN-65	7.560E+00	5.594E+00	8.455E+00	0.000E+00	0.102
SE-75	-2.875E+00	2.659E+00	4.277E+00	0.000E+00	0.894
SR-85	1.336E+01	2.498E+00	4.673E+00	0.000E+00	-0.672
Y-88	-9.809E-02	2.187E+00	3-568E+00	0.000E+00	2.858
NB-94	6.053E-01	1.962E+00	3.277E+0.0	0.000E+00	-0.027
NB-95	5.583E-01	2.021E+00	3.356E+00	0.000E+00	0.185
ZR-95	9.824E-01	3.661E+00	6.080E+00	0.000E+00	0.166
MO-99	-6.210E+01	5.843E+01	9.128E+01	0.000E+00	0.162
RU-103	2.829E+00	2.264E+00	3.877E+00	0.000E+00	-0.680
RU-106	-3.301E+00	1.794E+01	2.959E+01	0.000 ± 00	0.730
AG-110m	-1.685E-01	2.030E+00	3.351E+00	0.000E+00	-0.112
SN-113	9.963E-01	2.596E+00	4.376E+00	$\begin{array}{c} 0.000 \pm 0.000 \\ 0.000 \pm 0.000 \end{array}$	~0.050
SB-124	-4.339E-01	4.754E+00	3.363E+00	$0.000E\pm00$	0.228
SB-125	-1.652E+00	5.754E+00	9.450E+00	0.000E+00	-0.129
IE-129M	1.008E+01	2.524E+01	4.222E+01	0.000E+00	-0.175
I-131 DA 122	-6.738E-01	3.205E+00	5.173E+00	0.000E+00	-0 120
BA-133	7.727E+00	3.399E+00	5.133E+00	0.000E+00	-0.130
CS = 134	6.204E+00	4.631E+00	3.962E+00	0.000E+00	1 566
CS = 136	-1.709E+00	2.575E+00	4.057E+00	0.000E+00	-0 421
CE 120	5.282E-01	2.191E+00	3.663E+00	0.000E+00	0.421
CE-139 DD 140	-1.607E+00	2.030E+00	3.270E+00	0.000E+00	-0 192
BA = 140	1.501E+00	9.482E+00	1.559E+01	0.000E+00	0.492
DA = 140 CE 141	7.724E-01	3.048E+00	5.135E+00	0.000E+00	0.090
CE = 141	7.085E-01	4.420E+00	6.239E+00	0.000E+00	0.100
$\overline{\mathbf{FII}}_{-1}$	-4.404E+00	1.805E+01	2.532E+01	0.000E+00	-0 174
EU-152 FII_154	-3.380E+00	7.373E+00	1.033E+01	0.000E+00	-0.327
ШU-134 ТН-222	-1.82/E+00	4.107E+00	6.756E+00	0.000E+00	-0.270
TI=235	1.254出+00	+ 6.926E+00	1.322E+01	0.000E+00	0.095
U-238	エ・リノ8世+U1 5、フィイロ・ヘコ	1.827E+01	2.587E+01	0.000E+00	0.417
AM-241	ン・/06円+UL	2.145E+02	3.584E+02	0.000E+00	0.161
	-4.394世+01	1.787E+01	2.634E+01	0.000E+00	-1.668

A,10L2859	97-9	,05/15/2006	02:52.05/09/	2006 14.15			
B,10L2859	97-9	,LIBD	06	2000 14:15, 7/09/2005 00.04	3.612E+00,WG	L28597-9	ΕX
C,RA-226	,YES,	8.274E+00.	,00 4 254F±01	7 2005 08:04	E, 1035L091004		
C,AC-228	,YES,	1.256E+00	$6 939 \overline{E} 01,$	7.003E+UL,,	0.105		
C,TH-228	,YES,	2.485E-01	$3 180 \pm 00$	I.ZIUE+UI,,	0.104		
C,BE-7	NO .	7.817E+00	1, 700E+00,	5.902E+00,,	0.042		
C,NA-24	NO .	$-2.718E\pm02$	$\pm .790E+UL,$	3.005E+01,,	0.260		
C,K-40	NO .	1 910F±01	0.256E+UZ,	1.328E+03,,	-0.205		
C,CR-51	NO .	-1 939E101	2.901E+01,	5.612E+01,,	0.340		
C,MN-54	NO .	$1.426F_{-01}$	1.926E+UI,	3.064E+01,,	-0.633		
C, CO-57	NO .	-1 180F+00	2.116E+00, 1.072E+00	3.457E+00,,	0.041		
C,CO-58	, NO	-2 335E 00,	1.9/3E+00,	3.237E+00,,	-0.364		
C.FE-59	NO	1.794E+00,	2.115E+00,	3.263E+00,,	-0.716		
C, CO-60	NO ,	$2.704 \pm 100,$	4.042E+00,	6.776E+00,,	0.263		
C.ZN-65	NO ,	7 ECORDO	2.160E+00,	3.595E+00,,	0.102		
$C_{\rm sec} = 75$, NO , NO	7.50UE+UU,	5.594E+00,	8.455E+00,,	0.894		
C.SR-85	NO	-2.075E+00,	2.659E+00,	4.277E+00,,	-0.672		
$C_{\rm Y}$ - 88	, NO , NO	工.336년+01,	2.498E+00,	4.673E+00,,	2.858		
C NR-94	, NO , NO	-9.809E-02,	2.187E+00,	3.568E+00,,	-0.027		
C NB-95	, NO , NO	6.053E-01,	1.962E+00,	3.277E+00,,	0.185		
C ZR_{-95}	, INO ,	5.583E~01,	2.021E+00,	3.356E+00,,	0.166		
$C MO_{-99}$, NO , NO	9.824E-01,	3.661E+00,	6.080E+00,,	0.162		
$C \operatorname{PII}_{102}$,NO ,	-6.210E+01,	5.843E+01,	9.128E+01,,	-0.680		
C, RU-106	,NO ,	2.829E+00,	2.264E+00,	3.877E+00,,	0.730		
C AC 110m	,NO ,	-3.301E+00,	1.794E+01,	2.959E+01,,	-0.112		
C AG $- 110$,NO ,	-1.685E-01,	2.030E+00,	3.351E+00,,	-0.050		
C, SN-113	, NO ,	9.963E-01,	2.596E+00,	4.376E+00,,	0.228		
C, SD = 124	,NO ,	-4.339E-01,	4.754E+00,	3.363E+00,,	-0.129		
C, SD-12S	,NO ,	-1.652E+00,	5.754E+00,	9.450E+00,,	-0.175		
C, IC = IZ 9M	,NO,	1.008E+01,	2.524E+01,	4.222E+01,	0 239		
C, I = I 3 I	, NO ,	-6.738E-01,	3.205E+00,	5.173E+00,,	-0 130		
C, BA-133	,NO,	7.727E+00,	3.399E+00,	5.133E+00.	1 505		
C, CS = 134	,NO ,	6.204E+00,	4.631E+00,	3.962E+00.	1 566		
C, CS-136	,NO ,	-1.709E+00,	2.575E+00,	4.057E+00.	~0 421		
C, CS-137	,NO ,	5.282E-01,	2.191E+00,	3.663E+00.	$\begin{array}{c} 0 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 1$		
C, CE-139	,NO,	-1.607E+00,	2.030E+00,	3.270E+00	~0 /92		
C, BA-140	,NO ,	1.501E+00,	9.482E+00,	1.559E+01	0.492		
C,LA-140	,NO ,	7.724E-01,	3.048E+00,	5.135E+00	0.096		
C,CE-141	,NO,	7.085E-01,	4.420E+00,	6.239E+00	0.114		
C,CE-144	,NO,	-4.404E+00,	1.805E+01,	2.532E+01	0.114		
C, EU-152	,NO,	-3.380E+00,	7.373E+00.	1.033E+01			
C,EU-154	,NO,	-1.827E+00,	4.107E+00	5,00001,01,01,0	-0.32/		
C,TH-232	,NO,	1.254E+00,	6.926E+00	$1 322 E \pm 01$	-0.270		
C,U-235	,NO,	1.078E+01,	1.827E+01	$2.587E_{-01}$	0.095		
C,U-238	,NO,	5.766E+01,	2.145E+02	$2 \cdot 50 / \pm + 0 \perp$	∪.4⊥/		
C,AM-241	,NO ,	-4.394E+01,	1.787E+01	$2 \cdot 30 \pm 6 \pm 0 Z_{1}$	U.161		
		i = i	, <u>,</u> , , , , , , , , , , , , , , , , ,	2.034 <u>0</u> +01,,	-⊥.668		

TT TO 60 / 620T TT	L2859	7 69	of 3	11	1
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Sec. Review:

Analyst: LIMS:

vAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 14-MAY-2006 17:51:24.51
TBE11 P-20610B HpGe ******** Aquisition Date/Time: 13-MAY-2006 08:53:09.70

LIMS No., Customer Name, Client ID: WG L28597-4 EX BRAID

4:10:00.0
7
33
0
- - - - - - - - - - - - - - - - - - -

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Er	rr Fit
1	0	66.48	150	812	1.12	132.15	6.07E-01	5.21E-03 31.	6
2	0	139.75	256	866	1.41	279.11	1.69E+00	8.88E-03 22.	4
3	0	198.34*	161	683	1.16	396.61	1.57E+00	5.60E-03 32.	6
4	0	238.60*	14	522	1.12	477.34	1.42E+00	4.92E-04319.	4
5	0	295.15*	146	409	1.20	590.73	1.23E+00	5.08E-03 28.	6
6	0	351.78*	237	315	1.66	704.28	1.08E+00	8.22E-03 16.	9
7	0	582.73*	16	123	1.16	1167.24	7.27E-01	5.71E-04143.	0
8	0	595.81	110	249	1.65	1193.45	7.15E-01	3.80E-03 32.	0
9	0	608.96*	242	205	1.55	1219.79	7.02E-01	8.41E-03 15.	1
10	0	911.12*	39	134	1.67	1825.27	5.14E-01	1.36E-03 78.	3
11	0	1120.54*	51	78	1.38	2244.72	4.37E-01	1.78E-03 44	0
12	0	1239.95	90	84	5.75	2483.84	4.03E-01	3.12E-03 28.	2
13	0	1460.31*	4	88	2.08	2925.00	3.54E-01	1.24E-04763.	5
14	0	1762.40*	46	31	1.70	3529.58	3.04E-01	1.61E-03 33.	8

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K-40	1460.81	4	10.67*	3.540E-01	2.593E+00	2.593E+00	1526.95
AC-228	835.50		1.75	5.493E-01	Liı	ne Not Found	
	911.07	39	27.70*	5.136E-01	7.518E+00	7.528E+00	156.69
TH-228	238.63	14	44.60*	1.421E+00	6.129E-01	6.153E-01	638.84
	240.98		3.95	1.413E+00	Lin	ne Not Found	
TH-232	583.14	16	30.25	7.270E-01	2.048E+00	2.048E+00	286.10
	911.07	39	27.70*	5.136E-01	7.518E+00	7.518E+00	156.69
	969.11		16.60	4.895E-01	Lin	ne Not Found	

Flag: "*" = Keyline

L28597 70 of 111

Summary of Nuclide Activity Page : 2 Sample ID : 11L28597-4 Acquisition date : 13-MAY-2006 08:53:09 Total number of lines in spectrum 14 Number of unidentified lines 10 Number of lines tentatively identified by NID 4 28.57응 Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags K-40 1.28E+09Y 1.00 K-401.28E+09Y1.002.593E+002.593E+0039.59E+001526.95AC-2285.75Y1.007.518E+007.528E+0011.80E+00156.69TH-2281.91Y1.006.129E-016.153E-0139.31E-01638.84TH-2321.41E+10Y1.007.518E+007.518E+0011.78E+00156.69 _____ -----Total Activity : 1.824E+01 1.825E+01 Grand Total Activity : 1.824E+01 1.825E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit

L28597 71 of 111

Unident Sample	ified Er ID : 11I	lergy L 28597-	ines 4		Ac	quisit	tior	n date :	13-MAY	Page 2006 0	e: 3 8:53:09
It En	ergy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0 6 0 13 0 19 0 29 0 35 0 59 0 60 0 112 0 123 0 176	6.48 9.75 8.34 5.15 1.78 5.81 8.96 0.54 9.95 2.40	150 256 161 146 237 110 242 51 90 46	812 866 683 409 315 249 205 78 84 31	1.12 1.41 1.20 1.66 1.65 1.55 1.38 5.75 1.70	132.15 279.11 396.61 590.73 704.28 1193.45 1219.79 2244.72 2483.84 3529.58	130 275 392 586 699 1187 1214 2239 2474 3522	6 10 10 10 14 14 14 21 14	5.21E-03 8.88E-03 5.60E-03 5.08E-03 8.22E-03 3.80E-03 8.41E-03 1.78E-03 3.12E-03 1.61E-03	63.2 44.8 65.3 57.1 33.8 64.0 30.2 87.9 56.4 67.6	6.07E-(1.69E+(1.23E+(1.08E+(7.15E-(7.02E-(4.37E-(4.03E-(3.04E-(01 00 00 00 01 01 01 01
Flags: "T" = Tentatively associated											
Summary	of Nucl	ide Act	tivity								
Total ı Number Number	number c of unid of line	of lines lentifie s tenta	s in spe ed line: atively	ectrum s ident	ified by	NID	14 10 4	28	.57%		
Nuclide Nuclide K-40 AC-228 TH-228 TH-232	Type : Hli 1.28E+0 5.7 1.9 1.41E+1 Total	natura fe De 9Y 1 5Y 1 1Y 1 0Y 1 Activit	Wt Und 2.00 2 2.00 5 2.00 6 2.00 6 2.00 2 	td Mea: pCi/L .593E+ .470E+ .129E- .048E+ .072E+	n Wto ted Deca 00 2.5 00 5.4 01 6.5 00 2.0 01 1.0	d Mean oCi/L 593E+0 178E+0 153E-0 048E+0 073E+0) () () () () () () () () () ()	Decay C 2-Sigma 39.59E 13.17E 39.31E 5.859E	orr Error +00 1 +00 -01 +00	2-Sigma %Error 526.95 240.51 638.84 286.10	Flags
Grand	i Total	Activit	y: 1.	.072E+(01 1.0)73E+0	1				
Flags: "	'K" = Ke 'E" = Ma	yline r nually	ot four edited	nd	"M" "A"	= Man = Nuc	ual lid	ly accept e specif:	ced ic abn	. limit	
Interfer	rence Re	port									
	Inte	rfering	ſ		Interf	fered					
	Nuclide		Line	 Nu	uclide	L	ine				
	TH-232	9	11.07	I	AC-228	91	1.0	7			
Combined	l Activi	ty-MDA	Report								

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	2.593E+00	3.959E+01	3.981E+01	0.000E+00	0.065
AC-228	5.478E+00	1.317E+01	1.211E+01	0.000E+00	0.452
TH-228	6.153E-01	3.931E+00	6.078E+00	0.000E+00	0.101

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-6.491E+00		1.846E+01	2.993E+01	0.000E+00	-0.217
NA-24	-4.400E+01		1.841E+02	2.988E+02	0.000E+00	-0.147
CR-51	-3.094E+00		1.955E+01	3.168E+01	0.000E+00	-0.098
MN-54	4.501E-01		2.099E+00	3.456E+00	0.000E+00	0.130
CO-57	4.755E-01		2.039E+00	3.362E+00	0.000E+00	0.141
CO-58	8.860E-01		2.095E+00	3.490E+00	0.000E+00	0.254
FE-59	1.697E+00		4.272E+00	7.149E+00	0.000E+00	0.237
CO-60	1.400E+00		2.256E+00	3.868E+00	0.000E+00	0.362
ZN-65	6.166E+00		5.772E+00	8.579E+00	0.000E+00	0.719
SE-75	-6.907E-01		2.779E+00	4.537E+00	0.000E+00	-0.152
SR-85	1.557E+01		2.564E+00	4.866E+00	0.000E+00	3.200
Y-88	8.288E-01		2.757E+00	4.630E+00	0.000E+00	0.179
NB-94	3.263E-01		2.062E+00	3.419E+00	0.000E+00	0.095
NB-95	2.944E+00		2.129E+00	3.706E+00	0.000E+00	0.794
ZR-95	-2.128E+00		3.835E+00	6.125E+00	0.000E+00	-0.347
MO-99	-5.486E-01		4.238E+01	6.954E+01	0.000E+00	-0.008
RU-103	1.417E+00		2.350E+00	3.929E+00	0.000E+00	0.361
RU-106	5.111E+00		2.076E+01	3.389E+01	0.000E+00	0.151
AG-110m	9.716E-01		2.041E+00	3.443E+00	0.000E+00	0.282
SN-113	1.714E+00		2.726E+00	4.609E+00	0.000E+00	0.372
SB-124	-8.125E-01		5.043E+00	3.516E+00	0.000E+00	-0.231
SB-125	-5.821E+00		5.954E+00	9.506E+00	0.000E+00	-0.612
TE-129M	9.924E+00		2.560E+01	4.267E+01	0.000E+00	0.233
I-131	-2.416E-01		2.910E+00	4.834E+00	0.000E+00	-0.050
BA-133	1.049E+01		3.521E+00	5.435E+00	0.000E+00	1.929
CS-134	7.617E+00		5.002E+00	4.330E+00	0.000E+00	1.759
CS-136	-1.615E+00		2.496E+00	3.937E+00	0.000E+00	-0.410
CS-137	1.099E+00		2.262E+00	3.815E+00	0.000E+00	0.288
CE-139	7.849E-01		2.147E+00	3.509E+00	0.000E+00	0.224
BA-140	3.308E+00		9.313E+00	1.539E+01	0.000E+00	0.215
LA-140	9.080E-01		3.163E+00	5.257E+00	0.000E+00	0.173
CE-141	-2.456E+00		4.414E+00	6.023E+00	0.000E+00	-0.408
CE-144	6.410E+00		1.840E+01	2.590E+01	0.000E+00	0.247
EU-152	-2.162E+00		8.003E+00	1.084E+01	0.000E+00	-0.199
EU-154	1.286E+00		4.241E+00	7.000E+00	0.000E+00	0.184
RA-226	-6.815E+01		5.259E+01	8.361E+01	0.000E+00	-0.815
U-235	1.384E+01		1.865E+01	2.645E+01	0.000E+00	0.523
U-238	-9.838E+01		2.395E+02	3.722E+02	0.000E+00	-0.264
AM-241	-1.007E+01		2.976E+01	4.552E+01	0.000E+00	-0.221

A,11L28597-	4 ,	05/14/2006	17:51,	05/09/2	006	14:10). 3	.425	E+00.WG	L28597-	-4 FY
B,11L28597-	4 ,	LIBD		.09/	01/2	005 0	(7:43)	1135	L090204	шдору,	-1 -1177
C,K-40 ,	YES, 2	.593E+00,	3.959	E+01,	3.9	81E+0)1	0.	065		
C,AC-228 ,	YES, 5	.478E+00,	1.317	E+01,	1.2	11E+0	1.	0	452		
C,TH-228 ,	YES, 6	.153E-01,	3.931	E+00.	6.0	78E+0	10	Õ.	101		
C,TH-232 ,	YES, 2	.048E+00,	5.8591	E+00.	1.4	80E+0	1	0.	138		
C,BE-7 ,]	NO , -6	.491E+00,	1.8461	E+01.	2.9	93E+0	1	-0	217		
C,NA-24 ,]	NO , -4	.400E+01,	1.841	E+02.	2.9	88E+0	2.	-0	147		
C,CR-51 ,1	NO , -3	.094E+00,	1.9551	Ξ+01,	3.1	68E+0	1.	-0	098		
C,MN-54 ,1	NO, 4	.501E-01,	2.0991	, Ξ+ОО,	3.4	56E+0	0	0	130		
C,CO-57 ,I	NO, 4	.755E-01,	2.0391	Ξ+00.	3.3	62E+0	0	0.	141		
C,CO-58,1	NO , 8	.860E-01,	2.0951	Ξ+00,	3.4	90E+0	0	0.	254		
C,FE-59 ,I	NO , 1	.697E+00,	4.2728	Ξ+00.	7.1	49E+0	0.	0.	231		
C,CO-60 ,1	NO , 1	.400E+00,	2.2561	Ξ+00,	3.8	68E+0	0.	0.	362		
C,ZN-65 ,1	NO, 6	.166E+00,	5.772	Ξ+00,	8.5	79E+0	0,,	0.	719		
C,SE-75 ,1	NO , -6	.907E-01,	2.7791	Ξ+00,	4.5	37E+0	0.	-0	152		
C,SR-85 ,1	NO, 1	.557E+01,	2.564H	Ξ+00,	4.8	66E+0	0	3	200		
C,Y-88 ,1	NO, 8	.288E-01,	2.757E	Ξ+00.	4.6	30E+0	0	0	179		
C,NB-94 ,1	NO, 3	.263E-01,	2.0628	Ξ+00.	3.4	19E+0	0	0.1	095		
C,NB-95 ,N	NO, 2	.944E+00,	2.129E	Ξ+00,	3.7	0.6E+0	0	0 '	794		
C,ZR-95 ,1	NO , -2	.128E+00,	3.835E	Ξ+00.	6.1	25E+0	0,,	-0.	347		
C,MO-99 ,N	NO , -5	.486E-01,	4.238E	E+01.	6.9	54E+0	1	-0.0	008		
C,RU-103 ,N	NO, 1	.417E+00,	2.350E	Ξ+00,	3.9	29E+0	$\hat{\mathbf{O}}$	0.0	361		
C,RU-106 ,N	NO, 5	.111E+00,	2.076E	S+01,	3.38	89E+0	1.	0.0	151		
C, AG-110m , N	JO, 9	.716E-01,	2.041E	, 2+00	3.44	4.3E+0	0	0.1	282		
C, SN-113 , N	NO, 1	.714E+00,	2.726E	, E+00,	4.60	0.9E+0.0	0	0.7	372		
C,SB-124 ,N	JO, -8.	.125E-01,	5.043E	, 2+00,	3.5	16E+00	0	-0.2	231		
C,SB-125 ,N	10, -5.	.821E+00,	5.954E	, 2+00,	9.50	0.6E+0.0	0	-0.6	512		
C,TE-129M ,N	JO, 9.	924E+00,	2.560E	1+01,	4.26	57E+0	1	0.2	233		
C,I-131 ,N	JO, -2.	416E-01,	2.910E	C+00,	4.83	34E+00	0	-0.0	150		
C,BA-133 ,N	10, 1.	.049E+01,	3.521E	C+00,	5.43	35E+00	0	1.0	929		
C,CS-134 ,N	NO, 7.	.617E+00,	5.002E	2+00,	4.33	30E+0(0.,	1.5	759		
C,CS-136 ,N	10, -1.	615E+00,	2.496E	S+00,	3.93	37E+00	0	-0.4	410		
C,CS-137 ,N	10, 1.	099E+00,	2.262E	·+00,	3.81	L5E+0(Ο	0.2	288		
C,CE-139 ,N	10 , 7.	849E-01,	2.147E	+00,	3.50)9E+0(Ο	0.2	224		
C,BA-140 ,N	ю, з.	308E+00,	9.313E	+00,	1.53	39E+01	1	0.2	215		
C,LA-140 ,N	10, 9.	080E-01,	3.163E	+00,	5.25	57E+00),,),,	0.1	73		
C,CE-141 ,N	10 , -2.	456E+00,	4.414E	+00,	6.02	23E+00	-,,)	-0.4	108		
C,CE-144 ,N	10, 6.	410E+00,	1.840E	+01,	2.59	0E+01	1	0.2	247		
C,EU-152 ,N	10, -2.	162E+00,	8.003E	+00,	1.08	34E+01	-,, 1	-0.1	99		
C,EU-154 ,N	10, 1.	286E+00,	4.241E	+00,	7.00	0E+00)	0.1	84		
C,RA-226 ,N	ю, -6.	815E+01,	5.259E	+01,	8.36	51E+01	L	-0.8	815		
C,U-235 ,N	ю, 1.	384E+01,	1.865E	+01,	2.64	5E+01	,, L	0.5	23		
C,U-238 ,N	ю, -9.	838E+01,	2.395E	+02,	3.72	2E+02	2	-0.2			
C,AM-241 ,N	0, -1.	007E+01,	2.976E	+01,	4.55	2E+01	., L,,	-0.2	21		

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Sec. Review:

Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 14-MAY-2006 17:52:21.02 TBE13 P-10727B HpGe ******** Aquisition Date/Time: 13-MAY-2006 08:53:21.61

LIMS No., Customer Name, Client ID: WG L28597-5 EX BRAID

Sample ID Sample Type Quantity Start Channel End Channel MDA Constant	:::::::::::::::::::::::::::::::::::::::	13L2859 WG 3.49690 25 4090 0.00	7-5 E+00 L Energy Tol Pk Srch Sens Library Used	:	1.50000 5.00000 LIBD	Smple Date Geometry BKGFILE Real Time Live time		9-MAY-2006 15:10:00.0 1335L090904 13BG050506MT 0 08:00:08.83 0 08:00:00.00
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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4	3 3 3 1	63.34* 65.25* 66.75* 77.26*	46 86 138	892 866 725	1.09 1.10 0.98	126.63 130.46 133.45	6.22E-01 6.87E-01 7.39E-01	1.61E-03 2.98E-03 4.78E-03	116.9 63.8 34.4	1.53E+00
5 6 7	1 1 1	87.44* 139.78* 185.68*	43 321 37	1005 556 1184 843	0.88 0.99 1.71 1.00	154.46 174.80 279.40 371 12	1.09E+00 1.39E+00 2.02E+00	2.82E-03 1.49E-03 1.11E-02	72.6 93.4 22.1	2.03E+00 2.44E+00 2.40E+00
8 9 10	1 4 4	198.43* 238.67* 241.81*	354 152 127	1006 548 685	2.14 1.39 1.64	396.61 477.03 483.31	1.90E+00 1.90E+00 1.73E+00 1.72E+00	1.23E-03 1.23E-02 5.29E-03 4.40E-03	18.4 31.3 42.0	1.77E+00 6.89E+00 2.99E-01
12 13 14	1 1 1 1	295.18* 351.96* 583.27* 595.98	259 418 10 127	478 289 254 201	1.03 1.21 1.23 1.44	589.97 703.48 1165.92	1.52E+00 1.34E+00 9.26E-01	8.99E-03 1.45E-02 3.58E-043	17.7 9.6 332.1	1.47E+00 1.86E+00 8.88E-01
15 16 17	1 1 1	609.54* 768.75 911.58*	368 60 26	265 127 104	1.40 1.76 1.87	1218.44 1536.82 1822.49	9.11E-01 8.96E-01 7.54E-01 6.64E-01	4.41E-03 1.28E-02 2.07E-03 9.14E-04	22.1 11.0 36.9 90.8	8.39E-01 7.03E+00 6.97E-01
19 20 21	1 1 1	120.82* 1238.70* 1378.75* 1765.24*	124 78 34 47	66 94 59 72	2.44 4.53 2.19 1.75	2241.07 2476.95 2757.21 3530.90	5.69E-01 5.29E-01 4.89E-01 4.11E-01	4.30E-03 2.72E-03 1.18E-03 1.64E-03	19.4 32.7 53.2 49.3	5.48E+00 2.70E+00 1.89E+00 1.83E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide RA-226 AC-228 TH-228 TH-232	Energy 186.21 835.50 911.07 238.63 240.98 583.14 911.07 969.11	Area 37 26 152 127 10 26	<pre>%Abn 3.28* 1.75 27.70* 44.60* 3.95 30.25 27.70*</pre>	%Eff 1.946E+00 7.084E-01 6.638E-01 1.733E+00 1.720E+00 9.260E-01 6.638E-01	Uncorrected pCi/L 1.554E+01 Lin 3.844E+00 5.287E+00 5.003E+01 9.891E-01 3.844E+00	Decay Corr pCi/L 1.554E+01 ne Not Found 3.849E+00 5.308E+00 5.022E+01 9.891E-01 3.844E+00	2-Sigma %Error 318.34 181.61 62.56 83.97 664.24 181.61
U-235	969.11 143.76		16.60 10.50*	6.342E-01 2.023E+00	Lir	ie Not Found Not Found	181.61

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163.35	- 4.70	2.011E+00	Line Not Found	318.34
185.71 3	7 54.00	1.946E+00	9.439E-01 9.439E-01	
205.31	- 4.70	1.871E+00	Line Not Found	

Flag: "*" = Keyline

Summary of Nuclide Activity Page : 2 Sample ID : 13L28597-5 Acquisition date : 13-MAY-2006 08:53:21 Total number of lines in spectrum 21 Number of unidentified lines 16 Number of lines tentatively identified by NID 5 23.81% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags

 Nuclide
 Hille
 Decay
 pci/L
 pci/L
 2-Sigma Error <Error FI</th>

 RA-226
 1600.00Y
 1.00
 1.554E+01
 1.554E+01
 4.947E+01
 318.34

 AC-228
 5.75Y
 1.00
 3.844E+00
 3.849E+00
 6.990E+00
 181.61

 TH-228
 1.91Y
 1.00
 5.287E+00
 5.308E+00
 3.321E+00
 62.56

 TH-232
 1.41E+10Y
 1.00
 3.844E+00
 3.844E+00
 6.981E+00
 181.61

 U-235
 7.04E+08Y
 1.00
 9.439E-01
 9.439E-01
 30.05E-01
 318.34
 K

 Total Activity : 2.946E+01 2.948E+01 Grand Total Activity : 2.946E+01 2.948E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit

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Unidentified Energy Lines Sample ID : 13L28597-5

Sam	ple ID :	13L28597	- 5		Ac	quisi	tio:	n date :	13-MA	Page Y-2006 08	≥: 3 3:53:21
It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3 3	63.34 65.25	46 86	892 866	1.09	126.63	122	15	1.61E-03	* * * *	6.22E-()1
3	66.75	138	725		130.46	122	15	2.98E-03	* * * *	6.87E-()1
1	77.26	81	1005	0.90	133.45	122	15	4.78E-03	68.8	7.39E-0)1
1	87.44	13	1005 EEC	0.00	154.46	153	8	2.82E-03	****	1.09E+0) ()
1	139 78	301	1104	0.99	174.80	173	5	1.49E-03	* * * *	1.39E+C	0
1	198 43	354	1000	$\perp . / \perp$	279.40	274	11	1.11E-02	44.2	2.02E+C	0
1	295 18	254	1006	2.14	396.61	390	11	1.23E-02	36.7	1.90E+C	0
1	351 96	259	478	1.03	589.97	585	9	8.99E-03	35.4	1.52E+0	0
1	505.90	418	289	1.21	703.48	700	8	1.45E-02	19.3	1.34E+0	0
1	595.98 600 F4	127	201	1.44	1191.32	1187	9	4.41E-03	44.1	9.11E-0	1
1	760 75	368	265	1.40	1218.44	1213	11	1.28E-02	22.1	8.96E-0	1
1	/68./5	60	127	1.76	1536.82	1533	9	2.07E-03	73.8	754E-0	1
⊥ -	1120.82	124	66	2.44	2241.07	2237	14	4.30E-03	38.7	5 69F-0	1
1	1238.70	78	94	4.53	2476.95	2469	17	2.72E-03	65 3	5.29E_0	⊥ 1
1	1378.75	34	59	2.19	2757.21	2750	12	1.18E-03	****	J.ZJE-0	-
Ţ	1765.24	47	72	1.75	3530.90	3521	18	1.64E-03	98.6	4.11E-0	1
Flag	gs: "T" =	Tentativ	vely ass	ociate	d						±
Sumn	nary of N	uclide Ac	ctivity								
Tot Num Num	al numbe ber of u ber of l	r of line nidentifi ines tent	es in spe ed lines atively	ectrum s ident:	ified by	NID	21 16 5	23.	81%		
Nucl	ide Type	: natura	.1	7							
Nucl	ide H	Hlife D	Wt Unc ecay	d Mear correct	n Wtd ted Deca	Mean y Cor	r	Decay Co:	rr 2	2-Sigma	
RA-2	26 1600	D.00Y	1.00 1	554E+(-1	2-Sigma E	rror	*Error H	Flags
AC-2	28 5	5.75Y	1.00 2	8558+0	10 20	54凸+U. F 0日・0	T O	4.947日+(01 3	318.34	
TH-2	28 _	L.91Y	1,00,5	5631-0		ンタビキ() 0 F II - の	0	9.598E+(00	335.81	
TH-2	32 1.41E	E+10Y	1.00 9	891E-0	10 2.5	85E+UI	U 1	3.310E+(00	59.27	
					·	91E-U.	L	65.70E-(01 6	564.24	
	Tota	al Activi	ty : 2.	495E+C	1 2.4	97E+0	_ 1				
G	rand Tota	al Activi	ty: 2.	495E+0	1 2.49	97E+01	L				
Flag	s: "K" = "E" =	Keyline n Manually	not foun edited	d	"M" = "A" =	= Manu = Nucl	uall .ide	y accepte specific	ed c abn.	limit	
Inte	ference	Report									
	In	terferind	7		Interfe	rod					

THEFTE	r Tuð	Interfered			
Nuclide	Line	Nuclide	Line		
TH-232	911.07	AC-228	911.07		

Combined Activity-MDA Report

---- Identified Nuclides ----

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Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
RA-226	1.554E+01	4.947E+01			
AC-228	2.858E+00	9.598E+00	7.032E+U1	0.000E+00	0.221
TH-228	5.585E+00	3.310E+00	I.091E+01	0.000E+00	0.262
TH-232	9.891E-01	6.570E+00	1.269E+01	0.000E+00 0.000E+00	1.106
Non-	-Identified Nuc	lides		0.0001+00	0.078
	Key-Line				
Nuclide	Activity (pCi/L)	K.L. Act error Ided	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-1.898E+01	1.608E+01	2 5225 01		
NA-24	2.806E+01	1.681E+02	2.5220+01 2.3590+02	0.000E+00	-0.753
K-40	1.513E+01	2.737E+01	5 289 <u><u></u><u></u> 5 289<u></u><u></u> 101</u>	0.000E+00	0.119
CR-51	-7.319E+00	1.663E+01	2.209E+01	0.000E+00	0.286
MN-54	1.061E+00	1.935E+00	2.074E+U1 2.2E4E+01	0.000E+00	-0.274
CO-57	7.252E-01	1.635E+0.0	3.234E+00	0.000E+00	0.326
CO-58	-7.718E-01	1 856E+00	2.750E+00	0.000E+00	0.264
FE-59	2.613E+00	3713E+00	3.012E+00	0.000E+00	-0.256
CO-60	-2.532E-01	1 934E+00	6.309E+00	0.000E+00	0.414
ZN-65	7.664E+00	4 902E+00	3.172E+00	0.000E+00	-0.080
SE-75	-1.803E+00	2 367 E + 00	7.473E+00	0.000E+00	1.025
SR-85	1.850E+01	2,3076+00	3.834E+00	0.000E+00	-0.470
Y-88	-2.021E+00	2.359E+00	4.481E+00	0.000E+00	4.128
NB-94	-9.184E-01		3.476E+00	0.000E+00	-0.581
NB-95	3.436E+00	1 9995,00	2.926E+00	0.000E+00	-0.314
ZR-95	-2.268E+00	3 2100.00	3.341E+00	0.000E+00	1.028
MO-99	1.996E+01	3.210E+00	5.180E+00	0.000E+00	-0.438
RU-103	5.235E-01	3.6IZE+UL	6.136E+01	0.000E+00	0.325
RU-106	~4 586F+00	1.967E+00	3.227E+00	0.000E+00	0.162
AG-110m	1 906E - 01	1.733E+01	2.823E+01	0.000E+00	-0 162
SN-113	1 3/38.00	1.838E+00	3.020E+00	0.000E+00	0 063
SB-124	-2 121E 00	2.320E+00	3.906E+00	0.000E+00	0.003
SB-125		4.463E+00	3.095E+00	0.000E+00	-0 685
TE-129M		5.079E+00	8.288E+00	0.000E+00	-0.169
I-131		2.229E+01	3.691E+01	0.000E+00	0.109
BA-133	5.085E-01	2.487E+00	4.158E+00	0.000E+00	0,229
CS-134	0.149E+00	2.897E+00	4.447E+00	0.000E+00	1 202
CS = 136	3.049E+00	3.012E+00	3.512E+00	0.000E+00	1.383
CS = 137	-2.660E-01	2.157E+00	3.540E+00	0 000F+00	0.868
CE_139	1.643E+00	2.032E+00	3.424E+00	0.000 ± 00	-0.075
BA = 140	8.608E-01	1.738E+00	2.874E+00	0.000E+00	0.480
$L\Lambda$, 140	1.568E+00	7.730E+00	1.295E+01		0.300
CE 141	1.966E+00	2.667E+00	4.603E+00	0.000E+00	0.121
CE = 141	2.980E+00	3.620E+00	5.253E+00	0.000 ± 00	0.427
	-6.211E+00	1.515E+01	2.140E+01		0.567
	-6.211E+00	6.323E+00	8.990		-0.290
EU-154	-5.008E-01	3.457E+00	5 750E+00	0.000E+00	-0.691
U-235	1.140E+01	1.578E+01	2 25/E+00	U.UUUE+00	-0.087
U-238	4.454E+01	2.248E+02	4·4J40+VL 3 6110,00	U.UUUE+00	0.506
AM-241	2.328E+01	1.642E+01	2.458E+01	0.000E+00 0.000E+00	0.123 0.947

A,13L2859	7-5	,05/14/2006	17:52,05/09/	2006 15:10.	3.497E+00 WG	1.28597-5 EX
B,13L2859	7-5	,LIBD	,08	3/05/2005 08.1	6.13351.090904	MII C I C C C D Z D
C,RA-226	,YES,	1.554E+01,	4.947E+01.	7.032E+01	0 221	
C,AC-228	,YES,	2.858E+00,	9.598E+00.	1 091E+01	0.262	
C,TH-228	,YES,	5.585E+00,	3.310E+00.	5.051E+00	1 106	
C,TH-232	,YES,	9.891E-01,	6.570E+00	1.269E+01	0.078	
C,BE-7	,NO,	-1.898E+01,	1.608E+01	$2.500\pm01,$	-0 753	
C,NA-24	,NO,	2.806E+01,	1.681E+02	2.359E+02	0.119	
C,K-40	, NO ,	1.513E+01,	2.737E+01	5,289E+01	0.286	
C, CR-51	, NO ,	-7.319E+00,	1.663E+01	$2.674E\pm01$	-0.274	
C, MN-54	, NO	1.061E+00,	1.935E+00	3 254E+00	0.274	
C, CO-57	, NO	7.252E-01.	1.635E+00	2 750F+00,	0.320	
C, CO-58	, NO	-7.718E-01	1.856E+00	$3 012E \pm 00$	0.204	
C,FE-59	, NO	2.613E+00	3 713E+00	5.0120+00,,	-0.256	
C, CO-60	, NO ,	-2.532E-01	1 934E+00	$3 172E_{100}$	0.414	
C,ZN-65	, NO ,	7.664E+00	4 902E+00	7 473E+00,	-0.000	
C,SE-75	, NO ,	-1.803E+00	2.367E+00	3 834 E 100,,	1.025	
C, SR-85	, NO ,	1.850E+01	$2.307 \pm 100,$ 2.339 ± 100	J.0J4⊡+00,,	-0.470	
C,Y-88	, NO .	-2.021E+00	2.355 <u>5</u> +00, 2.256 <u>E+00</u>	3 476 - 00,	4.120 0 E01	
C, NB-94	NO .	-9.184E-01	$1 832F \pm 00$	2.470E+00,,	-0.581	
C, NB-95	NO .	3.436E+00	1 888F+00,	2.920E+00,,	-0.314	
C,ZR-95	, NO .	-2.268E+00	3 210E+00	5.5410+00,, 5.1900,00	1.028	
C, MO-99	NO .	1.996E+01	3.612E+00,	5.1000+00,	-0.438	
C, RU-103	, NO ,	5.235E-01	1 967E±00	$3, 227 \overline{E}, 00$	0.325	
C,RU-106	NO .	-4 586E+00	1.733E+01	2.227E+00,	0.162	
C,AG-110m	NO .	1 906E-01	1 838E+00	2.023E+01,	-0.162	
C, SN-113	NO .	1.343E+00	2.320E+00,	3.020E+00,,	0.063	
C.SB-124	NO .	-2.121E+00	2,5205+00, 4 463E100	$3.900 \pm 00,$	0.344	
C,SB-125	NO .	-1 402E+00	5 079E+00,	9 200E+00,	-0.685	
C.TE-129M	, NO .	8 441E+00,	2.079E+00, 2.229E+01	0.200E+00,,	-0.169	
C.I-131	NO .	3.065E-01	2.2255+01, 2.487E+00	$1 = 2 \times 100$	0.229	
C, BA-133	, NO ,	6.149E+00	2.4075+00, 2.8975+00	4.1300+00,,	1 202	
C,CS-134	, NO .	3.049E+00	$3 012F \pm 00$	4.4470+00,,	1.303	
C,CS-136	, NO .	-2.660E-01	$2 157E \pm 00$	3.512E+00,,	0.075	
C,CS-137	NO .	1.643E+00	2.1371100, 2.032F+00	3.3400+00,	-0.075	
C,CE-139	.NO .	8.608E-01	1 738F±00,	3.424E+00,,	0.480	
C, BA-140	NO .	1 568E+00	7 730E+00,	2.0746+00,,	0.300	
C.LA-140	NO .	1.966E+00	$7.750\pm00,$ 2.667 ± 00	1.295E+01,,	\bigcirc 121	
C,CE-141	NO .	2.980E+00	2.0075+00,	4.003E+00,,	0.427	
C, CE-144	, NO	-6.211E+00	$1 515 \overline{v}_{1} 01$	2.253E+00,	0.567	
C.EU-152	NO ,	-6 211F+00,	$\pm \cdot \exists \exists \exists \exists \exists \exists \forall \forall \forall i,$	2.140E+01,	-0.290	
C.EU-154	, NO	-5 008F-01	$\begin{array}{c} 0.5256+00,\\ 3.457\overline{\mathbf{v}}\cdot00 \end{array}$	0.330E+00,,	-0.691	
C.U-235	NO /	1 140F±01	$1 579 \overline{\nu} \cdot 01$	2.750E+00,	-0.087	
C,U-238	, NO	4 454F±01	エ・ンノO凸+U上, クーク/ Q豆・ヘウ	$\angle \cdot \angle \supset 4 \amalg + \cup \bot$,	0.506	
C.AM-241	NO	$2 20 8 \overline{\mathbf{D}} + 01$	ム・ムサOL+UZ, 1 (インロ・ヘ1	3.6IIE+UZ,,	0.123	
~, · · · · · · · · · · ·	, ,	2.020E+01,	⊥.04∠Ľ+U⊥,	∠.458氏+01,,	0.947	

L28597 80 of 111

Sec.	. Re ⁻	view: An	alyst:	LIMS:						
UAX/ TBE1	/VMS 14 P	====== <i>=</i> = Teledyne -10933A Hp	Brown Eng Ge *****	. Labor **** Aq	atory uisiti	Gamma Re Lon Date,	eport: 14-N /Time: 13-N	1AY-2006 1AY-2006 (L7:53	:05.78 :33.43
LIMS	S No	., Custome	er Name, C	lient I	D: WG	L28597-0	6 EX BRAID			,
Samr Samr Quar Star End MDA	ole ble ' ntit; ct C Cha: Con	ID : 1 Type : W y : 3 hannel : 9 nnel : 4 stant : 0	4L28597-6 IG .64100E+0 0 En 090 Pk .00 Li	0 L ergy To Srch S brary U	l : 1 ens: 5 sed: I	L.30000 5.00000 JIBD	Smple Date Geometry BKGFILE Real Time Live time	e: 10-MAY : 1435L09 : 14BG050 : 0 08:00 : 0 08:00	-2006 91304 0506M7 0:05.(0:00.(09:30:00. Г 06 00
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8	1 1 1 1 1 1	66.16* 92.52* 139.94 185.73* 198.66* 238.74* 242.01 295.40*	310 112 346 109 539 90 183 368	1084 1160 1254 870 1095 626 568 677	1.64 1.88 1.97 1.93 4.04 1.41 1.40 1.59	133.44 186.37 281.54 373.42 399.35 479.72 486.28 593.29	4.48E-01 1.15E+00 1.67E+00 1.64E+00 1.60E+00 1.47E+00 1.46E+00 1.29E+00	1.07E-02 3.89E-03 1.20E-02 3.77E-03 1.87E-02 3.12E-03 6.36E-03 1.28E-02	20.7 63.0 21.2 55.0 13.9 54.7 23.7 16.1	6.83E-01 2.39E+00 1.89E+00 1.04E+00 4.29E+00 7.23E-01 8.55E-01
9 10 11 12 13	1 1 1 1 1	352.08* 582.79* 596.06 609.49* 768.70 968.85*	545 159 143 506 50 15	506 335 312 284 216 81	1.50 5.82 2.74 1.61 1.90	706.87 1168.56 1195.09 1221.92 1539.94 1939.14	1.14E+00 7.92E-01 7.79E-01 7.66E-01 6.43E-01 5.38E-01	1.89E-02 5.51E-03 4.97E-03 1.76E-02 1.74E-03 5.19E-04	9.9 31.0 28.0 9.2 68.2	1.89E+00 2.26E+00 1.16E+00 3.64E+00 1.01E+00 3.47E+00
15 16 17	1 1 1	1120.13* 1461.73* 1766.67*	142 13 57	83 89 66	2.83 2.48 2.07	2240.42 2919.36 3523.81	4.81E-01 3.93E-01 3.43E-01	4.93E-03 4.55E-042 1.99E-03	18.1 225.0 37.6	1.59E+00 1.23E+00 6.18E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

TICCTTCC T	, po, maoar						
	11				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
K-40	1460.81	13	10.67*	3.926E-01	8.061E+00	8.061E+00	450.03
RA-226	186.21	109	3.28*	1.641E+00	5.204E+01	5.204E+01	110.03
TH-228	238.63	90	44.60*	1.468E+00	3.542E+00	3.553E+00	109.34
	240.98	183	3.95	1.457E+00	8.198E+01	8.223E+01	47.44
TH-232	583.14	159	30.25	7.917E-01	1.709E+01	1.709E+01	62.06
	911.07		27.70*	5.646E-01	Li	ne Not Found	
	969.11	15	16.60	5.384E-01	4.310E+00	4.310E+00	246.58
U-235	143.76	_	10.50*	1.680E+00	Li:	ne Not Found	
	163.35		4.70	1.685E+00	Li:	ne Not Found	
	185.71	109	54.00	1.641E+00	3.161E+00	3.161E+00	110.03
	205.31		4.70	1.582E+00	Li	ne Not Found	
Page : 2 Summary of Nuclide Activity Acquisition date : 13-MAY-2006 08:53:33 Sample ID : 14L28597-6 17 Total number of lines in spectrum Number of unidentified lines 11 Number of lines tentatively identified by NID 6 35.29% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma DecaypCi/LpCi/L2-Sigma Error %Error1.008.061E+008.061E+0036.28E+00450.031.005.204E+015.204E+015.726E+01110.03 Nuclide Hlife K-40 1.28E+09Y 2-Sigma Error %Error Flags RA-226 1600.00Y 3.885E+00 109.34 TH-228 1.91Y 1.00 3.542E+00 3.553E+00 TH-2321.41E+10Y1.001.709E+011.709E+011.060E+0162.06KU-2357.04E+08Y1.003.161E+003.161E+003.478E+00110.03K _ Total Activity : 8.389E+01 8.391E+01 Grand Total Activity : 8.389E+01 8.391E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

Page : 3

Unidentified Energy Lines Sample ID : 14L28597-6

Sam	ple ID : 1		Aco	quisi	tio	n date :	13-MAY	-2006 08:	: 3 53:33		
It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
	66.16 92.52 139.94 198.66 295.40 352.08 596.06 609.49 768.70 1120.13 1766.67	310 112 346 539 368 545 143 506 50 142 57	1084 1160 1254 1095 677 506 312 284 216 83 66	1.64 1.88 1.97 4.04 1.59 1.50 2.74 1.61 1.90 2.83 2.07	133.44 186.37 281.54 399.35 593.29 706.87 1195.09 1221.92 1539.94 2240.42 3523.81	129 181 275 393 588 701 1188 1215 1533 2232 3518	9 11 12 14 13 15 15 16 16	1.07E-02 $3.89E-03$ $1.20E-02$ $1.87E-02$ $1.28E-02$ $1.89E-02$ $4.97E-03$ $1.76E-02$ $1.74E-03$ $4.93E-03$ $1.99E-03$	41.4 **** 42.3 27.8 32.2 19.8 56.1 18.5 **** 36.3 75.2	4.48E-01 1.15E+00 1.67E+00 1.29E+00 1.14E+00 7.79E-01 7.66E-01 6.43E-01 4.81E-01 3.43E-01	
Flag Sumi Tot Nui	gs: "T" = mary of Nu tal number mber of un	Tentativ aclide Ac c of line aidentific	ely ass tivity s in sp ed line	ociate ectrum s	d		17 11				

Number of lines tentatively identified by NID 6 35.29%

Nuclide Type : natural

			Wtd Mean	Wtd Mean					
			Uncorrected	Decay Corr	Decay Corr	2-Sigma			
Nuclide	Hlife	Decay	pCi/L	pĈi/L	2-Sigma Error	%Error	Flags		
K-40	1.28E+09Y	1.00	8.061E+00	8.061E+00	36.28E+00	450.03	1 1 4 9 0		
RA-226	1600.00Y	1.00	5.204E+01	5.204E+01	5.726E+01	110.03			
TH-228	1.91Y	1.00	3.542E+00	3.553E+00	3.885E+00	109.34			
TH-232	1.41E+10Y	1.00	1.071E+01	1.071E+01	0.751E+01	70.06			
	Total Acti	vity :	7.436E+01	7.437E+01					
Grand	d Total Acti	vity :	7.436E+01	7.437E+01					
Flags: '	'K" = Keylin 'E" = Manual	e not f ly edit	found red	"M" = Manually accepted "A" = Nuclide specific abn. limit					

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	8.061E+00	3.628E+01	3.473E+01	0.000E+00	0.232
RA-226	5.204E+01	5.726E+01	8.603E+01	0.000E+00	0.605
TH-228	3.553E+00	3.885E+00	6.480E+00	0.000E+00	0.548
TH-232	1.071E+01	7.507E+00	1.340E+01	0.000E+00	0.800

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	8.095E+00		1.822E+01	3.062E+01	0.000E+00	0.264
NA-24	-7.572E+01		7.766E+01	1.198E+02	0.000E+00	-0.632
CR-51	-4.874E+00		1.977E+01	3.237E+01	0.000E+00	-0.151
MN-54	6.308E-01		2.132E+00	3.552E+00	0.000E+00	0.178
CO-57	2.274E-01		2.253E+00	3.746E+00	0.000E+00	0.061
CO-58	-1.113E-01		2.141E+00	3.524E+00	0.000E+00	-0.032
FE-59	3.030E+00		4.218E+00	7.203E+00	0.000E+00	0.421
CO-60	4.332E-01		2.252E+00	3.718E+00	0.000E+00	0.117
ZN-65	1.049E+01		5.787E+00	8.944E+00	0.000E+00	1,173
SE-75	-1.934E+00		2.949E+00	4.829E+00	0.000E+00	-0.401
SR-85	1.797E+01		2.523E+00	4.829E+00	0.000E+00	3.721
Y-88	-6.008E-01		2.263E+00	3.618E+00	0.000E+00	-0.166
NB-94	3.395E-01		2.047E+00	3.345E+00	0.000E+00	0.101
NB-95	1.765E+00		2.543E+00	3.684E+00	0.000E+00	0.479
ZR-95	-1.820E+00		4.003E+00	5.953E+00	0.000E+00	-0.306
MO - 99	3.245E+01		3.309E+01	5.695E+01	0.000E+00	0.570
RU-103	4.175E-01		2.261E+00	3.763E+00	0.000E+00	0.111
RU-106	2.227E+01		2.074E+01	3.341E+01	0.000E+00	0.666
AG-110m	-2.734E-02		2.119E+00	3.453E+00	0.000E+00	-0.008
SN-113	-1.184E+00		2.919E+00	4.709E+00	0.000E+00	-0.251
SB-124	-9.891E-01		5.250E+00	3.561E+00	0.000E+00	-0.278
SB-125	-1.481E+00		6.341E+00	1.023E+01	0.000E+00	-0.145
TE-129M	1.235E+01		2.516E+01	4.239E+01	0.000E+00	0.291
I-131	-9.128E-01		2.831E+00	4.594E+00	0.000E+00	-0.199
BA-133	2.231E+01		3.820E+00	6.305E+00	0.000E+00	3.538
CS-134	1.431E+01		5.310E+00	4.833E+00	0.000E+00	2.962
CS-136	-7.380E-01		2.411E+00	3.925E+00	0.000E+00	-0.188
CS-137	3.840E+00		2.315E+00	4.001E+00	0.000E+00	0.960
CE-139	-5.522E-01		2.228E+00	3.643E+00	0.000E+00	-0.152
BA-140	-2.730E+00		8.629E+00	1.407E+01	0.000E+00	-0.194
LA-140	5.305E-02		2.784E+00	4.588E+00	0.000E+00	0.012
CE-141	1.810E+00		4.573E+00	6.474E+00	0.000E+00	0.279
CE-144	-6.569E+00		2.031E+01	2.834E+01	0.000E+00	-0.232
EU-152	-7.798E+00		8.209E+00	1.098E+01	0.000E+00	-0.710
EU-154	5.716E-01		4.737E+00	7.875E+00	0.000E+00	0.073
AC-228	2.190E+00		8.140E+00	1.341E+01	0.000E+00	0.163
U-235	3.059E+01		2.000E+01	2.913E+01	0.000E+00	1.050
U-238	1.413E+02		2.243E+02	3.764E+02	0.000E+00	0.376
AM-241	-3.154E+01		3.584E+01	4.890E+01	0.000E+00	-0.645

A,14L2859	7-6	,05/14/2006	17:53,05/10	/2006 09:30,	3.641E+00,WG	L28597-6	ΕX
B,14L2859	7-6	,LIBD	,0	6/22/2005 08:5	7,1435L091304		
C,K-40	,YES,	8.061E+00,	3.628E+01,	3.473E+01,,	0.232		
C,RA-226	,YES,	5.204E+01,	5.726E+01,	8.603E+01,,	0.605		
C,TH-228	,YES,	3.553E+00,	3.885E+00,	6.480E+00,,	0.548		
C,TH-232	,YES,	1.071E+01,	7.507E+00,	1.340E+01,,	0.800		
C,BE-7	,NO,	8.095E+00,	1.822E+01,	3.062E+01,,	0.264		
C,NA-24	,NO,	-7.572E+01,	7.766E+01,	1.198E+02,,	-0.632		
C,CR-51	,NO,	-4.874E+00,	1.977E+01,	3.237E+01,,	-0.151		
C,MN-54	,NO,	6.308E-01,	2.132E+00,	3.552E+00,,	0.178		
C,CO-57	,NO,	2.274E-01,	2.253E+00,	3.746E+00,	0.061		
C,CO-58	,NO,	-1.113E-01,	2.141E+00,	3.524E+00,,	-0.032		
C,FE-59	,NO,	3.030E+00,	4.218E+00,	7.203E+00,,	0.421		
C,CO-60	,NO,	4.332E-01,	2.252E+00,	3.718E+00,,	0.117		
C,ZN-65	,NO,	1.049E+01,	5.787E+00,	8.944E+00,,	1.173		
C,SE-75	,NO,	-1.934E+00,	2.949E+00,	4.829E+00,,	-0.401		
C,SR-85	,NO,	1.797E+01,	2.523E+00,	4.829E+00,,	3.721		
C,Y-88	,NO,	-6.008E-01,	2.263E+00,	3.618E+00,,	-0.166		
C,NB-94	,NO,	3.395E-01,	2.047E+00,	3.345E+00,,	0.101		
C,NB-95	,NO,	1.765E+00,	2.543E+00,	3.684E+00,,	0.479		
C,ZR-95	,NO,	-1.820E+00,	4.003E+00,	5.953E+00,,	-0.306		
C,MO-99	,NO,	3.245E+01,	3.309E+01,	5.695E+01,,	0.570		
C,RU-103	,NO,	4.175E-01,	2.261E+00,	3.763E+00,,	0.111		
C,RU-106	,NO,	2.227E+01,	2.074E+01,	3.341E+01,,	0.666		
C,AG-110m	,NO,	-2.734E-02,	2.119E+00,	3.453E+00,,	-0.008		
C,SN-113	,NO,	-1.184E+00,	2.919E+00,	4.709E+00,,	-0.251		
C,SB-124	,NO,	-9.891E-01,	5.250E+00,	3.561E+00,,	-0.278		
C,SB-125	,NO,	-1.481E+00,	6.341E+00,	1.023E+01,,	-0.145		
C,TE-129M	,NO,	1.235E+01,	2.516E+01,	4.239E+01,	0.291		
C,I-131	,NO,	-9.128E-01,	2.831E+00,	4.594E+00,,	-0.199		
C,BA-133	,NO,	2.231E+01,	3.820E+00,	6.305E+00,,	3.538		
C,CS-134	,NO,	1.431E+01,	5.310E+00,	4.833E+00,,	2.962		
C,CS-136	,NO,	-7,380E-01,	2.411E+00,	3.925E+00,,	-0.188		
C,CS-137	,NO,	3.840E+00,	2.315E+00,	4.001E+00,,	0.960		
C,CE-139	,NO ,	-5.522E-01,	2.228E+00,	3.643E+00,,	-0.152		
C,BA-140	,NO,	-2.730E+00,	8.629E+00,	1.407E+01,,	-0.194		
C,LA-140	,NO,	5.305E-02,	2.784E+00,	4.588E+00,,	0.012		
C,CE-141	,NO,	1.810E+00,	4.573E+00,	6.474E+00,,	0.279		
C,CE-144	,NO,	-6.569E+00,	2.031E+01,	2.834E+01,,	-0.232		
C,EU-152	,NO,	-7.798E+00,	8.209E+00,	1.098E+01,,	-0.710		
C,EU-154	,NO,	5.716E-01,	4.737E+00,	7.875E+00,,	0.073		
C,AC-228	,NO,	2.190E+00,	8.140E+00,	1.341E+01,,	0.163		
C,U-235	,NO,	3.059E+01,	2.000E+01,	2.913E+01,,	1.050		
C,U-238	,NO,	1.413E+02,	2.243E+02,	3.764E+02,,	0.376		
C,AM-241	,NO,	-3.154E+01,	3.584E+01,	4.890E+01,,	-0.645		

Sec. Review:

Analyst: LIMS:

=======================================	
VAX/VMS Teledyne TBE14 P-10933A H	Brown Eng. Laboratory Gamma Report: 15-MAY-2006 02:56:32.90 DGe ********* Aquisition Date/Time: 14-MAY-2006 18:56:15.42
LIMS No., Custome	er Name, Client ID: WG L28597-12 EX BRAID

Sample ID		1/1 2050	7 10		Cmplo Dato		10 MAY 2006 00.25.00
sampre in	•	1412039	$I = \perp Z$		Smpre Dale		10-MAI-2006 09:25:00.
Sample Type	:	WG			Geometry	:	1435L091304
Quantity	:	3.738201	E+00 L		BKGFILE	:	14BG050506MT
Start Channel	:	90	Energy Tol :	1.30000	Real Time	:	0 08:00:04.68
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 08:00:00.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.06*	284	1145	1.54	133.25	4.45E-01	9.87E-03	23.6	2.71E+00
2	1	92.38*	75	995	1.61	186.08	1.14E+00	2.62E-03	85.0	8.20E-01
3	1	139.96	285	907	1.67	281.59	1.67E+00	9.91E-03	20.5	4.22E+00
4	1	185.96*	89	1110	2.60	373.87	1.64E+00	3.08E-03	81.2	2.79E+00
5	1	198.37*	198	908	1.53	398.76	1.60E+00	6.87E-03	31.4	1.28E+00
6	1	353.07*	184	645	6.23	708.85	1.14E+00	6.38E-03	37.7	4.33E+00
7	1	583.20*	7	192	1.81	1169.38	7.91E-01	2.29E-044	62.3	1.38E+00
8	1	596.11	113	231	1.49	1195.19	7.78E-01	3.92E-03	27.5	1.99E+00
9	1	609.13*	111	270	1.70	1221.22	7.66E-01	3.86E-03	37.1	1.09E+00
10	1	911.91*	9	148	1.65	1825.65	5.64E-01	2.99E-043	840.4	1.60E+00
11	1	1154.84	43	79	2.36	2309.51	4.70E-01	1.49E-03	43.8	3.04E+00
12	1	1461.52*	17	55	2.09	2918.94	3.93E-01	5.75E-041	47.8	1.14E+00
13	1	1766.79*	5	42	2.49	3524.05	3.43E-01	1.80E-043	312.4	3.13E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected De	cay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
K-40	1460.81	17	10.67*	3.926E-01	9.918E+00 9	.918E+00	295.58
RA-226	186.21	89	3.28*	1.640E+00	4.136E+01 4	.136E+01	162.47
AC-228	835.50		1.75	6.034E-01	Line	Not Found	
	911.07	9	27.70*	5.642E-01	1.383E+00 1	.385E+00	680.77
TH-232	583.14	7	30.25	7.913E-01	6.911E-01 6	.911E-01	924.59
	911.07	9	27.70*	5.642E-01	1.383E+00 1	.383E+00	680.77
	969.11		16.60	5.383E-01	Line	Not Found	
U-235	143.76		10.50*	1.680E+00	Line	Not Found	
	163.35		4.70	1.685E+00	Line	Not Found	
	185.71	89	54.00	1.640E+00	2.512E+00 2	.512E+00	162.47
	205.31		4.70	1.582E+00	Line	Not Found	

Summary of Nuclide Activity Page : 2 Sample ID : 14L28597-12 Acquisition date : 14-MAY-2006 18:56:15 Total number of lines in spectrum 13 Number of unidentified lines 9 Number of lines tentatively identified by NID 4 30.77% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma NuclideHlifeDecaypCi/LpCi/L2-Sigma Error2-SigmaK-401.28E+09Y1.009.918E+009.918E+0029.32E+00295.58RA-2261600.00Y1.004.136E+014.136E+016.720E+01162.47AC-2285.75Y1.001.383E+001.385E+009.427E+00680.77 2-Sigma Error %Error Flags

 AC-228
 5.75Y
 1.00
 1.383E+00
 1.385E+00
 9.427E+00
 680.77

 TH-232
 1.41E+10Y
 1.00
 1.383E+00
 1.383E+00
 9.413E+00
 680.77

 U-235
 7.04E+08Y
 1.00
 2.512E+00
 2.512E+00
 4.082E+00
 162.47

 _____ Total Activity : 5.656E+01 5.656E+01 Grand Total Activity : 5.656E+01 5.656E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit

L28597 87 of 111

Unidentified Energy Lines Page : 3 Acquisition date : 14-MAY-2006 18:56:15 Sample ID : 14L28597-12 It Energy Area Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags 66.06 284 1145 1.54 133.25 128 10 9.87E-03 47.3 4.45E-01 1 75 995 1.61 186.08 181 10 2.62E-03 **** 1.14E+00 139.962859071.61186.08181102.62E-03****1.14E+00139.962859071.67281.59276109.91E-0341.01.67E+00198.371989081.53398.76393116.87E-0362.71.60E+00353.071846456.23708.85699226.38E-0375.31.14E+00596.111132311.491195.191189113.92E-0355.07.78E-01609.131112701.701221.221215153.86E-0374.17.66E-011154.8443792.36230951230312149E-03976 92.38 1 1 1 1 1 1 79 2.36 2309.51 2303 12 1.49E-03 87.6 4.70E-01 1 1154.84 43 42 2.49 3524.05 3518 12 1.80E-04 **** 3.43E-01 1 1766.79 5 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum13Number of unidentified lines9 9 Number of lines tentatively identified by NID 4 30.77% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma

 Nuclide
 Hlife
 Decay
 pCi/L
 pCi/L
 pCi/L
 2-Sigma
 2-Sigma

 K-40
 1.28E+09Y
 1.00
 9.918E+00
 9.918E+00
 29.32E+00
 295.58

 RA-226
 1600.00Y
 1.00
 4.136E+01
 4.136E+01
 6.720E+01
 162.47

 AC-228
 5.75Y
 1.00
 6.916E-01
 6.926E-01
 113.9E-01
 1645.08

 TH-232
 1.41E+10Y
 1.00
 6.911E-01
 6.911E-01
 63.90E-01
 924.59

 Total Activity : 5.266E+01 5.266E+01 Grand Total Activity : 5.266E+01 5.266E+01 Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit Interference Report Interfering Interfered Nuclide Line Nuclide Line AC-228 911.07 TH-232 911.07 Combined Activity-MDA Report ---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	9.918E+00	2.932E+01	3.293E+01	0.000E+00	0.301
RA-226	4.136E+01	6.720E+01	8.066E+01	0.000E+00	0.513
AC-228	6.926E-01	1.139E+01	1.149E+01	0.000E+00	0.060
TH-232	6.911E-01	6.390E+00	1.326E+01	0.000E+00	0.052

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	2.281E+01		1.758E+01	3.029E+01	0.000E+00	0.753
NA-24	-1.032E+02		3.212E+02	5.134E+02	0.000E+00	-0.201
CR-51	-1.472E+01		1.907E+01	3.081E+01	0.000E+00	-0.478
MN-54	9.637E-01		2.009E+00	3.373E+00	0.000E+00	0.286
CO-57	-1.557E+00		2.069E+00	3.387E+00	0.000E+00	-0.460
CO-58	1.080E+00		1.996E+00	3.368E+00	0.000E+00	0.321
FE-59	-1.300E+00		3.901E+00	6.349E+00	0.000E+00	-0.205
CO-60	2.851E-01		1.973E+00	3.252E+00	0.000E+00	0.088
ZN-65	5.609E+00		4.343E+00	7.599E+00	0.000E+00	0.738
SE-75	-5.979E-01		2.799E+00	4.627E+00	0.000E+00	-0.129
SR-85	1.432E+01		2.314E+00	4.394E+00	0.000E+00	3.260
Y - 88	-5.714E-01		2.109E+00	3.366E+00	0.000E+00	-0.170
NB-94	9.948E-01		1.989E+00	3.292E+00	0.000E+00	0.302
NB-95	4.391E-01		1.959E+00	3.273E+00	0.000E+00	0.134
ZR-95	-2.399E-01		3.448E+00	5.695E+00	0.000E+00	-0.042
MO-99	5.836E-01		4.560E+01	7.567E+01	0.000E+00	0.008
RU-103	3.194E+00		2.226E+00	3.840E+00	0.000E+00	0.832
RU-106	-3.537E+00		1.970E+01	3.011E+01	0.000E+00	-0.117
AG-110m	1.429E+00		1.979E+00	3.316E+00	0.000E+00	0.431
SN-113	-1.157E+00		2.706E+00	4.360E+00	0.000E+00	-0.265
SB-124	-1.420E+00		4.974E+00	3.320E+00	0.000E+00	-0.428
SB-125	6.917E+00		5.895E+00	9.915E+00	0.000E+00	0.698
TE-129M	2.124E+01		2.372E+01	4.048E+01	0.000E+00	0.525
I-131	7.160E-01		3.504E+00	5.031E+00	0.000E+00	0.142
BA-133	5.221E+00		3.399E+00	4.982E+00	0.000E+00	1.048
CS-134	3.891E+00		4.045E+00	3.721E+00	0.000E+00	1.046
CS-136	-1.733E+00		2.421E+00	3.868E+00	0.000E+00	-0.448
CS-137	1.383E-01		2.186E+00	3.570E+00	0.000E+00	0.039
CE-139	4.093E-01		2.052E+00	3.382E+00	0.000E+00	0.121
BA-140	-1.136E-01		8.654E+00	1.426E+01	0.000E+00	-0.008
LA-140	9.529E-01		2.789E+00	4.692E+00	0.000E+00	0.203
CE-141	3.423E-01		4.329E+00	6.081E+00	0.000E+00	0.056
CE-144	-5.896E+00		1.876E+01	2.618E+01	0.000E+00	-0.225
EU-152	-6.880E+00		7.736E+00	1.036E+01	0.000E+00	-0.664
EU-154	-3.806E+00		4.328E+00	7.070E+00	0.000E+00	-0.538
TH-228	2.901E+00		4.061E+00	6.606E+00	0.000E+00	0.439
U-235	3.249E+00		1.849E+01	2.605E+01	0.000E+00	0.125
U-238	-7.848E+01		2.238E+02	3.582E+02	0.000E+00	-0.219
AM-241	1.290E+01		3.288E+01	4.638E+01	0.000E+00	0.278

A,14L28597	7-12	,05/15/2006	02:56,05/10/2	2006 09:25,	3.738E+00,WG	L28597-12	Е
B,14L28597	7-12	,LIBD	,06/	/22/2005 08:5	7,1435L091304		
C,K-40	,YES,	9.918E+00,	2.932E+01,	3.293E+01,,	0.301		
C,RA-226	,YES,	4.136E+01,	6.720E+01,	8.066E+01,,	0.513		
C,AC-228	,YES,	6.926E-01,	1.139E+01,	1.149E+01,,	0.060		
C,TH-232	,YES,	6.911E-01,	6.390E+00,	1.326E+01,,	0.052		
C,BE-7	,NO,	2.281E+01,	1.758E+01,	3.029E+01,,	0.753		
C,NA-24	,NO,	-1.032E+02,	3.212E+02,	5.134E+02,,	-0.201		
C, CR-51	,NO ,	-1.472E+01,	1.907E+01,	3.081E+01,,	-0.478		
C,MN-54	,NO,	9.637E-01,	2.009E+00,	3.373E+00,,	0.286		
C,CO-57	,NO,	-1.557E+00,	2.069E+00,	3.387E+00,,	-0.460		
C, CO-58	,NO,	1.080E+00,	1.996E+00,	3.368E+00,,	0.321		
C,FE-59	,NO,	-1.300E+00,	3.901E+00,	6.349E+00,,	-0.205		
C, CO-60	,NO,	2.851E-01,	1.973E+00,	3.252E+00,,	0.088		
C,ZN-65	,NO,	5.609E+00,	4.343E+00,	7.599E+00,,	0.738		
C,SE-75	,NO,	-5.979E-01,	2.799E+00,	4.627E+00,,	-0.129		
C,SR-85	,NO,	1.432E+01,	2.314E+00,	4.394E+00,,	3.260		
C,Y-88	,NO,	-5.714E-01,	2.109E+00,	3.366E+00,,	-0.170		
C,NB-94	,NO,	9.948E-01,	1.989E+00,	3.292E+00,,	0.302		
C,NB-95	,NO,	4.391E-01,	1.959E+00,	3.273E+00,,	0.134		
C,ZR-95	,NO,	-2.399E-01,	3.448E+00,	5.695E+00,,	-0.042		
C,MO-99	,NO,	5.836E-01,	4.560E+01,	7.567E+01,,	0.008		
C,RU-103	,NO,	3.194E+00,	2.226E+00,	3.840E+00,,	0.832		
C,RU-106	,NO,	-3.537E+00,	1.970E+01,	3.011E+01,,	-0.117		
C,AG-110m	,NO,	1.429E+00,	1.979E+00,	3.316E+00,,	0.431		
C,SN-113	,NO,	-1.157E+00,	2.706E+00,	4.360E+00,,	-0.265		
C,SB-124	,NO,	-1.420E+00,	4.974E+00,	3.320E+00,,	-0.428		
C,SB-125	,NO,	6.917E+00,	5.895E+00,	9.915E+00,,	0.698		
C,TE-129M	,NO,	2.124E+01,	2.372E+01,	4.048E+01,,	0.525		
C,I-131	,NO,	7.160E-01,	3.504E+00,	5.031E+00,,	0.142		
C,BA-133	,NO,	5.221E+00,	3.399E+00,	4.982E+00,,	1.048		
C,CS-134	,NO,	3.891E+00,	4.045E+00,	3.721E+00,,	1.046		
C,CS-136	,NO,	-1.733E+00,	2.421E+00,	3.868E+00,,	-0.448		
C,CS-137	,NO,	1.383E-01,	2.186E+00,	3.570E+00,,	0.039		
C,CE-139	,NO,	4.093E-01,	2.052E+00,	3.382E+00,,	0.121		
C,BA-140	,NO,	-1.136E-01,	8.654E+00,	1.426E+01,,	-0.008		
C,LA-140	,NO,	9.529E-01,	2.789E+00,	4.692E+00,,	0.203		
C,CE-141	,NO,	3.423E-01,	4.329E+00,	6.081E+00,,	0.056		
C,CE-144	,NO,	-5.896E+00,	1.876E+01,	2.618E+01,,	-0.225		
C,EU-152	,NO,	-6.880E+00,	7.736E+00,	1.036E+01,,	-0.664		
C,EU-154	,NO,	-3.806E+00,	4.328E+00,	7.070E+00,,	-0.538		
C,TH-228	,NO,	2.901E+00,	4.061E+00,	6.606E+00,,	0.439		
C,U-235	,NO,	3.249E+00,	1.849E+01,	2.605E+01,,	0.125		
C,U-238	,NO,	-7.848E+01,	2.238E+02,	3.582E+02,,	-0.219		
C,AM-241	,NO,	1.290E+01,	3.288E+01,	4.638E+01,,	0.278		

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 14-MAY-2006 17:54:05.31 TBE15 P-10635B HpGe ******** Aquisition Date/Time: 13-MAY-2006 08:53:43.16 LIMS No., Customer Name, Client ID: WG L28597-7 EX BRAID

Sample ID	:	15L28597-7		Smple Date:	9-MAY-2006 10:55:00.0
Sample Type	:	WG		Geometry :	1535L090104
Quantity	:	3.59270E+00 L		BKGFILE :	15BG050506MT
Start Channel	:	40 Energy Tol : 1.7	0000	Real Time :	0 08:00:03.10
End Channel	:	4090 Pk Srch Sens: 5.0	0000	Live time :	0 08:00:00.00
MDA Constant	:	0.00 Library Used: LIB	D		
End Channel MDA Constant	:	40Energy 101 : 1.764090Pk Srch Sens: 5.060.00Library Used: LIB	0000 0000 D	Live time :	0 08:00:03.10

Ρk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eii	Cts/Sec	%Err	Fit
1	1	66.97	183	1009	1.59	119.95	4.51E-01	6.35E-03	32.1	3.79E-01
2	1	93.39*	160	1234	2.15	173.10	1.08E+00	5.55E-03	47.7	1.55E+00
3	1	140.52	159	850	1.15	267.93	1.48E+00	5.53E-03	33.8	1.96E+00
4	1	198.94*	111	637	0.96	385.44	1.36E+00	3.85E-03	42.9	4.78E-01
5	5	242.49	128	622	1.60	473.04	1.21E+00	4.45E-03	37.4	3.10E+00
6	1	295.52*	227	446	1.70	579.69	1.05E+00	7.89E-03	20.1	3.32E+00
7	1	351.99*	377	331	1.50	693.26	9.16E-01	1.31E-02	11.4	5.25E+00
8	1	596.34	98	196	2.51	1184.52	5.97E-01	3.41E-03	30.3	1.43E+00
9	1	609.19*	336	229	1.76	1210.35	5.86E-01	1.17E-02	12.4	8.16E-01
10	1	1763.84*	68	42	2.81	3528.65	2.54E-01	2.35E-03	25.8	2.94E+00

Flag: "*" = Peak area was modified by background subtraction

LIMS:

Nuclide Line Activity Report

Summary of Nuclide Activity Sample ID : 15L28597-7 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 1 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

0.000E+00

0.000E+00

0.000E+00

0.000E+00

0.000E+00

0.691

0.625

-0.292

~0.119

0.376

Unidentified Energy Lines Sample ID : 15L28597-7 Page : 3 Acquisition date : 13-MAY-2006 08:53:43 It Energy Area Bkqnd Channel Left Pw Cts/Sec %Err FWHM %Eff Flags 1 66.97 183 1009 1.59 119.95 116 9 6.35E-03 64.3 1 93.39 4.51E-01 160 1234 2.15 173.10 167 13 5.55E-03 95.5 1 140.52 1.08E+00 159 850 1.15 267.93 263 9 5.53E-03 67.5 1 198.94 1.48E+00 111 637 0.96 385.44 382 8 3.85E-03 85.9 5 242.49 1.36E+00 128 622 1.60 473.04 463 15 4.45E-03 74.9 1 295.52 1.21E+00227 T 446 1.70 579.69 575 11 7.89E-03 40.3 1 351.99 1.05E+00377 331 1.50 689 11 1.31E-02 22.8 693.26 1 596.34 9.16E-01 98 196 1184.52 1180 12 3.41E-03 60.7 2.51 1 609.19 5.97E-01 336 1.76 229 1210.35 1203 17 1.17E-02 24.8 1 1763.84 5.86E-01 68 42 2.81 3528.65 3522 15 2.35E-03 51.6 2.54E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 10 Number of unidentified lines Number of lines tentatively identified by NID 9 1 **** There are no nuclides meeting summary criteria **** 10.00% Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Activity K.L. Act error MDA Nuclide MDA error (pCi/L) Ided Act/MDA (pCi/L) BE - 7 2.837E+00 2.065E+01 3.364E+01 NA-24 0.000E+00 -2.609E+02 0.084 2.352E+02 3.566E+02 K-40 0.000E+00 -1.284E+01 -0.7323.359E+01 6.181E+01 CR-51 0.000E+00 -4.643E+00 -0.208 2.168E+01 3.566E+01 0.000E+00 MN-54 3.829E-01 -0.130 2.310E+00 3.861E+00 CO-57 0.000E+00 -5.862E-01 0.099 2.323E+00 3.779E+00 CO-58 0.000E+00 -1.056E+00 -0.155 2.515E+00 4.099E+00 FE-59 0.000E+00 6.051E+00 -0.258 5.124E+00 8.870E+00 CO-60 0.000E+00 1.962E-01 0.682 2.468E+00 4.084E+00 ZN-65 0.000E+00 7.756E+00 0.048 5.498E+00 9.613E+00 0.000E+00 SE-75 5.431E-01 0.807 3.021E+00 5.062E+00 SR-85 0.000E+00 1.632E+01 0.107 2.740E+00 5.272E+00 Y-88 0.000E+00 -5.221E-01 3.096 2.810E+00 4.552E+00 0.000E+00 NB-94 2.742E+00 -0.115 2.313E+00 3.970E+00

NB-95

ZR-95

MO-99

RU-103

2.508E+00

-1.881E+00

-9.231E+00

1.571E+00

2.347E+00

4.066E+00

4.816E+01

2.452E+00

4.010E+00

6.447E+00

7.762E+01

4.174E+00

IH-2282.198E+005.299E+007.401E+000.000E+00-0.249TH-232-3.708E+009.513E+001.487E+010.000E+000.297U-2358.807E+002.069E+012.922E+010.000E+00-0.249U-2389.869E+012.692E+024.500E+020.000E+000.301AM-241-3.576E+012.909E+014.414E+010.000E+000.219	AG-110m SN-113 SB-124 SB-125 TE-129M I-131 BA-133 CS-134 CS-136 CS-137 CE-139 BA-140 LA-140 CE-141 CE-144 EU-152 EU-154 RA-226 AC-228 TH-228 TH-232 U-235 U-238 AM-241	1.716E+00 -1.445E+00 -1.944E+00 -3.995E+00 -1.741E+01 3.940E-01 1.430E+01 1.027E+01 -1.136E+00 4.964E-01 1.252E+00 1.421E+00 3.298E+00 -6.537E-01 -2.264E+00 5.037E+00 -7.905E-01 -5.793E+01 -3.713E+00 8.807E+00 9.869E+01 -3.576E+01	2.207E+01 2.263E+00 3.059E+00 5.383E+00 6.724E+00 2.959E+01 3.309E+00 3.945E+00 4.819E+00 2.790E+00 2.566E+00 2.259E+00 9.942E+00 3.300E+00 4.853E+00 1.993E+01 8.320E+00 4.838E+00 5.911E+01 9.526E+00 5.299E+00 9.513E+00 2.069E+01 2.692E+02 2.909E+01	3.547E+01 3.835E+00 4.931E+00 3.740E+00 1.073E+01 4.703E+01 5.459E+00 6.312E+00 4.662E+00 4.540E+00 4.240E+00 3.760E+00 1.658E+01 5.866E+00 6.741E+00 2.819E+01 1.232E+01 1.232E+01 1.489E+01 1.489E+01 1.487E+01 2.922E+01 4.500E+02 4.14E+01	0.000E+00 0.000E+00	0.097 0.448 -0.293 -0.520 -0.372 -0.370 0.072 2.266 2.204 -0.250 0.117 0.333 0.086 0.562 -0.097 -0.080 0.409 -0.100 -0.623 -0.249 0.297 -0.249 0.301 0.219
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L28597 94 of 111

A,15L28597	7-7	,05/14/2006	17:54,05/09	/2006 10:55,	3.593E+00,WG	L28597-7	ЕΧ
B,15L28597	7 – 7	,LIBD	,0	3/09/2005 13:2	9,1535L090104		
, С. ВЕ-7	.NO,	2.837E+00,	2.065E+01,	3.364E+01,,	0.084		
C.NA-24	, NO .	-2.609E+02,	2.352E+02,	3.566E+02,,	-0.732		
C,K-40	NO .	-1.284E+01,	3.359E+01,	6.181E+01,,	-0.208		
C. CR - 51	NO .	-4.643E+00,	2.168E+01,	3.566E+01,,	-0.130		
C. MN-54	, NO .	3.829E-01.	2.310E+00,	3.861E+00,,	0.099		
$C_{1}C_{0}-57$	NO .	-5.862E-01.	2.323E+00.	3.779E+00,,	-0.155		
$C_{1}C_{2}-58$	NO .	-1.056E+00,	2.515E+00,	4.099E+00,,	-0.258		
C.FE-59	.NO .	6.051E+00,	5.124E+00,	8.870E+00,,	0.682		
C, CO - 60	.NO .	1.962E-01,	2.468E+00,	4.084E+00,,	0.048		
C. ZN-65	NO .	7.756E+00.	5.498E+00.	9.613E+00,,	0.807		
$C_{\rm SE} = 75$	NO .	5.431E-01.	3.021E+00,	5.062E+00,,	0.107		
C.SR-85	.NO .	1.632E+01,	2.740E+00,	5.272E+00,,	3.096		
$C_{Y} = 88$	NO .	-5.221E-01,	2.810E+00,	4.552E+00,,	-0.115		
C, NB-94	.NO .	2.742E+00,	2.313E+00,	3.970E+00,,	0.691		
C, NB-95	NO .	2.508E+00,	2.347E+00,	4.010E+00,,	0.625		
C, ZR-95	NO .	-1.881E+00,	4.066E+00,	6.447E+00,,	-0.292		
C, MO-99	.NO ,	-9.231E+00,	4.816E+01,	7.762E+01,,	-0.119		
C.RU-103	, NO ,	1.571E+00,	2.452E+00,	4.174E+00,,	0.376		
C,RU-106	, NO ,	3.435E+00,	2.207E+01,	3.547E+01,,	0.097		
C,AG-110m	, NO ,	1.716E+00,	2.263E+00,	3.835E+00,,	0.448		
C,SN-113	, NO ,	-1.445E+00,	3.059E+00,	4.931E+00,,	-0.293		
C,SB-124	, NO ,	-1.944E+00,	5.383E+00,	3.740E+00,,	-0.520		
C,SB-125	, NO ,	-3.995E+00,	6.724E+00,	1.073E+01,,	-0.372		
C, TE-129M	, NO ,	-1.741E+01,	2.959E+01,	4.703E+01,,	-0.370		
C,I-131	, NO ,	3.940E-01,	3.309E+00,	5.459E+00,,	0.072		
C,BA-133	, NO ,	1.430E+01,	3.945E+00,	6.312E+00,,	2.266		
C,CS-134	, NO ,	1.027E+01,	4.819E+00,	4.662E+00,,	2.204		
C,CS-136	, NO ,	-1.136E+00,	2.790E+00,	4.540E+00,,	-0.250		
C,CS-137	,NO,	4.964E-01,	2.566E+00,	4.240E+00,,	0.117		
C,CE-139	,NO,	1.252E+00,	2.259E+00,	3.760E+00,,	0.333		
C,BA-140	,NO,	1.421E+00,	9.942E+00,	1.658E+01,,	0.086		
C,LA-140	,NO,	3.298E+00,	3.300E+00,	5.866E+00,,	0.562		
C,CE-141	,NO,	-6.537E-01,	4.853E+00,	6.741E+00,,	-0.097		
C,CE-144	,NO,	-2.264E+00,	1.993E+01,	2.819E+01,,	-0.080		
C,EU-152	,NO,	5.037E+00,	8.320E+00,	1.232E+01,,	0.409		
C,EU-154	,NO,	-7.905E-01,	4.838E+00,	7.880E+00,,	-0.100		
C,RA-226	,NO,	-5.793E+01,	5.911E+01,	9.304E+01,,	-0.623		
C,AC-228	,NO,	-3.713E+00,	9.526E+00,	1.489E+01,,	-0.249		
C, TH-228	,NO,	2.198E+00,	5.299E+00,	7.401E+00,,	0.297		
C, TH-232	,NO,	-3.708E+00,	9.513E+00,	1.487E+01,,	-0.249		
C,U-235	,NO,	8.807E+00,	2.069E+01,	2.922E+01,,	0.301		
C,U-238	,NO,	9.869E+01,	2.692E+02,	4.500E+02,,	0.219		
C,AM-241	,NO,	-3.576E+01,	2.909E+01,	4.414E+01,,	-0.810		

L28597 95 of 111

Sec. Review: Analyst:

LIMS:

VAX/VMS Teledy TBE23 03017322	yne Brown Eng. Laboratory Gamma R 2 HpGe ******** Aquisition Date	eport: 14-MAY-2006 17:54:57.48 /Time: 13-MAY-2006 08:54:01.69
LIMS No., Cust	Omer Name Client TD MG Teases	
,	WG L28597-	8 EX BRAID
Sample ID Sample Type Quantity Start Channel End Channel MDA Constant	: 23L28597-8 : WG : 3.65040E+00 L : 50 Energy Tol : 1.50000 : 4090 Pk Srch Sens: 5.00000 : 0.00 Library Used: LIBD	<pre>Smple Date: 9-MAY-2006 12:10:00.0 Geometry : 2335L090704 BKGFILE : 23BG050506MT Real Time : 0 08:00:20.12 Live time : 0 08:00:00.00</pre>

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
12345678901123456789011234567890	10 10 10 10 1 1 1 0 0 0 0 0 0 0 0 0 0 0	33.72* 37.03* 39.34* 41.79* 53.13 63.35* 64.95 66.41* 92.62* 140.31* 198.15* 238.41* 294.71* 351.74* 500.11 596.04 609.35* 911.82* 1460.81* 1765.05*	48 114 34 131 111 83 108 106 83 109 208 96 36 90 79 124 123 1 11	41 386 635 555 584 673 672 670 1199 1035 750 589 486 320 161 217 184 89 58	$\begin{array}{c} 1.00\\ 2.39\\ 2.40\\ 2.09\\ 1.04\\ 1.07\\ 1.07\\ 1.08\\ 1.06\\ 1.26\\ 1.72\\ 1.18\\ 1.13\\ 1.39\\ 2.35\\ 1.17\\ 1.34\\ 1.41\\ 2.21\\ \end{array}$	67.61 74.22 78.83 83.73 106.39 126.81 129.99 132.92 185.29 280.58 396.17 476.62 589.15 703.12 999.72 1191.52 1218.12 1823.03 2921.58	9.28E-02 1.50E-01 1.98E-01 2.57E-01 6.00E-01 9.43E-01 9.95E-01 1.04E+00 1.69E+00 1.73E+00 1.50E+00 1.32E+00 1.32E+00 1.32E+00 1.32E+01 8.59E-01 4.59E-01	1.67E-03 3.97E-03 1.17E-031 4.55E-03 3.87E-03 2.87E-03 3.76E-03 3.68E-03 2.89E-03 3.78E-03 3.78E-03 7.21E-03 3.34E-03 1.24E-031 3.12E-03 2.74E-03 4.30E-03 4.27E-03 1.83E-05* 3.78E-042	58.5 50.2 50.2 71.8 31.4 37.2 57.8 41.1 42.3 85.9 56.3 26.9 51.9 28.0 41.0 31.3 25.4 27.7 **** 33.6	3.94E+00 2.79E+00
			L) <u>1</u>	1.00	3530.72	4.00E-01	4.12E-041	67.1	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide K-40 AC-228 TH-228	Energy 1460.81 835.50 911.07 238.63 240.98	Area 11 1 96	%Abn 10.67* 1.75 27.70* 44.60* 3.95	%Eff 4.594E-01 6.790E-01 6.379E-01 1.725E+00 1.714E+00	Uncorrected pCi/L 5.703E+00 Lir 7.685E-02 3.210E+00	Decay Corr pCi/L 5.703E+00 Not Found 7.695E-02 3.223E+00	2-Sigma %Error 467.17 8224.01 103.75
				T:) T T 1 0 0		le Not Found	

Summary of Nuclide Activity	Page : 2
Sample ID : 23L28597-8	Acquisition date : 13-MAY-2006 08:54:01
Total number of lines in spectrum	20
Number of unidentified lines	17
Number of lines tentatively identifi	Led by NID 3 15.00%
Nuclide Type : natural	
Uncorrected Nuclide Hlife Decay pCi/L K-40 1.28E+09Y 1.00 5.703E+00 AC-228 5.75Y 1.00 7.685E-02 TH-228 1.91Y 1.00 3.210E+00 Total Activity : 8.991E+00	Decay Corr Decay Corr 2-Sigma pCi/L 2-Sigma Error %Error Flags 5.703E+00 26.64E+00 467.17 7.695E-02 632.9E-02 8224.01 3.223E+00 3.344E+00 103.75 9.004E+00
Grand Total Activity : 8.991E+00	9.004E+00
Flags: "K" = Keyline not found	"M" = Manually accepted
"E" = Manually edited	"A" = Nuclide specific abn. limit

L28597 97 of 111

Unidentified Energy Lines Sample ID : 23L28597-8

Page : 3 Acquisition date : 13-MAY-2006 08.54.01

					110	quebe	CTO.	u uale.		2006 08	:54:01
It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
10 10 10 0 1 1 1 0 0 0 0 0 0 0 0 0	33.72 37.03 39.34 41.79 53.13 63.35 64.95 66.41 92.62 140.31 198.15 294.71 351.74 500.11 596.04 609.35	48 114 34 131 111 83 108 106 83 109 208 36 90 79 124 123	41 386 635 555 584 673 672 670 1199 1035 750 486 320 161 217 184	1.00 2.39 2.40 2.09 1.04 1.07 1.07 1.08 1.06 1.26 1.72 1.13 1.39 2.35 1.17	67.61 74.22 78.83 83.73 106.39 126.81 129.99 132.92 185.29 280.58 396.17 589.15 703.12 999.72 1191.52 1218 12	65 65 103 123 123 123 123 123 123 123 123 123 12	23 23 23 7 14 14 10 9 10 10 9 12	1.67E-03 $3.97E-03$ $1.17E-03$ $4.55E-03$ $3.87E-03$ $3.76E-03$ $3.76E-03$ $3.68E-03$ $2.89E-03$ $3.78E-03$ $7.21E-03$ $1.24E-03$ $3.12E-03$ $2.74E-03$ $4.30E-03$	**** 62.8 74.4 **** 82.1 84.5 **** 53.7 *2.7 82.1 62.8 51	9.28E-02 1.50E-02 1.98E-02 2.57E-02 6.00E-02 9.43E-02 9.43E-02 1.04E+00 1.69E+00 2.05E+00 1.90E+00 1.50E+00 1.32E+00 1.32E+00 8.73E-01	2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0	1765.05	12	51	1.80	3530.72	3521	20^{13}	4.27E-03 4.12E-04	55.4 ****	8.59E-01 4.00E-01	
Flag	gs: "T" = 1	Centative	ely asso	ociate	d						
Sumn Tot Num Num	nary of Nuc cal number nber of uni nber of lin	clide Act of lines dentifie es tenta	ivity in spe d lines tively	ectrum ; ident:	ified by :	NID	20 17 3	15	0.0.%		
Nucl	ide Type :	natural			1		0	10.	008		
Nucl K-40 AC-2 TH-2	ide Hl 1.28E+ 28 5. 28 1.	ife De 09Y 1 75Y 1 91Y 1	Wt Unc cay .00 5. .00 7. .00 3.	d Mear orrect pCi/L 703E+C 685E-C 210E+C	Wtd Deca 00 5.70 02 7.69 00 3.22	Mean y Cor: Ci/L 03E+00 95E-02 23E+00	r 0 2 0	Decay Co: 2-Sigma E: 26.64E+(632.9E-(3.344E+(rr 2 rror 00 4 02 82 00 1	2-Sigma %Error F 67.17 224.01 03.75	lags
	Total	Activit	y: 8.	991E+0	9.00)4E+0(- C				
G	rand Total	Activit	y: 8.	991E+0	0 9.00)4E+0(C				

Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
---------	---------------------	-----------	----------------	-----------	---------

K-40 AC-228 TH-228	5.703E+00 7.695E-02 3.223E+00	2.664E+01 6.329E+00 3.344E+00	2.561E+01 9.461E+00 5.015E+00	0.000E+00 0.000E+00	0.223
Non-	Identified Nuc	lides	3.0138+00	0.000E+00	0.643
	Key-Line				
Nuclide	ACLIVITY	K.L. Act error	MDA	MDA error	Act/MDA
naciiac		Ided	(pCi/L)		
BE-7	-1.850E-01	1.418E+01	2 2705,01		
NA-24	-8.423E+01	1.327E+02	2.070 ± 01 2.212 ± 02	0.000E+00	-0.008
CR-51	-7.333E+00	1.480E+01	$2 \cdot 2 \cdot 2 \cdot 2 \cdot + 0 \cdot 2$	0.000E+00	-0.381
MN - 54	8.798E-01	1 598E+00		0.000E+00	-0.295
CO-57	9.148E-01	1 691E+00	2.020E+00	0.000E+00	0.311
CO-58	~1.259E+00	$1 640F_{+}00$	2.0062+00	0.000E+00	0.326
FE-59	2.999E+00	3 035E+00	2.065E+00	0.000E+00	-0.472
CO-60	-1.016E-01	1 579E+00	2.72EE 00	0.000E+00	0.548
ZN-65	2.989E+00	3 4858+00	2.735E+00	0.000E+00	-0.037
SE-75	-1.895E+00	2 233E+00	8.196E+UU	0.000E+00	0.482
SR-85	9.932E+00	1 977E+00	3.626E+UU	0.000E+00	-0.523
Y-88	6.802E-01	1 661E+00	3.725E+UU	0.000E+00	2.666
NB-94	1.470E+00	1 542E+00	3.00/E+00	0.000E+00	0.226
NB-95	3.577E-01	1 645E+00	2.721E+00	0.000E+00	0.540
ZR-95	1.323E+00	2 892E+00	2.810E+00	0.000E+00	0.127
MO-99	1.497E+01	3 146E + 01	4.999E+00	0.0008+00	0.265
RU-103	9.820E-01	2 112E+00	3.459E+01	0.000E+00	0.274
RU-106	-1.878E+00	1 481E+01	2.482E+01	0.000E+00	0.321
AG-110m	1.034E-01	$1 494F_{+}00$		0.000E+00	-0.076
SN-113	-1.262E+00	2.095E+00	2.3396+00	0.000E+00	0.040
SB-124	2.152E+00	3 206E+00	2.72 Cm + 00	0.000E+00	-0.363
SB-125	2.438E+00	4.684E+00	2.730E+00 8.024E+00	0.000E+00	0.787
TE-129M	-7.059E+00	1.992E+01	3 3045+00	0.000E+00	0.304
I-131	3.229E+00	2.231E+00	3 9450-00	0.000E+00	-0.214
BA-133	1.477E+00	2.543E+00	3 7628+00	0.000E+00	0.818
CS-134	3.776E+00	2.767E+00	2 9438-00	0.000E+00	0.393
CS-136	9.485E-01	1.882E+00	3 2588.00	0.000E+00	1.283
CS-137	-3.202E-01	1.666E+00	2 819E+00	0.000E+00	0.291
CE-139	2.078E-02	1.669E+00	2.010E+00 2.818E+00	0.000E+00	-0.114
BA-140	-3.183E+00	6.884E+00	$1 164 \mathbf{E}_{+} 01$	0.000E+00	0.007
LA-140	4.603E-01	1.974E+00	3 4828+01	0.000E+00	-0.273
CE-141	1.401E+00	3.464E+00	5 0875.00	0.000E+00	0.132
CE-144	6.652E+00	1.514E+01	2 144E + 01	0.000E+00	0.275
EU-152	-2.861E+00	5.801E+00	$2 \cdot 1 + 4 + 0 + 0 + 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0$	0.000E+00	0.310
EU-154	3.427E+00	3.524E+00	5 802E+00	0.000E+00	-0.348
RA-226	-8.960E+00	4.369E+01	7 310E+00	0.0005+00	0.582
TH-232	7.685E-02	+ 6.320E+00	/・JエZビサUI 1 022ビェハ1	0.0008+00	-0.123
U-235	1.309E+01	1.507E+01	エ・UムムロナUi クークロオロ・Ai	U.UUUE+00	0.008
U-238	-2.237E+00	1.846E+02	4.2046+01 3 1006,00	0.0008+00	0.594
AM-241	9.395E+00	1.169E+01	J. INSE+UZ 1 //95,01	U.UUUE+00	-0.007
	-		エ・キキロロキリエ	0.000比+00	0.649

A,23L2859	97-8	,05/14/2006	17:54.05/09	9/2006 12.10			
B,23L2859	97-8	,LIBD		$\frac{1}{2}$	3.650E+00,WG	L28597-8	ΕX
C,K-40	,YES,	, 5,703E+00,	2 664F+01	2 = (1 = .01)	9,2335L090704		
C,AC-228	,YES,	7.695E - 02	6 329ELOO	, 2.361E+U1,,	0.223		
C,TH-228	,YES,	3.223E+00	3344E+00,	, 9.461E+00, ,	0.008		
C, BE - 7	, NO	-1 850E-01	1 410D 01	, 5.015E+00,,	0.643		
C.NA-24	NO	-8 422 E 01	1,4188+01,	2.378E+01,,	-0.008		
C. CR-51	NO ,	-7 222E, 00	1.32/E+U2,	2.212E+02,,	-0.381		
C.MN-54	NO ,	-7.555E+00,	1.480E+01,	2.489E+01,,	-0.295		
$C_{1}C_{0} = 57$, NO , NO	0.190E-UI,	1.598E+00,	2.828E+00,,	0.311		
C C C - 58	, NO , NO	9.148E-01,	1.691E+00,	2.806E+00,,	0.326		
C FF-59	, NO , NO	-1.259E+00,	1.640E+00,	2.665E+00,,	-0.472		
C, EE=39	,NO ,	2.999E+00,	3.035E+00,	5.469E+00,,	0.548		
C, CU-60	,NO ,	-1.016E-01,	1.579E+00,	2.735E+00,,	-0.037		
C, ZN - 65	,NO,	2.989E+00,	3.485E+00,	6.196E+00,,	0.482		
C, SE-75	,NO,	-1.895E+00,	2.233E+00,	3.626E+00,	-0 523		
C, SR-85	,NO,	9.932E+00,	1.977E+00,	3.725E+00.	2 666		
C,Y-88	,NO,	6.802E-01,	1.661E+00,	3.007E+00	0.226		
C,NB-94	,NO,	1.470E+00,	1.542E+00,	2.721E+00	0.220		
C,NB-95	,NO,	3.577E-01,	1.645E+00.	2 810E+00	0.127		
C,ZR-95	,NO,	1.323E+00,	2.892E+00.	4 999E+00			
С,МО-99	,NO ,	1.497E+01,	3.146E+01	$5 459 F_{-01}$	0.265		
C,RU-103	,NO ,	9.820E-01,	2.112E+00	3.450E+01,	0.274		
C,RU-106	,NO ,	-1.878E+00,	1.481E+01	$2 492 \overline{E} + 01$	0.321		
C,AG-110m	,NO,	1.034E-01	$1 494F_{+00}$	2.403E+01,,	-0.076		
C,SN-113	,NO ,	-1.262E+00	2, 195E+00,	2.559E+00,,	0.040		
C,SB-124	NO .	2.152E+00	$2.000\pm00,$	3.4//E+00,,	-0.363		
C,SB-125	NO .	2.438E+00	$3.200 \pm 00,$	2.736E+00,,	0.787		
C, TE-129M	, NO	-7 059E 00	4.004E+00,	8.024E+00,,	0.304		
C,I-131	NO	3 229E+00,	1.992E+01,	3.304E+01,,	-0.214		
C.BA-133	NO ,	$1 477 \pi 00$	2.231E+00,	3.945E+00,,	0.818		
$C_{1}C_{2}-134$	NO	1,47/E+00,	2.543E+00,	3.762E+00,,	0.393		
$C_{1}CS = 136$, NO , NO	3.776日+00,	2.767E+00,	2.943E+00,,	1.283		
C C C = 137	,NO ,	9.485E-UL,	1.882E+00,	3.258E+00,,	0.291		
C CE_{-120}	, NO ,	-3.202E-01,	l.666E+00,	2.819E+00,,	-0.114		
C PA 140	, NO ,	2.0/8E-02,	1.669E+00,	2.818E+00,,	0.007		
C IN 140	, NO ,	-3.183E+00,	6.884E+00,	1.164E+01,,	-0.273		
C, DA=140	, NO ,	4.603E-01,	1.974E+00,	3.482E+00,,	0.132		
C, CE = 141	,NO,	1.401E+00,	3.464E+00,	5.087E+00,	0.275		
C, CE-144	,NO ,	6.652E+00,	1.514E+01,	2.144E+01.	0 310		
C,EU-152	,NO,	-2.861E+00,	5.801E+00,	8.211E+00	-0.348		
C,EU-154	,NO,	3.427E+00,	3.524E+00.	5.893E+00	0 580		
C,RA-226	,NO,	-8.960E+00,	4.369E+01.	7.312E+01	-0 102		
C,TH-232	,NO,	7.685E-02,	6.320E+00	$1.022E \pm 01$	0.143		
C,U-235	,NO,	1.309E+01,	1.507E+01	$2 204 F_{101}$			
C,U-238	,NO,	-2.237E+00,	1.846E+02	$2 \cdot 2 \cdot 2 \cdot 1 + 1 \cdot 1 \cdot 1$	0.594		
C,AM-241	,NO,	9.395E+00.	$1.169E \pm 01$	J, INDE+UZ,, 1 //QE, 01	-0.007		
	•		,	工、生生8匹+U上,,	U.649		

Sec. Review:

Analyst: LIMS:

A

======================== VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 15-MAY-2006 02:53:28.48 TBE11 P-20610B HpGe ******* Aquisition Date/Time: 14-MAY-2006 18:53:08.49 _____ LIMS No., Customer Name, Client ID: WG L28597-10 EX BRAID

Smple Date: 9-MAY-2006 15:25:00.0 Sample ID : 11L28597-10 : WG Geometry : 1135L090204 Sample Type BKGFILE : 11BG050506MT Quantity : 3.67270E+00 L Start Channel : 40 Energy Tol : 1.30000 Real Time : 0 08:00:10.81 Pk Srch Sens: 5.00000 Live time : 0 08:00:00.00 End Channel : 4090 MDA Constant : 0.00 Library Used: LIBD

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	139.95	160	790	1.43	279.49	1.69E+00	5.56E-03	31.5	0.00E+00
2	0	185.32*	67	636	0.85	370.48	1.62E+00	2.34E-03	74.7	
3	0	198.40*	216	716	1.23	396.73	1.57E+00	7.48E-03	25.2	
4	1	238.56*	73	547	1.44	477.26	1.42E+00	2.54E-03	63.7	1.51E+00
5	1	242.05	175	527	1.44	484.24	1.41E+00	6.08E-03	24.9	
6	0	295.26*	246	502	1.32	590.94	1.23E+00	8.54E-03	19.5	
7	0	351.79*	476	382	1.48	704.30	1.08E+00	1.65E-02	10.2	
8	0	495.47	17	214	1.03	992.32	8.26E-01	5.82E-041	167.3	
9	0	583.07*	37	174	1.09	1167.92	7.27E-01	1.29E-03	78.3	
10	0	595.67	106	217	1.81	1193.17	7.15E-01	3.68E-03	31.0	
11	0	609.10*	394	278	1.48	1220.08	7.02E-01	1.37E-02	11.3	
12	0	727.23	46	81	1.70	1456.82	6.12E-01	1.59E-03	37.1	
13	0	911.66*	24	92	1.60	1826.33	5.13E-01	8.34E-04	98.5	
14	0	1120.82*	65	99	1.56	2245.28	4.37E-01	2.25E-03	39.7	
15	0	1378.04	55	41	2.05	2760.32	3.71E-01	1.89E-03	28.6	
16	0	1384.58	33	24	1.50	2773.42	3.69E-01	1.15E-03	34.4	
17	0	1762.29*	74	26	1.89	3529.36	3.04E-01	2.58E-03	22.5	
18	0	1961.38	25	32	0.68	3927.64	2.79E-01	8.52E-04	52.0	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

	<u>с</u> т				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
RA-226	186.21	67	3.28*	1.617E+00	3.245E+01	3.245E+01	149.40
AC-228	835.50		1.75	5.493E-01	Li	ne Not Found	
	911.07	24	27.70*	5.133E-01	4.314E+00	4.322E+00	196.92
TH-228	238.63	73	44.60*	1.421E+00	2.943E+00	2.959E+00	127.48
	240.98	175	3.95	1.409E+00	8.037E+01	8.079E+01	49.88
TH-232	583.14	37	30.25	7.267E-01	4.335E+00	4.335E+00	156.58
	911.07	24	27.70*	5.133E-01	4.314E+00	4.314E+00	196.92
	969.11		16.60	4.895E-01	Li	ne Not Found	
U-235	143.76		10.50*	1.695E+00	Li	ne Not Found	
	163.35		4.70	1.678E+00	Li	ne Not Found	
1	185.71	67	54.00	1.617E+00	1.971E+00	1.971E+00	149.40
	205.31		4.70	1.546E+00	Li	ne Not Found	

L28597 101 of 111

Summary Sample I	of Nuclide A D : 11L28597	Activit 7-10	У	Acquisitio	n date : 14-MA	Page Y-2006 18	e : 2 8:53:08
Total r Number Number	number of lin of unidentif of lines ten	les in fied li ltative	spectrum nes ly identifie	18 12 d by NID 6	33.33%		
Nuclide	Type : natur	al					
Nuclide RA-226 AC-228 TH-228 TH-232 U-235	Hlife 1600.00Y 5.75Y 1.91Y 1.41E+10Y 7.04E+08Y	Decay 1.00 1.00 1.01 1.00 1.00	Uncorrected pCi/L 3.245E+01 4.314E+00 2.943E+00 4.314E+00 1.971E+00	Decay Corr pCi/L 3.245E+01 4.322E+00 2.959E+00 4.314E+00 1.971E+00	Decay Corr 2-Sigma Error 4.849E+01 8.510E+00 3.772E+00 8.495E+00 2.945E+00	2-Sigma %Error 149.40 196.92 127.48 196.92 149.40	Flags K
	Total Activ	ity :	4.600E+01	4.602E+01			
Grand	Total Activ	ity :	4.600E+01	4.602E+01			
Flags: "	K" = Keyline E" = Manuall	not fo y edite	ound ed	"M" = Manual "A" = Nuclic	ly accepted de specific abr	. limit	

Unidentified Energy Lines

Sampl	e ID : 11	Lergy Ц. L28597-:	ines 10		Ac	quisi	tio	n date :	14-MAY	Pag -2006 -	ge: 3 L8:53:08
It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0 0 0 0 0 0 1 0 0 1 0 0 1 0 1 0 1 5 1 9 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 1 0 0 1 1 1 0	139.95 198.40 295.26 351.79 495.47 595.67 609.10 727.23 120.82 378.04 384.58 762.29 961.38 : "T" = Te	160 216 246 476 17 106 394 46 65 55 33 74 25 ntative	790 716 502 382 214 217 278 81 99 41 24 26 32	1.43 1.23 1.32 1.48 1.03 1.81 1.48 1.70 1.56 2.05 1.50 1.89 0.68	279.49 396.73 590.94 704.30 992.32 1193.17 1220.08 1456.82 2245.28 2760.32 2773.42 3529.36 3927.64	275 392 586 698 1185 1212 1454 2242 2752 2767 3521 3918	8 10 11 13 10 14 16 8 12 14 12 14 12 18 13	5.56E-03 7.48E-03 8.54E-03 1.65E-02 5.82E-04 3.68E-03 1.37E-02 1.59E-03 2.25E-03 1.89E-03 1.15E-03 2.58E-03 8.52E-04	62.9 50.3 38.9 20.4 **** 62.0 22.6 74.2 79.4 57.1 68.8 45.0 ****	1.69E+ 1.23E+ 1.23E+ 1.08E+ 8.26E- 7.15E- 7.02E- 6.12E- 4.37E- 3.71E- 3.69E- 3.04E- 2.79E-	-00 -00 -00 -01 01 01 01 01 01 01 T 01 01 01
Summaı	ry of Nucl	ide Act	ivity								
Total Numbe Numbe	number o er of unid er of line	f lines entifie s tenta	in spe d lines tively	ectrum ; identi	ified by	NID	18 12 6	33.	33%		
Nuclic	le Type : :	natural	Wt	d Mear	b Wtd	Mean					
Nuclid RA-226 TH-228 TH-232	le Hli 1600.0 1.9 1.41E+10	fe De OY 1 LY 1 OY 1	Unc cay .00 3. .01 2. .00 4.	correct pCi/L 245E+C 943E+C 327E+C	ed Deca p 1 3.2 0 2.9 0 4.3	y Cor Ci/L 45E+0 59E+0 27E+0	r 1 0 0	Decay Cc 2-Sigma E 4.849E+ 3.772E+ 5.303E+	orr 2 Srror 01 1 00 1 00 1	-Sigma %Error 49.40 27.48 22.56	Flags
	Total A	Activit	y: 3.	972E+0	1 3.9	74E+01	1.				
Gra	nd Total A	Activity	<i>र</i> : 3.	972E+0	1 3.9'	74E+01	L				
Flags:	"K" = Key "E" = Mar	vline no nually e	ot foun edited	d	"M" = "A" =	= Manu = Nuc]	uall ide	ly accept e specifi	ed c abn.	limit	
Interf	erence Rep	port									
	Inter	fering			Interfe	ered					
	Nuclide	I	ine	Nu	clide	 Li	ne				
	TH-232	91	1.07	A	C-228	911	.07				
Combine	ed Activit	y-MDA R	eport								
Ic	lentified	Nuclide	s								
Nuclide	Ac e (j	tivity pCi/L)		Act ei	ror	M (pC	DA i/L	M)	IDA err	or i	Act/MDA

RA-226 3.245E+01 4.849E+01 7.742E+01 0.000E+00 0.419

TH-228 TH-232	2.959E+00 4.327E+00	3.772E+00 5.303E+00	6.157E+00 1 174E+01	0.000E+00	0.481
Non-	Identified Nuc	lidea	T.T.40401	0.0008+00	0.368
		TIMES			
	Key-Line				
Nuclide	ACTIVITY (pCi/L)	K.L. Act error Ided	MDA (pCi/L)	MDA error	Act/MDA
BE-7	5.434E+00	1.838E+01	3.047E+01		0 100
NA-24	-3.098E+02	9.670E+02	1.297E+03	$\begin{array}{c} 0.000 \pm 00 \\ 0.000 \pm 00 \end{array}$	0.178
K-40	1.673E+01	2.785E+01	5.235E+01	0.000E+00	-0.239
CR-51	-1.617E+01	1.961E+01	3.121E+01	0.000E+00	-0 519
MN - 54	8.749E-01	2.027E+00	3.371E+00	0.000E+00	0.310
CO-57	-1.459E+00	1.991E+00	3.223E+00	0.000E+00	-0.453
CU-58	3.307E-01	2.094E+00	3.443E+00	0.000E+00	0.455
FE-59	5.575E+00	4.088E+00	7.180E+00	0.000E+00	0.000
CU-60 ZN CE	1.065E-01	2.249E+00	3.725E+00	0.000E+00	0.770
21V-65 CF 75	1.488E+01	5.419E+00	8.932E+00	0.000E+00	1 666
2D 0E	1.083E+00	2.742E+00	4.549E+00	0.000E+00	0 238
V_88	1.553E+01	2.370E+00	4.557E+00	0.000E+00	3.408
	-3.308E-01	2.355E+00	3.833E+00	0.000E+00	-0.086
NB-94 NB-95	-1.485E+00	1.969E+00	3.142E+00	0.000E+00	-0.473
ND-95 ZR-95	2.35/E+00	2.151E+00	3.688E+00	0.000E+00	0.639
MO-99	-1.35/E-01	3.773E+00	6.176E+00	0.000E+00	-0.022
RII-103	-3.172E+U1	5.864E+01	9.254E+01	0.000E+00	-0.559
RU-106	2.0796+00 5.066E+00	2.233E+00	3.773E+00	0.000E+00	0.551
AG-110m	2 963E 01	1.915E+01	3.129E+01	0.000E+00	0.162
SN-113	2.903E-01 6 012E-01	1.963E+00	3.267E+00	0.000E+00	0.091
SB-124	2 604F+00	2.565E+UU	4.287E+00	0.000E+00	0.140
SB-125	-1.718E+00	4.569E+00 5.7C1R+00	3.561E+00	0.000E+00	0.731
TE-129M	7 103E+00	3.76IE+00	9.422E+00	0.000E+00	-0.182
I-131	-2.533E+00	2.59/E+U1 2.09/E+U1	4.310E+01	0.000E+00	0.165
BA-133	1.102E+01	3.096E+00	5.031E+00	0.000E+00	-0.503
CS-134	1.239E+01	3 6975,00	5.322E+00	0.000E+00	2.070
CS-136	-4.747E-01	2.097E+00 2.532E+00	4.586E+00	0.000E+00	2.702
CS-137	2.836E+00	2.3320+00 2.123E+00	4.091E+00	0.000E+00	-0.116
CE-139	3.386E-01	2.123E+00 2.049E+00	3.702E+00	0.000E+00	0.766
BA-140	5.931E+00	9 627E+00	3.335E+00	0.000E+00	0.102
LA-140	1.459E+00	3 104E+00	1.606E+01 5.22CE+00	0.000E+00	0.369
CE-141	-2.875E+00	4.438E+00	5.226E+00	0.000E+00	0.279
CE-144	-8.459E+00	1.826E+01	0.043E+00 2 512E+01	0.000E+00	-0.476
EU-152	-4.328E+00	7.762E+00	2.512E+U1 1 039E+01	0.000E+00	-0.337
EU-154	-1.879E+00	4.132E+00	エ・UJ 9日+UI 6 722日+UI	U.UUUE+00	-0.417
AC-228	4.322E+00	8.510E+00	1 375E+00	0.00000+00	-0.280
U-235	-1.091E+01	1.847E+01	2 522F±01		0.314
U-238	1.833E+02	2.281E+02	3 789F±02	0.00000+00	-0.432
AM-241	1.585E+01	2.676E+01	4.360E+01	0.000E+00 0.000E+00	U.484 0.363

A,11L2859	97-10	,05/15/2006	02:53 05/09	/2006 15.25			
B,11L2859	97-10	,LIBD	02.00,00,00	$9/2000 \pm 3:23$	3.6/3E+00,WG	L28597-10	Ε
C,RA-226	,YES,	3.245E+01	4 8495,01	77401/2005 07:43	3,1135L090204		
C,TH-228	,YES,	2.959E+00	3 772E+00	7.742E+01,,	0.419		
C,TH-232	,YES,	4 327E+00	5.7720+00, 5.2020+00	6.15/E+UU,,	0.481		
C,BE-7	, NO	5 434E100,	1 0 2 0 1 0 1	1.174E+01,,	0.368		
C.NA-24	, NO	$-3 098E_{00}$	1.838E+01,	3.047E+01,,	0.178		
C.K-40	NO ,	1 672 E + 01	9.670E+02,	1.297E+03,,	-0.239		
C, CR = 51	, NO ,	-1 - 617 - 01	2.785E+01,	5.235E+01,,	0.319		
C MN - 54	, NO , NO	-1.01/E+01,	1.961E+01,	3.121E+01,,	-0.518		
C C C - 57	, NO , NO	8.749E-UL,	2.027E+00,	3.371E+00,,	0.260		
C C - 58	, INO ,	-1.459E+00,	1.991E+00,	3.223E+00,,	-0.453		
C, CC-56	, NO ,	3.307E-01,	2.094E+00,	3.443E+00,,	0.096		
C, EE-59	,NO ,	5.575E+00,	4.088E+00,	7.180E+00,,	0.776		
C, CO-60	,NO ,	1.065E-01,	2.249E+00,	3.725E+00,,	0.029		
C, ZN-65	,NO,	1.488E+01,	5.419E+00,	8.932E+00,	1 666		
C, SE-75	,NO,	1.083E+00,	2.742E+00,	4.549E+00	1 238		
C,SR-85	,NO,	1.553E+01,	2.370E+00,	4.557E+00	3 408		
C,Y-88	,NO,	-3.308E-01,	2.355E+00,	3.833E+00	-0.006		
C,NB-94	,NO ,	-1.485E+00,	1.969E+00,	3 142E+00			
C,NB-95	,NO,	2.357E+00,	2.151E+00	3 688E+00	-0.473		
C,ZR-95	,NO,	-1.357E-01,	3.773E+00	$5.000 \pm 00,,$	0.639		
С,МО-99	,NO,	-5.172E+01,	5.864E+01	$9.254 \overline{E} \cdot 01$	-0.022		
C,RU-103	,NO,	2.079E+00.	2.233E+00	3 772 E + 00	-0.559		
C,RU-106	,NO,	5.066E+00.	$1 915F \pm 01$	3.773E+00,,	0.551		
C,AG-110m	,NO,	2.963E-01	1.963 E + 00	3.129E+01,,	0.162		
C,SN-113	NO .	6.012E-01	$2.565 \pm 00,$	3.2678+00,,	0.091		
C,SB-124	NO .	2 604E+00	2.505E+00,	4.28/E+00,,	0.140		
C,SB-125	NO	-1 718F \pm 00	4.3090+00,	3.561E+00,,	0.731		
C, TE-129M	, NO	7 103E+00,	2.761E+00,	9.422E+00,,	-0.182		
C. T-131	NO ,	$-2 = 522 \overline{E} + 00$	2.59/E+01,	4.310E+01,,	0.165		
C.BA-133	NO ,	1 100E + 01	3.096E+00,	5.031E+00,,	-0.503		
$C_{1}CS - 134$, NO , NO	1 220E+01	3.438E+00,	5.322E+00,,	2.070		
C CS = 136	, NO , NO	1.239E+01,	3.697E+00,	4.586E+00,,	2.702		
C C C - 137	, NO ,	-4./4/E-UL,	2.532E+00,	4.091E+00,,	-0.116		
C CE_{-120}	, NO ,	2.836E+00,	2.123E+00,	3.702E+00,,	0.766		
$C P \lambda 140$, NO ,	3.386E-01,	2.049E+00,	3.335E+00,,	0.102		
C, DA = 140	,NO ,	5.931E+00,	9.627E+00,	1.606E+01,,	0.369		
$C, \Box A = 140$,NO ,	1.459E+00,	3.104E+00,	5.226E+00,,	0.279		
C, CE-141	,NO ,	-2.875E+00,	4.438E+00,	6.043E+00,	-0 476		
C, CE-144	,NO,	-8.459E+00,	1.826E+01,	2.512E+01.	-0 337		
C,EU-152	,NO ,	-4.328E+00,	7.762E+00,	1.039E+01	-0 417		
C,EU-154	,NO,	-1.879E+00,	4.132E+00.	6.722E+00			
C,AC-228	,NO,	4.322E+00,	8.510E+00.	1.375E+01	0.200		
C,U-235	,NO,	-1.091E+01,	1.847E+01	$2.522E \pm 01$	-0 422		
C,U-238	,NO ,	1.833E+02,	2.281E+02	$3 789 F_{102}$			
C,AM-241	,NO,	1.585E+01,	2.676E+01	$4 360 \overline{P} \cdot 01$	0.484		
	-	· /	,	ユ・コロレロ+Uエ ,,	0.363		

Sec. Review:

Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 15-MAY-2006 02:54:32.60 TBE13 P-10727B HpGe ******** Aquisition Date/Time: 14-MAY-2006 18:54:08.69

LIMS No., Customer Name, Client ID: WG L28597-11 EX BRAID

Sample ID	:	13L2859	7-11		Smple Date	:	10-MAY-2006 09:20:00
Sample Type	:	WG			Geometrv	:	13351,090904
Quantity	:	3.66160	E+00 L		BKGFILE	:	13BG050506MT
Start Channel	:	25	Energy Tol :	1.50000	Real Time	:	0 08:00:08.63
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 08:00:00.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	r Fit
1	1	46.46*	52	523	0.98	92.92	1.45E-01	1.81E-03 78.2	2.19E+00
2	3	63.43*	27	856	1.09	126.82	6.25E-01	9.28E-04198.6	1.52E+00
3	3	66.23*	106	865	1.10	132.42	7.21E-01	3.69E-03 49.2	1.00001000
4	1	92.77*	31	1033	1.11	185.45	1.52E+00	1.08E-03212.2	2.28E+00
5	1	139.92*	178	879	1.04	279.69	2.02E+00	6.19E-03 31.0	1.72E+00
6	1	143.96*	66	989	1.21	287.75	2.02E+00	2.29E-03 90.8	1.87E+00
7	1	174.99	118	651	1.23	349.76	1.98E+00	4.11E-03 36.6	1.47E+00
8	1	185.88*	48	645	1.12	371.53	1.95E+00	1.68E-03106.6	5.67E+00
9	1	198.46*	277	704	1.69	396.68	1.90E+00	9.63E-03 18.9	3.14E+00
10	1	238.52*	74	699	1.08	476.73	1.73E+00	2.57E-03 73.4	1.31E+00
11	1	326.50	99	510	2.04	652.58	1.42E+00	3.43E-03 45.4	6.61E-01
12	1	351.81*	23	447	1.18	703.18	1.34E+00	8.04E-04184.6	2.42E+00
13	1	583.32*	40	231	1.96	1166.01	9.26E-01	1.38E-03 84.0	2.13E+00
14	1	596.01	107	240	1.58	1191.38	9.11E-01	3.71E-03 28.7	1.60E+00
15	1	609.47*	129	295	1.44	1218.30	8.96E-01	4.47E-03 30.8	2.69E+00
16	1	727.51*	32	108	2.48	1454.34	7.85E-01	1.10E-03 75.2	1.27E+00
17	1	1120.41*	21	117	1.45	2240.25	5.69E-01	7.13E-04112.3	1.64E+00
18	1	1461.43*	28	60	2.54	2922.70	4.69E-01	9.67E-04 99.0	2.49E+00
19	1	1765.37*	44	33	2.83	3531.16	4.11E-01	1.54E-03 38.7	7 62E - 01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	µ⊄i/L	%Error
K-40	1460.81	28	10.67*	4.687E-01	1.428E+01	1.428E+01	198.07
RA-226	186.21	48	3.28*	1.946E+00	1.938E+01	1.938E+01	213.15
TH-228	238.63	74	44.60*	1.733E+00	2.458E+00	2.470E+00	146.84
	240.98		3.95	1.723E+00	Li	ne Not Found	
U-235	143.76	66	10.50*	2.024E+00	7.958E+00	7.958E+00	181.61
	163.35		4.70	2.011E+00	Lin	ne Not Found	
	185.71	48	54.00	1.946E+00	1.177E+00	1.177E+00	213,15
	205.31		4.70	1.871E+00	Lin	ne Not Found	

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					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	&Abn	%Eff	pCi/L	pĊi/L	%Error
CE-141	145.44	66	48.40*	2.024E+00	1.726E+00	1.903E+00	181.61

Summary Sample	of Nuclide ID : 13L285	Activit 97-11	ΞУ	Acquisitio	n date : 14-MA	Page Y-2006 18	e: 2 3:54:08
Total n Number Number	number of l of unident of lines to	ines in ified li entative	spectrum ines ely identifie	19 14 d by NID 5	26.32%		
Nuclide	Type : natu	ural					
Nuclide K-40 RA-226 TH-228 U-235	Hlife 1.28E+09Y 1600.00Y 1.91Y 7.04E+08Y	Decay 1.00 1.00 1.00 1.00	Uncorrected pCi/L 1.428E+01 1.938E+01 2.458E+00 7.958E+00	Decay Corr pCi/L 1.428E+01 1.938E+01 2.470E+00 7.958E+00	Decay Corr 2-Sigma Error 2.828E+01 4.131E+01 3.626E+00 14.45E+00	2-Sigma %Error 198.07 213.15 146.84 181.61	Flags
Nuclide	Type : fiss	sion	4.40/E+01	4.408E+01			
Nuclide CE-141	Hlife 32.50D	Decay 1.10	Uncorrected pCi/L 1.726E+00	Decay Corr pCi/L 1.903E+00	Decay Corr 2-Sigma Error 3.456E+00	2-Sigma %Error 181.61	Flags
	IOTAL ACTI	vity :	1.726E+00	1.903E+00			
Grand	Total Acti	vity :	4.580E+01	4.599E+01			
Flags: "	K" = Keylin	e not f	ound	"M" = Manual	ly accepted		

"E" = Manually edited "A" = Manually accepted "A" = Nuclide specific abn. limit

L28597 109 of 111

Unidentified Energy Lines Sample ID : 13L28597-11

Page : 3 Acquisition date : 14-MAY-2006 18:54:08

	101120000			ACC	quisi	lor	n date : 1	L4 – MA	Y-2006 1	8:54:08
It Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1 46.46 3 63.43 3 66.23 1 92.77 1 139.92 1 174.99 1 198.46 3 26.50 1 351.81 1 583.32 1 596.01 1 609.47 1 120.41 1 1765.37	52 27 106 31 178 118 277 99 23 40 107 129 32 21 44	523 856 865 1033 879 651 704 510 447 231 240 295 108 117 33	0.98 1.09 1.10 1.11 1.04 1.23 1.69 2.04 1.18 1.96 1.58 1.44 2.48 1.45 2.83	92.92 126.82 132.42 185.45 279.69 349.76 396.68 652.58 703.18 1166.01 1191.38 1218.30 1454.34 2240.25 3531.16	90 123 123 181 276 347 393 647 698 1160 1187 1212 1449 2237 3523	6 14 9 7 9 11 9 10 12 10 15	1.81E-03 9.28E-04 3.69E-03 1.08E-03 6.19E-03 4.11E-03 9.63E-03 3.43E-03 8.04E-04 1.38E-03 3.71E-03 4.47E-03 1.10E-03 7.13E-04 1.54E-03	**** 98.5 *** 62.0 73.3 90.7 *** 57.3 61.6 **** 77.3	*EII 1.45E- 6.25E- 7.21E- 1.52E+ 2.02E+ 1.98E+ 1.90E+ 1.42E+ 1.34E+ 9.26E- 9.11E- 8.96E- (5.69E- (4.11E-	Flags 01 01 00 00 00 00 00 00 01 T 01 01 01 01 01
Flags: "T" = Summary of N	= Tentative Nuclide Act	ely ass ivity	sociated	Ę						
Total numbe Number of u Number of l	er of lines inidentifie ines tenta	in sp d line tively	ectrum s identi	ified by	NID	19 14 5	26.	32%		
Nuclide Type	• • natural									
Nuclide K-40 1.28 RA-226 160 TH-228 U-235 7.04 Tot	Hlife De E+09Y 1 00.00Y 1 1.91Y 1 E+08Y 1 al Activit	W Cay .00 1 .00 1 .00 2 .00 7 - y : 4	<pre>/td Mear .correct pCi/L .428E+C .938E+C .458E+C .958E+C .958E+C .407E+0</pre>	Mtd Deca p 1 1.4 1.9 0 2.4 0 7.9 1 4.4	Mean y Cor Ci/L 28E+0 38E+0 58E+0 58E+0 08E+0	r 1 1 0 2 1	Decay Co: 2-Sigma E: 2.828E+(4.131E+(3.626E+(14.45E+(rr rror 01 01 00	2-Sigma %Error 198.07 213.15 146.84 181.61	Flags
Nuclide Type	· figgion									
Nuclide CE-141 3 Tot	Hlife Dec 2.50D 1 al Activity	W Un cay .10 1 y : 1	td Mean correct pCi/L .726E+0 .726E+0	Wtd ed Decay p(0 1.9(0 1.9(Mean y Cori Ci/L)3E+0()3E+0(-))	Decay Cor 2-Sigma Er 3.456E+C	rr ror 0	2-Sigma %Error 181.61	Flags
Grand Tot	al Activity	y: 4.	.580E+0	1 4.59	9E+01	-				
Flags: "K" = "E" =	Keyline no Manually e	ot four edited	ıd	"M" = "A" =	= Manu = Nucl	all ide	y accepte specific	d abn	. limit	
Interference	Report									

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	1.428E+01	2.828E+01	2.869E+01	0.000E+00	0.498
CE-141	1.903E+00	3.456E+00	4.871E+00	0.000E+00	0.391
RA-226	1.938E+01	4.131E+01	6.458E+01	0.000E+00	0.300
TH-228	2.470E+00	3.626E+00	4.791E+00	0.000E+00	0.516
U-235	7.958E+00	1.445E+01	2.009E+01	0.000E+00	0.396

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	9.166E+00		1.495E+01	2.490E+01	0.000E+00	0.368
NA-24	5.586E+01		2.932E+02	4.884E+02	0.000E+00	0.114
CR-51	2.478E+00		1.832E+01	2.548E+01	0.000E+00	0.097
MN - 54	1.129E+00		1.771E+00	2.991E+00	0.000E+00	0.378
CO-57	1.193E+00		1.556E+00	2.634E+00	0.000E+00	0.453
CO-58	-5.902E-01		1.766E+00	2.876E+00	0.000E+00	-0.205
FE-59	6.011E+00		3.636E+00	6.425E+00	0.000E+00	0.936
CO-60	1.228E+00		1.906E+00	3.254E+00	0.000E+00	0.377
ZN-65	5.680E+00		4.461E+00	6.713E+00	0.000E+00	0.846
SE-75	-9.235E-01		2.195E+00	3.584E+00	0.000E+00	-0.258
SR-85	1.669E+01		2.206E+00	4.212E+00	0.000E+00	3.962
Y-88	-7.198E-01		2.024E+00	3.230E+00	0.000E+00	-0.223
NB-94	-6.828E-01		1.781E+00	2.858E+00	0.000E+00	-0.239
NB-95	2.686E+00		1.740E+00	3.057E+00	0.000E+00	0.879
ZR-95	-2.087E+00		2.965E+00	4.779E+00	0.000E+00	-0.437
MO-99	-5.411E+00		3.842E+01	6.275E+01	0.000E+00	-0.086
RU-103	3.760E-01		1.835E+00	3.005E+00	0.000E+00	0.125
RU-106	4.753E+00		1.594E+01	2.651E+01	0.000E+00	0.179
AG-110m	9.612E-01		1.757E+00	2.936E+00	0.000E+00	0.327
SN-113	2.249E+00		2.190E+00	3.735E+00	0.000E+00	0.602
SB-124	-2.742E+00		4.323E+00	2.931E+00	0.000E+00	-0.936
SB-125	1.478E+00		4.847E+00	8.053E+00	0.000E+00	0.184
TE-129M	-3.376E+00		2.097E+01	3.414E+01	0.000E+00	-0.099
I-131	-2.479E+00		2.499E+00	4.050E+00	0.000E+00	-0.612
BA-133	3.005E+00		2.686E+00	3.987E+00	0.000E+00	0.754
CS-134	3.235E-01		3.109E+00	3.123E+00	0.000E+00	0.104
CS-136	-9.198E-01		2.082E+00	3.368E+00	0.000E+00	-0.273
CS-137	1.720E+00		1.948E+00	3.292E+00	0.000E+00	0.522
CE-139	-4.486E-01		1.617E+00	2.633E+00	0.000E+00	-0.170
BA-140	3.382E+00		7.302E+00	1.235E+01	0.000E+00	0.274
LA-140	-6.998E-01		2.607E+00	4.252E+00	0.000E+00	-0.165
CE-144	5.673E+00		1.377E+01	2.069E+01	0.000E+00	0.274
EU-152	-1.148E+01		6.703E+00	8.565E+00	0.000E+00	-1.340
EU-154	1.177E+00		3.299E+00	5.539E+00	0.000E+00	0.213
AC-228	-8.680E-01		7.340E+00	1.186E+01	0.000E+00	-0.073
'I'H-232	-8.667E-01		7.329E+00	1.184E+01	0.000E+00	-0.073
U-238	1.089E+02		2.092E+02	3.402E+02	0.000E+00	0.320
AM-241	1.843E+01		1.493E+01	2.227E+01	0.000E+00	0.828

A,13L2859	97-11	,05/15/2006	02:54.05/10	/2006 09.20	3 6628,00 10	
B,13L2859	97-11	,LIBD	01	R/05/2005 08.16	12251000004	D2829/-II E
C,K-40	,YES,	1.428E+01.	2 828E+01	2 8695,00.10	0 400	
C,CE-141	,YES,	1.903E+00.	3 456E±00	$4 \ 971 \overline{E} \ 00$	0.498	
C,RA-226	YES.	1.938E+01	4 131E+01	4.0710+00,,	0.391	
C,TH-228	YES.	2 470E+00	3 6260,00	0.458E+U1,,	0.300	
C.U-235	YES	7 958E+00	1.445E+00,	4./91E+00,,	0.516	
C.BE-7	NO	9.166E+00,	1,445E+01,	2.009E+01,,	0.396	
$C_NA - 24$	NO ,	5.5862.01	1.495E+UL,	2.490E+01,,	0.368	
C CR - 51	, NO , NO	$3.300 \pm 01,$	2.932E+02,	4.884E+02,,	0.114	
C MN - 54	, NO , NO	2.478E+00, 1.100E+00	1.832E+01,	2.548E+01,,	0.097	
C, MIN = 54	, NO ,	1.129E+00,	1.771E+00,	2.991E+00,,	0.378	
C, CO = 57	, NO ,	1.193E+00,	1.556E+00,	2.634E+00,,	0.453	
C, CO-58	, NO ,	-5.902E-01,	1.766E+00,	2.876E+00,,	-0.205	
C, FE-59	,NO ,	6.011E+00,	3.636E+00,	6.425E+00,,	0.936	
C, CO-60	,NO,	l.228E+00,	1.906E+00,	3.254E+00,,	0.377	
C,ZN-65	,NO,	5.680E+00,	4.461E+00,	6.713E+00,,	0.846	
C,SE-75	,NO,	-9.235E-01,	2.195E+00,	3.584E+00,,	-0.258	
C,SR-85	,NO,	1.669E+01,	2.206E+00,	4.212E+00,,	3.962	
C,Y-88	,NO,	-7.198E-01,	2.024E+00,	3.230E+00,	-0.223	
C,NB-94	,NO ,	-6.828E-01,	1.781E+00,	2.858E+00.	-0.239	
C,NB-95	,NO,	2.686E+00,	1.740E+00,	3.057E+00.	0 879	
C,ZR-95	,NO,	-2.087E+00,	2.965E+00,	4.779E+00	-0.437	
С,МО-99	,NO ,	-5.411E+00,	3.842E+01,	6.275E+01	-0.086	
C,RU-103	,NO,	3.760E-01,	1.835E+00	3 005E+00	0.000	
C,RU-106	,NO,	4.753E+00,	1.594E+01	$2.651 \text{F}_{\pm}01$	0.120	
C,AG-110m	,NO,	9.612E-01,	1.757E+00	2.001101,	0.179	
C,SN-113	,NO,	2.249E+00.	2 190E+00	3735E+00,	0.327	
C,SB-124	, NO ,	-2.742E+00	$4 323E \pm 00$	2,735E+00,,	0.602	
C,SB-125	, NO	1.478E+00	$4 847F_{-00}$	2.051E+00,,	-0.936	
C, TE-129M	, NO ,	-3.376E+00	$2.097E\pm01$	2.033E+00,,	0.184	
C,I-131	NO .	-2.479E+00	2.0976+01, 2.499E+00	3.414E+U1,,	-0.099	
C,BA-133	NO .	3 005E+00	2.4995+00,	4.050E+00,,	-0.612	
C,CS-134	NO	3 235E-01	$2.000 \pm 00,$	3.98/E+00,,	0.754	
C, CS = 136	NO ,	-9 198E-01	3.109E+00,	3.123E+00,,	0.104	
$C_{1}CS = 137$	NO ,	1, 720E+00	2.082E+00,	3.368E+00,,	-0.273	
$C CE_{139}$, NO , NO	1,720E+00,	1.948E+00,	3.292E+00,,	0.522	
$C B \lambda - 140$, NO , NO	-4.400E-01,	1.617E+00,	2.633E+00,,	-0.170	
C I A 140	, NO , NO	3.382E+00,	7.302E+00,	1.235E+01,,	0.274	
$C, \Box A = 140$, NO ,	-6.998E-UI,	2.607E+00,	4.252E+00,,	-0.165	
C, CE-144	,NO ,	5.673E+00,	1.377E+01,	2.069E+01,,	0.274	
C, EU-152	,NO ,	-1.148E+01,	6.703E+00,	8.565E+00,,	-1.340	
C, EU-154	,NO ,	1.177E+00,	3.299E+00,	5.539E+00,,	0.213	
C, AC-228	,NO ,	-8.680E-01,	7.340E+00,	1.186E+01,,	-0.073	
C, TH-232	,NO ,	-8.667E-01,	7.329E+00,	1.184E+01,,	-0.073	
C,U-238	,NO,	1.089E+02,	2.092E+02,	3.402E+02,,	0.320	
C,AM-241	,NO,	1.843E+01,	1.493E+01,	2.227E+01,,	0.828	

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A Teledyne Technologies Company

2508 Quality Lane Knoxville, TN 37931 865-690-6819 (Phone)

Work Order #: L28609

Exelon

May 19, 2006



► TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville CT 06062

Case Narrative - L28609 EX001-3ESPBRAID-06

05/19/2006 16:09

Sample Receipt

The following samples were received on May 12, 2006 in good condition, unless otherwise noted.

Sample WG-BW-051006-028 (L28609-8)tritium portion was broken during shipment and no sample remained for analysis. The label for WG-BW-051006-026 gamma portion was lost during shipment.

WG-BW-051006-JL-023 (l28609-15) was dropped by the laboratory and	I no results are being reported	for this sample.
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	Cross Reference To	able	
Client ID	Laboratory ID	Station ID(if applicable)	
WG-BW-051006-MS-014	L28609-1		
WG-BW-051006-MS-016	L28609-2		
WG-BW-051006-MS-018	L28609-3		
WG-BW-051006-MS-020	L28609-4		
WG-BW-051006-MS-022	L28609-5		
WG-BW-051006-MS-024	L28609-6		
WG-BW-051006-MS-026	L28609-7		
WG-BW-051006-MS-028	L28609-8		
WG-BW-051106-MS-030	L28609-9		
WG-BW-051006-JL-013	L28609-10		
WG-BW-051006-JL-015	L28609-11		
WG-BW-051006-JL-017	L28609-12		
WG-BW-051006-JL-019	L28609-13		
WG-BW-051006-JL-021	L28609-14		
WG-BW-051006-JL-023	L28609-15		
WG-BW-051006-JL-025	L28609-16		
WG-BW-051106-JL-027	L28609-17		
WG-BW-051106-JL-029	L28609-18		
WG-BW-051106-JL-031	L28609-19		
WG-BW-051106-JL-035	L28609-20		

Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method
Gamma Spectrometry	TBE-2007	EPA 901.1
H-3	TBE-2010	EPA 906.0
SAMPLE	NA	
TOTAL SR	TBE-2018	EPA 905.0

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

Case Narrative - L28609 EX001-3ESPBRAID-06

05/19/2006 16:09

QC Sample #

WG3983-1

Gamma Spectroscopy

Quality Control

Quality control samples were analyzed as WG3983.

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

<u>Client ID</u> WG-BW-051006-MS-014

<u>H-3</u>

Quality Control

Quality control samples were analyzed as WG3978,WG3994.

Method Blank

All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

Laboratory ID

L28609-1

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	QC Sample #
WG-BW-050906-JL-001	L28597-7	WG3978-5



Case Narrative - L28609 EX001-3ESPBRAID-06

05/19/2006 16:09

TOTAL SR

Quality Control

Quality control samples were analyzed as WG4000.

Method Blank

All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

<u>Client ID</u> WG-BW-051006-MS-014 Laboratory ID L28609-1 <u>QC Sample #</u> WG4000-3

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter **Operations Manager**

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Sample Receipt Summary
L28609 6 of 158

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Teledyne Brown Engineering Sample Receipt Verification/Variance	Report			

05/	/12/0	06	12:07	
SR	#:	SI	208343	

Client: Exelon

Project #: EX001-3ESPBRAID-06 LIMS #:L28609

Initia Ini	ated By: PMARSHALL t Date: 05/12/06 Receive Date: 05/12,	/06	
Persor Nc Noti Notif	Notified: Kathy Shaw Dify Date: 5/12/06 Ify Method: email fy Comment: attached	. on of Va : Contacto	riance ed By: R-Charles
	Client Resp	onse	
Perso	n Responding:		
R	esponse Date:		
Resp	onse Comment		
Cı	riteria	Yes No NA	Comment
1	Shipping container custody seals present and intact.	E NA	
2	Sample container custody seals present and intact.	NA	
3	Sample containers received in good condition	N	
	WG-BW-051006-MS-028		Bottle arrived broken designated for tritium
	WG-BW-051006-MS-026		label for gamma portion lost during shippment
4	Chain of custody received with samples	Y	
5	All samples listed on chain of custody received	Y	
6	Sample container labels present and legible.	Y	
7	Information on container labels correspond with chain of custody	Y	
8	Sample(s) properly preserved and in appropriate container(s)	NA	
9	Other (Describe)	NA	

Charles, Rebecca

From: Shaw, Kathy [kshaw@craworld.com]

Sent: Wednesday, May 17, 2006 10:16 AM

To: Charles, Rebecca

Cc: Reid, James

Subject: FW: Sample receipt variance

Hi Rebecca,

We will re-collect the lost sample, please do not report any parameters already analyzed for it.

Thanks, Kathy

From: Cruickshank , David Sent: Wednesday, May 17, 2006 9:58 AM To: Shaw, Kathy; Reid, James Cc: Borkowski, Matthew Subject: RE: Sample receipt variance

Kathy,

We will re-collect.

We will sample the well as if it hasn't been sampled before and will collect all the parameters and the split sample again. So the lab needs to throw out WAG-BW-051006-JL-023 and replace it with the sample being collected either today or tomorrow.

Thanks,

Dave

From: Shaw, Kathy Sent: Wednesday, May 17, 2006 7:59 AM To: Reid, James Cc: Cruickshank , David Subject: FW: Sample receipt variance

Will you re-collect?

From: Charles, Rebecca [mailto:Rebecca.Charles@tbe.com]
Sent: Wednesday, May 17, 2006 8:53 AM
To: Shaw, Kathy
Cc: Larry.Walton@exeloncorp.com
Subject: RE: Sample receipt variance

WG-BW-051006-JL-023

Rebecca Charles Teledyne Brown Engineering Project Manager (865) 934-0379 (865) 934-0396 (fax)

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-----Original Message----- **From:** Shaw, Kathy [mailto:kshaw@craworld.com] **Sent:** Tuesday, May 16, 2006 5:53 PM **To:** Charles, Rebecca **Subject:** RE: Sample receipt variance

What is our sample ID?

From: Charles, Rebecca [mailto:Rebecca.Charles@tbe.com] Sent: Tuesday, May 16, 2006 5:27 PM To: Shaw, Kathy Cc: Larry.Walton@exeloncorp.com Subject: RE: Sample receipt variance

Kathy,

The cubitainer portion for L28609-15 was dropped and spilled in the laboratory. We probably have enough sample left for the Sr-90 analysis, but cannot meet the required MDCs for the gamma with the small amount of sample remaining.

Rebecca Charles Teledyne Brown Engineering Project Manager (865) 934-0379 (865) 934-0396 (fax)

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-----Original Message----- **From:** Shaw, Kathy [mailto:kshaw@craworld.com] **Sent:** Tuesday, May 16, 2006 5:15 PM **To:** Charles, Rebecca **Subject:** RE: Sample receipt variance

We don't know, maybe they will be sending another sample.

From: Charles, Rebecca [mailto:Rebecca.Charles@tbe.com] Sent: Tuesday, May 16, 2006 5:14 PM

L28609 9 of 158

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	<u> </u>										L	286	09 10	of 1 7	.5
	D EXELON	REMARKS						DATE: TIME:	DATE: TIME:	DATE:	TIME:		12416		
	NE: BRAIDWOO												DEOR LABORATORY BY: Hay 17 Constrants		
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TELEDYNE BROWN ENGINEERING 2508 Quality Lane Knoxville, TN 37931-3133

1-3 removed form #8 ACKNOWLEDGEMENT This is not an invoice

May 12, 2006

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville, CT 06062

The following sample(s) were received at Teledyne Brown Engineering Knoxville laboratory on May 12, 2006. The sample(s) have been scheduled for the analyses listed below and the report is scheduled for completion by May 19, 2006. Please review the following login information and pricing. Contact me if anything is incorrect or you have questions about the status of your sample(s).

Thank you for choosing Teledyne Brown Engineering for your analytical needs.

Sincerely, Rebecca Charles Project Manager (865)934-0379

Project ID: EX001-3ESPBRAID-06
 P.O. #: 00411203
Release #:
Contract#: 00411203
Kathy Shaw, FAX#:860-747-1900, kshaw@craworld.com

Client ID/Laboratory IDVol/UnitsStart CollectEnd CollectStationAnalysisPriceDate/TimeDate/Time

WG-BW-051006-MS-014	L28609-1	05/10/06:1010
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00
WG-BW-051006-MS-016	L28609-2	05/10/06:1050
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00
WG-BW-051006-MS-018	L28609-3	05/10/06:1135
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00
WG-BW-051006-MS-020	L28609-4	05/10/06:1345
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00
WG-BW-051006-MS-022	L28609-5 Page 1	05/10/06:1400

Client ID/ Station	Laboratory ID Analysis	Vol/Units Start Collect End Collect Price Date/Time Date/Time
	CPLI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-MS-024	L28609-6	05/10/06:1505
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-MS-026	L28609-7	05/10/06:1605
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-MS-028	L28609-8	05/10/06:1640
WG	GELI	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051106-MS-030	L28609-9	05/11/06:0915
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-JL-013	L28609-10	05/10/06:1115
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-JL-015	L28609-11	05/10/06:1210
WC	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-JL-017	L28609-12	05/10/06:1400
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-JL-019	L28609-13	05/10/06:1430
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-JL-021	L28609-14	05/10/06:1600
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051006-JL-023	L28609-15	05/10/06:1635

Client ID/ Station	Laboratory ID Analysis	Vol/Units Price	Start Collect End Collect Date/Time Date/Time
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051006-JL-025	L28609-16		05/10/06:1725
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-JL-027	L28609-17		05/11/06:0925
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-JL-029	L28609-18		05/11/06:1000
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-JL-031	L28609-19		05/11/06:1005
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-JL-035	L28609-20		05/11/06:1205
WG WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	

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Internal Chain of Custody

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05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
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	Internal Chain of Custody				
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Sampre # 120009-4	Contarnetnum				
H-3	EJ				
SR-90 (FAST)	GK				
Relinquish Date Relinquis	n By	Received By			
05/12/2006 00:00		099999	Sample Custodian		
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Prod	Analyst				
GELI					
	CK				
SR-90 (FAST)		Received By			
Relinquish Date Kelinquis	п ву	099999	Sample Custodian		
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Sample # L28609-4	Containernum 6				
Prod	Analyst				
GELI	DW				
н-з	EJ				
SR-90 (FAST)	GK				
Relinquish Date Relinquis	h By	Neceived By	Sample Custodian		
05/12/2006 00:00	****	****	****		
**************************************	Containernum 1				
Prod GELI	DW				
H-3	EJ				
SR-90 (FAST)	GK				
Relinguish Date Relinguis	h By	Received By			
05/12/2006 00:00	-	099999	Sample Custodian		
**************************************	**************************************	*****	****		
Prod	Analyst				
GELI	DW				
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SR-90 (FAST)	GK				
Relinquish Date Relinquis	sh By	Received By	Germle Gretedien		
05/12/2006 00:00		nuuuuu			
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05/15/2008 12:55 0999	99 Sample Custodian	030854	Donna Webb		
05/15/2006 12:55 0308	99 Sample Custodian 54 Donna Webb	0399999 030854 029728	Donna Webb Lauren Larsen		
05/15/2006 12:55 0393 05/15/2006 12:55 0308 05/17/2006 15:36 0297	 99 Sample Custodian 54 Donna Webb 28 Lauren Larsen 	030854 029728 030854	Donna Webb Lauren Larsen Donna Webb		
05/15/2006 12:55 0393 05/15/2006 12:55 0308 05/17/2006 15:36 0297 05/17/2006 15:37 0308	 99 Sample Custodian 54 Donna Webb 28 Lauren Larsen 54 Donna Webb 	099999 030854 029728 030854 099999	Sample Custodian Donna Webb Lauren Larsen Donna Webb Sample Custodian		
05/15/2006 12:55 0308 05/15/2006 12:55 0308 05/17/2006 15:36 0297 05/17/2006 15:37 0308 ***********************************	99 Sample Custodian 54 Donna Webb 28 Lauren Larsen 54 Donna Webb ***********************************	099999 030854 029728 030854 099999	Sample Custodian Donna Webb Lauren Larsen Donna Webb Sample Custodian		
05/15/2006 12:55 0308 05/15/2006 12:55 0308 05/17/2006 15:36 0297 05/17/2006 15:37 0308 ***********************************	99 Sample Custodian 54 Donna Webb 28 Lauren Larsen 54 Donna Webb ***********************************	099999 030854 029728 030854 099999	Sample Custodian Donna Webb Lauren Larsen Donna Webb Sample Custodian		

05/19/06 15:51	т	eledyne Brown Engineering	9	L28609 20 Page: 4 of 10	of 158
		Internal chain of custody	¥ 		
********************************* Sample # L28609-6	*****	**************************************	*****	****	
SR-90 (FAST)	GK				
Relinquish Date Rel:	inquish By		Received By	al. Gretedien	
05/12/2006 00:00			099999	Sample Custodian	
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Prod GELI	Anal DW	yst			
H-3	EJ				
SR-90 (FAST)	GK				
Relinquish Date Rel	inquish By		Received By	Gunnels Constadion	
05/12/2006 00:00			099999	Sample Custodian	
05/15/2006 12:53	099999	Sample Custodian	030854	Donna webb	
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen	
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb	
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian	
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Prod GELI	Ana] DW	yst			
H-3	EJ				
SR-90 (FAST)	GK				
Relinquish Date Rel	inquish By		Received By		
05/12/2006 00:00			099999	Sample Custodian	
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Prod	Ana.	lyst			
GELT	DW				
	CK ED				
SR-90 (FAST)	GA		Received By		
Relinquish Date Rel 05/12/2006 00:00	Linquish by		099999	Sample Custodian	
05/15/2006 12:53	099999	Sample Custodian	030854	Donna Webb	
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen	
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb	
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian	
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Prod GELI	Ana DW	lyst			
SR-90 (FAST)	GK				
Relinquish Date Re	linquish By		Received By		
05/12/2006 00:00			099999	Sample Custodian	
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Prod	Ana	lyst			

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05/19/06 15:51		Teledyne Brown Engineering	3	Page: 5 of 10	01 130
		Internal Chain of Custody	7		
**************************************	*******	**************************************	*****	* * * * *	
GELI	DW				
SR-90 (FAST)	GK				
Relinquish Date Rel	inquish By		Received By	Somolo Custodian	
05/12/2006 00:00			099999	Sample Custodian	
05/15/2006 12:53	099999	Sample Custodian	030854	Jonna webb	
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen	
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna webb	
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian	
**************************************	******	**************************************	******	* * * * * *	
Prod GELI	Ana DW	lyst			
н-3	EJ				
SR-90 (FAST)	GK				
Relinquish Date Rel	inquish By		Received By		
05/12/2006 00:00			099999	Sample Custodian	
**************************************	*****	**************************************	*****	* * * * *	
Prod	Ana	lyst			
GELI	DW				
H-3	EJ				
SR-90 (FAST)	GK				
Relinquish Date Rel	linquish By		Received By	Sample Custodian	
05/12/2006 00:00	000000	Sample Custodian	030854	Donna Webb	
05/15/2006 12:53	099999	Donna Wobb	029728	Lauren Larsen	
05/15/2006 12:55	030854		030854	Donna Webb	
05/17/2006 15:34	029728	Denne Webb	000004	Sample Custodian	
05/17/2006 15:36	030854		*****	+++++	
Sample # L28609-10		Containernum 1			
Prod	Ana	alyst			
GELI	DW				
H-3	EJ				
SK-90 (FASI)	GR		Possived By		
Relinquish Date Ke.	linquish By		099999	Sample Custodian	
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Prod	Ana	alyst			
GELI	DW				
н-3	EJ				
SR-90 (FAST)	GK				
Relinquish Date Re	linquish By		Received By		
05/12/2006 00:00			099999	Sample Custodian	

				L28609 22 Page: $6 \text{ of } 10$	of	158
05/19/06 15:51	I	eledyne Brown Engineering	J •	1490. 00110		
		Internal Chain of Custody				
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Relinquish Date			Received By			
05/15/2006 12:53	099999	Sample Custodian	030854	Donna Webb		
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb		
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian		
**************************************	* * * * * * * * * * * * * *	**************************************	*****	* * * * *		
Prod GELI	Anal DW	yst				
н-З	EJ					
SR-90 (FAST)	GK					
Relinquish Date Rel	inquish By		Received By			
05/12/2006 00:00			099999	Sample Custodian		
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Prod	Anal	lyst				
GELI	DW					
н-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Re 05/12/2006 00:00	Linquish By		Received By 099999	Sample Custodian		
05/15/2006 12:53	099999	Sample Custodian	030854	Donna Webb		
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb		
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian		
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Prod GELI	Ana DW	lyst				
н-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Re	linquish By		Received By			
05/12/2006 00:00	_		099999	Sample Custodian		
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Prod	Ana	lyst				
GELI	DW					
H-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Re	linquish By		Received By	Sample Custodian		
05/12/2006 00:00			030821	Donna Wehh		
05/15/2006 12:53	099999	Sample Custodian	020024	Lauren Larson		
05/15/2006 12:55	030854	Donna Webb	020054	Donna Mapp		
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb		
05/17/2006 15:36	030854	Donna Webb	099999	sample Custodian		

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				L28609 23	of	158
05/19/06 15:51	Те	ledyne Brown Engineering	g	Page: 7 of 10		
	I	nternal Chain of Custody	Y			
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Prod GELI	Analy DW	st				
н-З	EJ					
SR-90 (FAST)	GK					
Relinquish Date Reli	nquish By		Received By			
05/12/2006 00:00			099999	Sample Custodian		
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Prod	Analy	st				
GELI	Dw					
H-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Reli	nquish By		Received By	Sample Custodian		
05/12/2006 00:00		Sample Custodian	030854	Donna Webb		
05/15/2006 12:53	099999	Deppe Webb	020728	Lauren Larsen		
05/15/2006 12:55	030854		030854	Donna Webb		
05/17/2006 15:34	029728	Lauren Larsen	030854	Sample Custodian		
05/17/2006 15:36	030854	Donna webb				
**************************************	*******	Containernum 1	******	ххххх		
Prod GELT	Analy DW	rst				
н-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Reli	inguish By		Received By			
05/12/2006 00:00			099999	Sample Custodian		
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Prod	Analy	yst				
GELI	DW					
н-З	EJ					
SR-90 (FAST)	GK					
Relinquish Date Rel:	inquish By		Received By			
05/12/2006 00:00			099999	Sample Custodian		
05/15/2006 12:53	099999	Sample Custodian	030854	Donna webb		
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb		
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian		
**************************************	******	**************************************	*****	* * * * *		
Prod SAMPLE	Analy	yst				
Relinquish Date Rel	inquish By		Received By			
05/12/2006 00:00			099999	Sample Custodian		
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05/19/06 15:51		Teledyne Brown Engineering	g	L28609 24 Page: 8 of 10	of	158
		Internal Chain of Custody	I			
**************************************	*******	**************************************	* * * * * * * * * * * * * * * * * * * *	* * * * *		
Prod SAMPLE	Ana	alyst				
Relinquish Date Rel: 05/12/2006 00:00	inquish By		Received By 099999	Sample Custodian		
05/15/2006 12:53	099999	Sample Custodian	030854	Donna Webb		
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
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Prod GELI	An. DW	alyst				
н-3	ЕJ					
SR-90 (FAST)	GK					
Relinquish Date Rel	inquish By		Received By			
05/12/2006 00:00			099999	Sample Custodian		
**************************************	*****	**************************************	*****	* * * * *		
Prod GELI	An DW	alyst				
н-3	EJ					
SR-90 (FAST)	GK	:				
Relinquish Date Rel	inquish By		Received By 099999	Sample Custodian		
05/15/2006 12:53	099999	Sample Custodian	030854	Donna Webb		
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
05/17/2006 15:34	029728	Lauren Larsen	030854	Donna Webb		
05/17/2006 15:36	030854	Donna Webb	099999	Sample Custodian		
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Prod	Ar	alyst				
GELI	DV	T				
н-3	Ed	T				
SR-90 (FAST)	Gł	ζ				
Relinquish Date Rel	linquish By		Received By	Somolo Custodian		
05/12/2006 00:00			099999			
**************************************	*********	Containernum 2	*****	* * * * * * *		
Prod GELI	Ar DV	halyst V				
н-3	E	J				
SR-90 (FAST)	GI	٢				
Relinquish Date Rel	linquish By		Received By	Comple Custedis-		
05/12/2006 00:00			099999	Deppe Webb		
05/15/2006 12:53	099999	Sample Custodian	030854	Jonna Webb		
05/15/2006 12:55	030854	Donna Webb	029728	Lauren Larsen		
05/17/2006 15:34	029728	Lauren Larsen	030854	Jonna Webb		

05/19/06 15:51	Ψi	eledvne Brown 1	Engineering		L28609 25 of 15 Page: 9 of 10	8
00/10/00 10:01		Internal Chain	of Custody			
	****	*****	****	****	* * * * *	
Sample # L28609-17		Containernum	2			
Relinquish Date				Received By		
05/17/2006 15:36	030854	Donna Webb		099999	Sample Custodian	
**************************************	*****	**************************************	**************************************	******	****	
Prod GELI	Analy DW	yst				
н-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Reli	inquish By			Received By		
05/12/2006 00:00				099999	Sample Custodian	
**************************************	*********	**************************************	***************************************	*****	****	
Prod GELI	Anal DW	yst				
н-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Rel:	inquish By			Received By		
05/12/2006 00:00				099999	Sample Custodian	
05/15/2006 12:53	099999	Sample Cust	odian	030854	Donna Webb	
05/15/2006 12:55	030854	Donna Webb		029728	Lauren Larsen	
05/17/2006 15:34	029728	Lauren Lars	en	030854	Donna Webb	
05/17/2006 15:36	030854	Donna Webb		099999	Sample Custodian	
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Prod GELI	Anal DW	yst				
н-З	ЕJ					
SR-90 (FAST)	GK					
Relinguish Date Rel	inquish By			Received By		
05/12/2006 00:00				099999	Sample Custodian	
**************************************	***********	**************************************	************** 2	******	****	
Prod GELI	Ana. DW	lyst				
н-3	EJ					
SR-90 (FAST)	GK					
Relinquish Date Rel	inquish By			Received By		
05/12/2006 00:00				099999	Sample Custodian	
05/15/2006 12:53	099999	Sample Cust	todian	030854	Donna Webb	
05/15/2006 12:55	030854	Donna Webb		029728	Lauren Larsen	
05/17/2006 15:34	029728	Lauren Lars	sen	030854	Donna Webb	
05/17/2006 15:36	030854	Donna Webb		099999	Sample Custodian	
**************************************	*****	**************************************	************** 1	*****	* * * * * *	
Prod GELI	Ana DW	lyst				

05/10/06 15	. 51	m ala	dumo Broton I	Proincoring		L28609 26 Page: $10 \text{ of } 10$	of	158
05/19/06 15	:51	Tele	ernal Chain	of Custody				

*************** Sample # L28	******************* 609–20	Coi	ntainernum	1	* * * * * * * * * * * * * * * * *			
н-3		EJ						
SR-90 (FAS	Τ)	GK						
Relinquish D	ate Relinquish H	Зу			Received By			
05/12/2006 0	0:00				099999	Sample Custodian		
*********** Sample # L28	**************************************	******* Coi	**************************************	************** 2	******	* * * *		
Prod		Analyst	:					
GELI		DW						
н-З		EJ						
SR-90 (FAS	T)	GK						
Relinquish D	ate Relinquish 1	Ву			Received By			
05/12/2006 0	00:00				099999	Sample Custodian		
05/15/2006 1	.2:53 099999		Sample Cust	odian	030854	Donna Webb		
05/15/2006 1	.2:55 030854		Donna Webb		029728	Lauren Larsen		
05/17/2006 1	029728		Lauren Lars	en	030854	Donna Webb		
05/17/2006 1	030854		Donna Webb		099999	Sample Custodian		

Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

*****	******	******	*****	* * * * * * * * * * * * * * * * * * * *
L28609-1	WG	WG-BW-051006-MS-014		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		ILL	05/15/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
****	*****	*****	*****	*****
L28609-2	WG	WG-BW-051006-MS-016		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		ILL	05/15/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	КОЈ	05/19/06
****	*****	****	****	*****
L28609-3	WG	WG-BW-051006-MS-018		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		ILL	05/15/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
****	*****	*****	*****	******
L28609-4	WG	WG-BW-051006-MS-020		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KOJ	05/15/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	******	*****	* * * * * * * * * * * * * * * * * * *	******
L28609-5	WG	WG-BW-051006-MS-022		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	H-3		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KOJ	05/15/06

Aliquot

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28609-5	WG	WG-BW-051006-MS-022		
Count Room	Н-З		КОЈ	05/18/06
Count Room	SR-90	(FAST)	КОЈ	05/19/06
****	*****	* * * * * * * * * * * * * * * * * * * *	*****	*****
L28609-6	WG	WG-BW-051006-MS-024		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		КОЈ	05/15/06
Count Room	Н-З	· ·	КОЈ	05/18/06
Count Room	SR-90	(FAST)	КОЈ	05/19/06
******	******	******	*****	******
L28609-7	WG	WG-BW-051006-MS-026		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	H-3		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KOJ	05/15/06
Count Room	Н-З		КОЈ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
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**************************************	****** WG	WG-BW-051006-MS-028	****	**********
**************************************	****** WG <u>Prod</u>	**************************************	Analyst	<u>Date</u>
L28609-8 Process step Login	****** WG <u>Prod</u>	**************************************	<u>Analyst</u> RCHARLES	<u>Date</u> 05/12/06
<pre>************************************</pre>	****** WG <u>Prod</u> GELI	****************************** WG-BW-051006-MS-028	Analyst RCHARLES DW	<u>Date</u> 05/12/06 05/15/06
<pre>************************************</pre>	****** WG <u>Prod</u> GELI SR-90	**************************************	<u>Analyst</u> RCHARLES DW GK	<u>Date</u> 05/12/06 05/15/06 05/18/06
<pre>************************************</pre>	******* WG <u>Prod</u> GELI SR-90 GELI	**************************************	Analyst RCHARLES DW GK ILL	Date 05/12/06 05/15/06 05/18/06 05/16/06
<pre>************************************</pre>	******* WG Prod GELI SR-90 GELI SR-90	**************************************	Analyst RCHARLES DW GK ILL KOJ	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06
<pre>************************************</pre>	******* WG Prod GELI SR-90 GELI SR-90 ******	**************************************	Analyst RCHARLES DW GK ILL KOJ	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
**************************************	******* WG GELI SR-90 GELI SR-90 ****** WG	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	******* WG GELI SR-90 GELI SR-90 ****** WG <u>Prod</u>	**************************************	Analyst RCHARLES DW GK ILL KOJ Analyst	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod GELI	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	******* WG GELI SR-90 GELI SR-90 ******* WG Prod GELI H-3	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod GELI H-3 SR-90	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod GELI H-3 SR-90 GELI	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	******* WG GELI SR-90 GELI SR-90 ******* WG Prod GELI H-3 SR-90 GELI H-3	**************************************	Analyst RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	******* WG GELI SR-90 GELI SR-90 ******* WG Prod GELI H-3 SR-90 GELI H-3 SR-90	**************************************	Analyst RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 K-90	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	******* WG GELI SR-90 GELI SR-90 ******* WG Prod GELI H-3 SR-90 GELI H-3 SR-90 SR-90 *******	**************************************	<u>Analyst</u> RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	****** WG GELI SR-90 GELI SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 SR-90 K***** WG Prod	**************************************	Analyst RCHARLES DW GK ILL KOJ ***********************************	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/18/06 05/19/06 ************************************
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 K***** WG Prod	**************************************	Analyst RCHARLES DW GK ILL KOJ ***********************************	<pre>Date 05/12/06 05/15/06 05/18/06 05/16/06 05/19/06 ************************************</pre>
<pre>************************************</pre>	****** WG Prod GELI SR-90 GELI SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI	**************************************	Analyst RCHARLES DW GK ILL KOJ ***********************************	<u>Date</u> 05/12/06 05/15/06 05/18/06 05/18/06 05/19/06 ************************************

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28609-10	WG	WG-BW-051006-JL-013		
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		ILL	05/16/06
Count Room	н-3		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	*****	* * * * * * * * * * * * * * * * * * * *	*****	*****
L28609-11	WG	WG-BW-051006-JL-015		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		ILL	05/16/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
***********	******	******	*****	*****
L28609-12	ŴG	WG-BW-051006-JL-017		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	* * * * * * *	*****	****	******
L28609-13	WG	WG-BW-051006-JL-019		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	*****	*****	* * * * * * * * * * * * * * * * * * *	*****
L28609-14	WG	WG-BW-051006-JL-021		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
* * * * * * * * * * * * *	******	*****	* * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *
L28609-15	WG	WG-BW-051006-JL-023		

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28609-15	WG	WG-BW-051006-JL-023		
Process step	Prod		Analyst	Date
Login			RCHARLES	05/12/06
Aliquot	SAMPLE			
Count Room	SAMPLE			
******	******	* * * * * * * * * * * * * * * * * * * *	*****	*********
L28609-16	WG	WG-BW-051006-JL-025		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	******	*****	*****	******
L28609-17	WG	WG-BW-051106-JL-027		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/18/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	******	* * * * * * * * * * * * * * * * * * * *	****	* * * * * * * * * * * * * * * * * * * *
L28609-18	WG	WG-BW-051106-JL-029		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/19/06
Count Room	SR-90	(FAST)	KOJ	05/19/06
*****	******	****	* * * * * * * * * * * * * * * * *	******
L28609-19	ŴG	WG-BW-051106-JL-031		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/19/06
Count Room	SR-90	(FAST)	КОЈ	05/19/06
******	******	******	*****	******
L28609-20	WG	WG-BW-051106-JL-035		

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28609-20	WG	WG-BW-051106-JL-035		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/12/06
Aliquot	GELI		DW	05/15/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/18/06
Count Room	GELI		KPW	05/16/06
Count Room	Н-З		KOJ	05/19/06
Count Room	SR-90	(FAST)	KOJ	05/19/06

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Analytical Results Summary



Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

mole ID: 1	WG-BW-0510	06-MS-014			Collec	ct Start: 0.	5/10/2006 10	:10		Matrix: Gr	ound Wate	L.
ij					Colle	ct Stop:			-	/olume:		
:uc					Receiv	/e Date: 0	5/12/2006		W %	oisture:		
er:]	1-28609-1										-	
	SOP#	t Activity Cone	y Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units
and a second second second second second second second second second second second second second second second	2010	1 4.30E+(00 1.09E+02	1.79E+02	pCi/L		10	m		05/18/06	60	M
-	2018	-2.92E-0	01 3.49E-01	5.96E-01	pCi/L		450	Ē	05/10/06 10:10	05/19/06	400	M
	2007	7.40E-0)2 2.28E+00	4.04E+00	pCi/L		3729.78	m	05/10/06 10:10	05/15/06	12600	Sec
100000 TT	2007	-1.06E+(00 2.58E+00	4.30E+00	pCi/L		3729.78	ml	05/10/06 10:10	05/15/06	12600	Sec
	2007	7.75E-0	01 4.72E+00	8.35E+00	pCi/L		3729.78	ml	05/10/06 10:10	05/15/06	12600	Sec
	2007	1.60E+(00 2.23E+00	4.26E+00	pCi/L		3729.78	m	05/10/06 10:10	05/15/06	12600	Sec
	2007	9.93E+(00 6.53E+00	1.10E+01	pCi/L		3729.78	ml	05/10/06 10:10	05/15/06	12600	Sec
	2007	1.96E-C	01 2.49E+00	4.32E+00	pCi/L		3729.78	шl	05/10/06 10:10	05/15/06	12600	Sec
	2007	7 -5.78E-(01 4.45E+00	7.61E+00	pCi/L		3729.78	ml	05/10/06 10:10	05/15/06	12600	Sec
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				1							5

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12600

05/15/06

05/10/06 10:10

E

3729.78

pCi/L

5.00E+00 4.62E+00 1.97E+01

3.25E+00 2.55E+00 1.12E+01

2.55E+00

2007 2007 2007 2007

1.80E+00 2.50E+00

pCi/L

pCi/L

6.21E+00

3.65E+00

-1.32E+00

BA-140 LA-140

CS-134 CS-137

pCi/L

3729.78 3729.78 3729.78

12600

05/15/06 05/15/06

05/10/06 10:10 05/10/06 10:10

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Flag Values

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Flag Values

Compound/Analyte not detected or less than 3 sigma 1 1 +

Activity concentration exceeds MDC and 3 sigmă; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma II

Activity concentration exceeds customer reporting value II *⊃

MDC exceeds customer technical specification Н High Spec L

Low recovery 11

Bolded text indicates reportable value. High recovery II Η

19 õf Page 1

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum unless otherwise noted

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company

(MG)

Kathy Shaw

sport of Analysis	05/19/06 15:37
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Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

Sample ID: WG	-BW-051006	-MS-016			Collec	t Start: 0:	5/10/2006 10	:50		Matrix: Gr	ound Wat	er	M)
Station:					Collec	t Stop: Date: 0	5/12/2006		~ ~ %	Volume: Ioisture:			
LIMS Number: L28	509-2				VCCCIA	c Dall.	00071710						
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values
1.2	2010	-0 56F+01	1 03E+02	1 81 F.+02	nCi/L		10	Ш		05/18/06	60	M	N
TOTAL SR	2018	-8.55E-01	6.41E-01	1.12E+00	pCi/L		450	m	05/10/06 10:50	05/19/06	400	W	N
MN-54	2007	1.21E+00	2.66E+00	4.53E+00	pCi/L	-	3458.86	m	05/10/06 10:50	05/15/06	12646	Sec	U No
CO-58	2007	-1.26E+00	2.66E+00	4.19E+00	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	No No
EE-59	2007	1.80E+00	5.63E+00	9.49E+00	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	U No
CO-60	2007	-1.42E+00	2.68E+00	4.24E+00	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	U No
ZN-65	2007	6.18E+00	6.31E+00	1.10E+01	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	U No
NB-95	2007	4.59E-01	2.80E+00	4.62E+00	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	U No
ZR-95	2007	-7.54E-01	4.92E+00	7.99E+00	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	U No
CS-134	2007	6.19E+00	4.92E+00	5.05E+00	pCi/L		3458.86	ш	05/10/06 10:50	05/15/06	12646	Sec	U No
CS-137	2007	3.18E+00	2.66E+00	4.70E+00	pCi/L		3458.86	ш	05/10/06 10:50	05/15/06	12646	Sec	No No
BA-140	2007	-2.57E+00	1.15E+01	1.88E+01	pCi/L		3458.86	ml	05/10/06 10:50	05/15/06	12646	Sec	No No
I.A-140	2007	4.72E+00	3.83E+00	7.00E+00	pCi/L		3458.86	m	05/10/06 10:50	05/15/06	12646	Sec	- No

Flag Values U =

|| || +

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery

11

|| U* High L H

11 11

Bolded text indicates reportable value.

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum



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Conestoga-Rovers & Associates

FY001_3FSPBRAID-06

Kathy Shaw					EXO	UI-JESP	BKAID-00							
		C 440 010			Collect	t Start: 05	5/10/2006 11:	35		Matrix: Gr	ound Wate	u.		(MG)
Station: WC	nntcn-Mg-r	010-014-0			Collect	t Stop:				'olume:				
Description:					Receive	e Date: 05	5/12/2006		W %	oisture:				
LIMS Number: L28	3609-3						-		•	-		1 1 1 1 1		
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	keference Date	Count Date	Time	Units	Flag Valu	les
	0100	101217	1 175 LAD	1 796407	nCi/l		10	lm		05/18/06	60	M	U	
H-3	7010	0.41E+01	1.125702	1.101-10			450	Im	05/10/06 11:35	05/19/06	400	W	<u> </u>	
TOTAL SR	2018	-1.23E-01	0.2UE-UI	1.00TATU	hund		10 UJJC	1	05/10/06 11.35	05/15/06	0006	Sec	<u> </u>	No
MN-54	2007	-1.36E+00	2.89E+00	4.58E+00	pull		+0.0000	1111	2011 00/01/00	0012120	0000	Coo Coo	11	No
CO-58	2007	4.54E-01	3.20E+00	5.37E+00	pCi/L		3660.84	lm	CE:11 00/01/C0	00/01/00	2000	220		140
EE 50	2007	3 70F+00	6.06E+00	1.06E+01	pCi/L		3660.84	ml	05/10/06 11:35	05/15/06	9006	Sec		NO
CC-23	2002	1 53F+00	4 07F+00	6.69E+00	pCi/L		3660.84	ml	05/10/06 11:35	05/15/06	0006	Sec		No
CU-01	1007	3 80F400	7 38F+00	1 288+01	pCi/L		3660.84	ml	05/10/06 11:35	05/15/06	0006	Sec	U I	No
20-NZ	1002	7 01E+00	3 78F+00	5 59E+00	pCi/L		3660.84	lm	05/10/06 11:35	05/15/06	0006	Sec	U D	No
NB-93	1007	1 715-00	5 70F+00	0 73R+00	nCi/l.		3660.84	lm	05/10/06 11:35	05/15/06	0006	Sec	n	No
CK-XI7	1002	0017171-	1.001.00	- 101-00			3660 84	lm	05/10/06 11:35	05/15/06	0006	Sec	n	No
CS-134	2007	1.86E+00	4.82E+00	2.181+00	pulle		10,000		05/10/07/26	90/21/20	0000	Ser	11	No
CS-137	2007	1.22E-01	3.47E+00	5.71E+00	pCi/L		3660.84	Ē	CC:11 00/01/C0	00/01/00	0000	200	- 11	No
BA-140	2007	6.36E+00	1.41E+01	2.35E+01	pCi/L		3660.84	E.	CE:11 00/01/C0	00/C1/C0	0000	San		No
LA-140	2007	2.88E+00	4.39E+00	7.83E+00	pCi/L		3660.84	Ē	CC:11 00/01/C0		2000	201	-	

Flag Values U =

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

U* High Spec

Low recovery || || ||

High recovery ЧH Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company

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L28609

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESI	PBRAID-06							
Sample ID: Station:	WG-BW-051006	5-MS-020			Collec	t Start: 0	15/10/2006 13:	:45		Matrix: Gr /olume:	ound Wat	er		(MG)
Description:					Receive	s Date: 0.	15/12/2006		W %	oisture:				
LIMS Number:	L28609-4													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Va	lues
H-3	2010	2.36E+01	1.10E+02	1.79E+02	pCi/L		10	lm		05/18/06	60	M	U	
TOTAL SR	2018	-3.25E-01	3.83E-01	6.51E-01	pCi/L		450	m	05/10/06 13:45	05/19/06	400	M	U	
MN-54	2007	-3.99E-01	3.39E+00	5.53E+00	pCi/L		3726.07	ш	05/10/06 13:45	05/15/06	8400	Sec	U	No
CO-58	2007	-2.75E+00	3.34E+00	5.16E+00	pCi/L		3726.07	Ш	05/10/06 13:45	05/15/06	8400	Sec	U	No
FE-59	2007	3.17E+00	6.64E+00	1.14E+01	pCi/L		3726.07	m	05/10/06 13:45	05/15/06	8400	Sec	U	No
CO-60	2007	-1.43E+00	3.52E+00	5.59E+00	pCi/L		3726.07	ml	05/10/06 13:45	05/15/06	8400	Sec	N	No
ZN-65	2007	1.19E+01	8.23E+00	1.34E+01	pCi/L		3726.07	ml	05/10/06 13:45	05/15/06	8400	Sec	Ŋ	No
NB-95	2007	1.49E+00	3.47E+00	5.91E+00	pCi/L		3726.07	m	05/10/06 13:45	05/15/06	8400	Sec	n	No
Z.R-95	2007	1.69E+00	5.79E+00	9.81E+00	pCi/L		3726.07	m	05/10/06 13:45	05/15/06	8400	Sec	U	No
CS-134	2007	8.49E+00	6.41E+00	6.22E+00	pCi/L		3726.07	ml	05/10/06 13:45	05/15/06	8400	Sec	U	No
CS-137	2007	6.95E-01	3.22E+00	5.35E+00	pCi/L		3726.07	ml	05/10/06 13:45	05/15/06	8400	Sec	n	No
BA-140	2007	9.88E+00	1.43E+01	2.48E+01	pCi/L		3726.07	ml	05/10/06 13:45	05/15/06	8400	Sec	U	No
LA-140	2007	4.10E+00	4.35E+00	7.99E+00	pCi/L		3726.07	ш	05/10/06 13:45	05/15/06	8400	Sec	U	No

Compound/Analyte not detected or less than 3 sigma Flag Values U =

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Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11

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Low recovery High recovery 11 11

Bolded text indicates reportable value.

19 of Page 4

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

	A CONTRACTOR OF A CONTRACT OF				: (110100111	00		Matriv. Gr	ound Wat	PL		(ĽM
Sample ID: WG	-BW-051006	-MS-022			Collec	t Start: U:	0/10/2006 14:	00:		IVIAUIA. UI		5		
Station:					Collec	t Stop:				Volume:				
Description:					Receive	Date: 0:	5/12/2006		₩ W	loisture:				
LIMS Number: L28	509-5													
		Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	Count	Count	Elog Volue	ŭ
Radionuclide	SOP#	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Units	riag value	0
11 2	2010	-8 54E+01	1_02E+02	1.78E+02	pCi/L		10	ml		05/18/06	60	M		
TOTAI SR	2018	-2.04F-01	4.01E-01	6.75E-01	pCi/L		450	Ш	05/10/06 14:00	05/19/06	400	X	n	
MNL54	2002	3 43E-01	1.57E+00	2.57E+00	pCi/L		3651.92	ш	05/10/06 14:00	05/15/06	50820	Sec	n	10
CD 58	2002	-1 53E+00	1.53E+00	2.41E+00	pCi/L		3651.92	m	05/10/06 14:00	05/15/06	50820	Sec	- D	10
CU-20 FF_50	2002	1.68E+00	3.18E+00	5.32E+00	pCi/L		3651.92	m	05/10/06 14:00	05/15/06	50820	Sec	n	70
	2007	3 01 E-01	1.61E+00	2.67E+00	pCi/L	-	3651.92	m	05/10/06 14:00	05/15/06	50820	Sec	n	70
	2002	6 31F+00	4 22E+00	6 28E+00	pCi/L		3651.92	m	05/10/06 14:00	05/15/06	50820	Sec		Vo
20 DIA	2002	8 34F-01	1 59E+00	2.64F.+00	pCi/L	-	3651.92	ml	05/10/06 14:00	05/15/06	50820	Sec		<u>vo</u>
7P_05	2007	-2 45E-01	2.79E+00	4-56E+00	pCi/L		3651.92	m	05/10/06 14:00	05/15/06	50820	Sec	 N	V0
CC-134	2007	7 54E+00	2.78E+00	3.19E+00	pCi/L		3651.92	Ш	05/10/06 14:00	05/15/06	50820	Sec	1 <u>0</u> *	70
CS-137	2007	1.08E+00	1.60E+00	2.71E+00	pCi/L		3651.92	m	05/10/06 14:00	05/15/06	50820	Sec		No
BA-140	2007	-1.43E-01	6.92E+00	1.13E+01	pCi/L		3651.92	ml	05/10/06 14:00	05/15/06	50820	Sec		07
I A.140	2007	2.62E+00	2.39E+00	4.17E+00	pCi/L		3651.92	ml	05/10/06 14:00	05/15/06	50820	Sec		40

Flag Valucs U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery Page 5 of 19 11 11

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High recovery || ||

Bolded text indicates reportable value.

Page 5

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

ysis	
Report of Anal	05/19/06 15:37

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ES	PBRAID-06							
Sample ID: W	G-BW-05100	6-MS-024			Collect	t Start: C	5/10/2006 15:	:05		Matrix: GI	ound Wate	ar		(MG)
Station:					Collect	t Stop:				/olume:				
Description:					Receive	c Date: 0	5/12/2006		Μ%	oisture:				
LIMS Number: L2	3609-6													
		Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	Count	Count		
Radionuclide	SOP#	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Units	Flag	/alues
H-3	2010	5.15E+01	1.12E+02	1.79E+02	pCi/L		10	ш		05/18/06	60	M	U	
TOTAL SR	2018	-1.42E-01	5.03E-01	8.38E-01	pCi/L		450	ml	05/10/06 15:05	05/19/06	400	M	U	
K-40	2007	1,52E+02	2.75E+01	2.48E+01	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	+	Yes
MN-54	2007	6.61E-01	1.60E+00	2.65E+00	pCi/L		3574.92	ш	05/10/06 15:05	05/15/06	51000	Sec	n	No
CO-58	2007	4.82E-01	1.64E+00	2.70E+00	pCi/L		3574.92	ш	05/10/06 15:05	05/15/06	51000	Sec	U	No
FE-59	2007	6.21E+00	3.74E+00	5.67E+00	pCi/L		3574.92	Ш	05/10/06 15:05	05/15/06	51000	Sec	*	No
CO-60	2007	-9.01E-01	1.59E+00	2.54E+00	pCi/L		3574.92	ш	05/10/06 15:05	05/15/06	51000	Sec	n	No
ZN-65	2007	1.02E+01	4.07E+00	6.40E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	*	No
NB-95	2007	1.85E+00	1.60E+00	2.72E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	n	No
ZR-95	2007	7.88E-01	2.75E+00	4.55E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	n	No
CS-134	2007	8.34E+00	3.01E+00	3.16E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	N*	No
CS-137	2007	1.29E+00	1.70E+00	2.87E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	U	No
BA-140	2007	3.71E+00	7.19E+00	1.19E+01	pCi/L		3574.92	ш	05/10/06 15:05	05/15/06	51000	Sec	n	No
LA-140	2007	7.17E-01	2.36E+00	3.92E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	n	No
RA-226	2007	9.94E+01	3.95E+01	6.01E+01	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	+	Yes
TH-228	2007	1.05E+01	2.69E+00	4.53E+00	pCi/L		3574.92	ml	05/10/06 15:05	05/15/06	51000	Sec	+	Yes
TH-232	2007	1.30E+01	4.91E+00	1.07E+01	pCi/L		3574.92	m	05/10/06 15:05	05/15/06	51000	Sec	+	Yes

Flag Values

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Compound/Analyte not detected or less than 3 sigma

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

High Spec 1

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Bolded text indicates reportable value. Low recovery High recovery Н

19 Page 6 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

L28609 38 of 158

BROWN ENGINEERING, INC. A Teledyne Technologies Company

port of Analysis	05/19/06 15:37
Repo	



Conestoga-Rovers & Associates

Kathy Shaw														
Sample ID: W Station:	G-BW-051006	-MS-026			Collect Collect	t Start: 05 t Stop:	5/10/2006 16:	:05		Matrix: Gr Volume:	ound Wat	ar		WG)
Description:					Receive	Date: 05	5/12/2006		W %	oisture:				
LIMS Number: L	3609-7													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values	
<u>H_</u> 1	2010	-4 28E+00	1.08E+02	1.79E+02	pCi/L		10	ml		05/18/06	60	Μ	n	
TOTAL SR	2018	2.77E-01	3.08E-01	4.88E-01	pCi/L		450	ml	05/10/06 16:05	05/19/06	400	M	n In	
MN-54	2007	1.72E-01	1.64E+00	2.73E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	N N	0
C-0.58	2002	-1 84E-01	1.66E+00	2.75E+00	pCi/L		3817.7	E	05/10/06 16:05	05/15/06	51300	Sec	N N	0
EE-50	2007	3 34E+00	3.41E+00	5.79E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	N	0
CD-60	2007	1 44E+00	1.62E+00	2.80E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	2 	0
ZNI-65	2007	8 35E+00	4.43E+00	6.77E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	N N	0
NR-95	2007	3.43E+00	1.77E+00	3.07E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	N N	0
78-05	2007	-1.47E+00	3.01E+00	4.79E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	N	0
CS-134	2007	3.54E+00	3.22E+00	3.10E+00	pCi/L		3817.7	m	05/10/06 16:05	05/15/06	51300	Sec	2 	0
CS-137	2007	9.18E-01	1.82E+00	3.03E+00	pCi/L		3817.7	ШШ	05/10/06 16:05	05/15/06	51300	Sec		0
RA-140	2007	9.80E-01	7.32E+00	1.22E+01	pCi/L		3817.7	ml	05/10/06 16:05	05/15/06	51300	Sec	N N	0
LA-140	2007	1.11E-01	2.41E+00	4.01E+00	pCi/L		3817.7	Ш	05/10/06 16:05	05/15/06	51300	Sec		0

Flag Values U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery

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Bolded text indicates reportable value.

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum



Conestoga-Rovers & Associates

Kathy Shaw					EX0(01-3ESP	BRAID-06							
Sample ID: WG-E	3W-051006	-MS-028			Collect	Start: 05	5/10/2006 16:4	40		Matrix: Gr	ound Wate	r		(MG)
Station:					Collect	Stop:			>	olume:				
Description:					Receive	: Date: 05	5/12/2006		% MG	oisture:		ŗ		
LIMS Number: L286(9-8													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Val	Ines
LOTAI SR	2018	-1 49F-01	3.04E-01	5.12E-01	pCi/L		450	ml	05/10/06 16:40	05/19/06	400	M	U	
MN-54	2007	9.32E-01	3.11E+00	5.30E+00	pCi/L		3592.27	m	05/10/06 16:40	05/16/06	7200	Sec	U	No
TO-58	2007	2.20E-01	3.72E+00	6.07E+00	pCi/L		3592.27	ml	05/10/06 16:40	05/16/06	7200	Sec	D	No
EE-50	2007	-2.12E+00	7.09E+00	1.14E+01	pCi/L		3592.27	ml	05/10/06 16:40	05/16/06	7200	Sec	n	No
CO-60	2007	-7.98E-01	3.30E+00	5.30E+00	pCi/L		3592.27	ml	05/10/06 16:40	05/16/06	7200	Sec	n	No
ZN-65	2007	3.60E+00	8.11E+00	1.39E+01	pCi/L		3592.27	ml	05/10/06 16:40	05/16/06	7200	Sec	n	No
NB-95	2007	1.60E+00	3.34E+00	5.67E+00	pCi/L		3592.27	ml	05/10/06 16:40	02/16/06	7200	Sec	- n	No
ZR-95	2007	-2.52E+00	5.88E+00	9.28E+00	pCi/L		3592.27	ш	05/10/06 16:40	05/16/06	7200	Sec	D :;	N0
CS-134	2007	1.36E+01	4.94E+00	6.46E+00	pCi/L		3592.27	m	05/10/06 16:40	05/16/06	7200	Sec	*	N0 ,
CS-137	2007	1.60E+00	3.23E+00	5.55E+00	pCi/L		3592.27	ш	05/10/06 16:40	05/16/06	7200	Sec		N0 ;
BA-140	2007	1.37E+01	1.59E+01	2.76E+01	pCi/L		3592.27	Ħ	05/10/06 16:40	05/16/06	7200	Sec	D :	No
LA-140	2007	-2.53E+00	5.30E+00	8.27E+00	pCi/L		3592.27	E	05/10/06 16:40	05/16/06	1/200	Sec	0	001
Comment: 1 T	ritium aliqu	ot lost in shipn	ient											

Flag Values U =

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Compound/Analyte not detected or less than 3 sigma 11

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery 11

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Bolded text indicates reportable value.

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

MDC - Minimum Detectable Concentration



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Rep	1	

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG	-BW-051106	-MS-030			Collect	t Start: 05	5/11/2006 09:	-15		Matrix: Gro	ound Wate	ŗ		(MG)
Station:					Collect	t Stop:			***	/olume:				
Description:					Receive	5 Date: 05	5/12/2006		W %	oisture:				
LIMS Number: L28	6-609													
		Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	Count	Count	;	****
Radionuclide	SOP#	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Units	Flag Val	nes
H-3	2010	1.96E+02	1.24E+02	1.83E+02	pCi/L		10	ш		05/18/06	60	М	+	
TOTAL SR	2018	-3.07E-01	3.89E-01	6.62E-01	pCi/L		450	m	05/11/06 09:15	02/19/06	400	M	U	
MN-54	2007	5.99E-01	2.87E+00	5.13E+00	pCi/L		3497.32	m	05/11/06 09:15	05/16/06	10885	Sec	n	No
CO-58	2007	-3.74E+00	3.13E+00	4.91E+00	pCi/L		3497.32	m	05/11/06 09:15	05/16/06	10885	Sec	n	No
FE-59	2007	5.71E+00	6.60E+00	1.21E+01	pCi/L		3497.32	m	05/11/06 09:15	05/16/06	10885	Sec	n	No
CO-60	2007	2.43E+00	3.00E+00	5.71E+00	pCi/L		3497.32	m	05/11/06 09:15	05/16/06	10885	Sec	- D	No
ZN-65	2007	3.47E+00	6.40E+00	1.16E+01	pCi/L		3497.32	ш	05/11/06 09:15	05/16/06	10885	Sec	- -	No
NB-95	2007	1.88E+00	3.01E+00	5.41E+00	pCi/L		3497.32	Ш	05/11/06 09:15	05/16/06	10885	Sec	U N	No
ZR-95	2007	-6.86E-02	4.90E+00	8.49E+00	pCi/L		3497.32	m	05/11/06 09:15	05/16/06	10885	Sec	n 	No
CS-134	2007	3.20E+00	4.53E+00	5.63E+00	pCi/L		3497.32	ml	05/11/06 09:15	05/16/06	10885	Sec		No
CS-137	2007	6.09E-01	3.24E+00	5.67E+00	pCi/L		3497.32	ml	05/11/06 09:15	05/16/06	10885	Sec	n	No
BA-140	2007	-6.84E+00	1.33E+01	2.26E+01	pCi/L		3497.32	m	05/11/06 09:15	05/16/06	10885	Sec	<u> </u>	No
LA-140	2007	4.16E+00	3.86E+00	7.68E+00	pCi/L		3497.32	Ш	05/11/06 09:15	05/16/06	10885	Sec	n	No
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Flag Values U =

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Compound/Analyte not detected or less than 3 sigma II II II II II II II

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Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

High Spec

Low recovery High recovery ЪН

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company
sport of Analysis	05/19/06 15:37	
Rep	i	

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG-B' Station:	W-051006	-JL-013			Collect Collect	t Start: 05 t Stop:	;/10/2006 11:	15		Matrix: Gr /olume:	ound Wate	L		(MG)
Description:					Receive	e Date: 05	5/12/2006		W %	oisture:				
LIMS Number: L28609	01- €										Ĩ			
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag V	alues
H_3	2010	7.19E+02	1.50E+02	1.81E+02	pCi/L		10	Ш		05/18/06	60	X	+	
TOTAL SR	2018	-2.37E-01	8.31E-01	1.38E+00	pCi/L		450	m	05/10/06 11:15	05/19/06	400	Σ	n	
K-40	2007	1.20E+02	5.52E+01	5.14E+01	pCi/L		3654.51	m	05/10/06 11:15	05/16/06	10048	Sec	+	Yes
MN-54	2007	2.17E+00	2.91E+00	5.09E+00	pCi/L		3654.51	m	05/10/06 11:15	05/16/06	10048	Sec	n	No
CO-58	2007	-2.39E+00	3.26E+00	5.10E+00	pCi/L		3654.51	Ш	05/10/06 11:15	05/16/06	10048	Sec	n	No
FE-59	2007	1.06E+00	6.24E+00	1.05E+01	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec	n	No
CD-60	2007	-3.18E-01	3.36E+00	5.73E+00	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec	n	No
ZN-65	2007	7.73E+00	8.45E+00	1.31E+01	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec	n	No
NB-95	2007	-6.03E-01	3.39E+00	5.42E+00	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec	n	No
ZR-95	2007	5.26E+00	5.61E+00	9.78E+00	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec	n	No
CS-134	2007	5.45E+00	5.06E+00	5.92E+00	pCi/L		3654.51	m	05/10/06 11:15	05/16/06	10048	Sec	U	No
CS-137	2007	3.21E+00	3.49E+00	5.03E+00	pCi/L		3654.51	m	05/10/06 11:15	05/16/06	10048	Sec	n I	Yes
BA-140	2007	3.55E+00	1.50E+01	2.46E+01	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec	D	No
LA-140	2007	-1.67E-02	5.23E+00	8.55E+00	pCi/L		3654.51	ml	05/10/06 11:15	05/16/06	10048	Sec		No
			A REAL PROPERTY AND A REAL PROPERTY A REAL PROPERTY A REAL PROPERTY A REAL PROPERTY A REAL PROPERTY A REAL PROPERTY A REAL PRO											

Flag Values U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11

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Low recovery High recovery

Bolded text indicates reportable value.

19 Page 10 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

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Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESI	BRAID-06							Ĩ
Sample ID: WG-B	W-051006	-JL-015			Collect	t Start: 0.	5/10/2006 12	:10		Matrix: Gr	ound Water	•.		(DM)
Station: Description:					Collect Receive	t Stop: 3 Date: 0:	5/12/2006		W %	oisture:				
LIMS Number: L2860	9-11													
Radionuclide	\$OP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Va	lues
H-3	2010	1.04E+03	1.72E+02	1.91E+02	pCi/L		10	m		05/18/06	54.61	M	+	
TOTAL SR	2018	-8.07E-01	9.36E-01	1.59E+00	pCi/L		450	ш	05/10/06 12:10	05/19/06	400	Μ	U	
K-40	2007	1.05E+02	5.30E+01	3.75E+01	pCi/L		3548.08	ml	05/10/06 12:10	05/16/06	17749	Sec	+	Yes
MN-54	2007	3.46E+00	2.88E+00	5.00E+00	pCi/L		3548.08	m	05/10/06 12:10	05/16/06	17749	Sec	n	No
CO-58	2007	-6.30E-01	3.06E+00	4.93E+00	pCi/L		3548.08	m	05/10/06 12:10	05/16/06	17749	Sec	n	No
FE-59	2007	-1.60E+00	6.09E+00	9.81E+00	pCi/L		3548.08	ш	05/10/06 12:10	05/16/06	17749	Sec	n	No
CO-60	2007	-1.98E+00	2.87E+00	4.48E+00	pCi/L		3548.08	ml	05/10/06 12:10	05/16/06	17749	Sec	n	No No
ZN-65	2007	4.82E+00	7.79E+00	1.13E+01	pCi/L		3548.08	ml	05/10/06 12:10	05/16/06	17749	Sec	U N	No
NB-95	2007	1.74E+00	2.73E+00	4.63E+00	pCi/L		3548.08	ml	05/10/06 12:10	05/16/06	17749	Sec	n	No
ZR-95	2007	-1.66E+00	4.94E+00	7.93E+00	pCi/L		3548.08	ml	05/10/06 12:10	05/16/06	17749	Sec	U –	No
CS-134	2007	7.99E+00	4.64E+00	5.39E+00	pCi/L		3548.08	ш	05/10/06 12:10	05/16/06	17749	Sec	n*	No
CS-137	2007	1.96E+00	3.00E+00	5.12E+00	pCi/L		3548.08	Ш	05/10/06 12:10	05/16/06	17749	Sec	n	No
BA-140	2007	3.12E+00	1.31E+01	2.15E+01	pCi/L		3548.08	m	05/10/06 12:10	05/16/06	17749	Sec	n	No
LA-140	2007	1.20E+00	4.85E+00	8.06E+00	pCi/L		3548.08	m	05/10/06 12:10	05/16/06	17749	Sec	U –	No

Compound/Analyte not detected or less than 3 sigma Flag Values 11 \supset +

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11 11

I U* High Spec

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Low recovery High recovery

Bolded text indicates reportable value.

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L28609 43 of 158

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

unless otherwise noted

MDC - Minimum Detectable Concentration



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Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG-B	W-051006	-JL-017			Collect	t Start: 05	5/10/2006 14:	00:		Matrix: Gro olume:	ound Wate	ST.		(MG)
Description:					Receive	s Date: 05	5/12/2006		% Me	oisture:				
LIMS Number: L2860	9-12													
	HIC3	Activity	Uncertainty	MDC	I Inits	Run #	Aliquot	Aliquot	Reference Data	Count Date	Count Time	Count Units	Flag	Values
Kadionuchde	#JOS	Conc	2 Sigma	COM	CHIC	#		CIIIIS	Date	Mark)	-
H-3	2010	-3.48E+01	1.01E+02	1.71E+02	pCi/L		10	m		05/18/06	60	M	D	
TOTALSR	2018	3.37E-01	1.02E+00	1.65E+00	pCi/L		450	ш	05/10/06 14:00	05/19/06	400	X	n	
MN-54	2007	-1.77E-01	2.74E+00	4.44E+00	pCi/L		3602.18	h	05/10/06 14:00	05/16/06	17182	Sec	n	No
CO-58	2007	2.48E+00	2.89E+00	4.96E+00	pCi/L		3602.18	m	05/10/06 14:00	05/16/06	17182	Sec	N	No
RF_50	2007	3.03E+00	5.49E+00	9.33E+00	pCi/L		3602.18	m	05/10/06 14:00	05/16/06	17182	Sec	n	No
CD-60	2007	1 22E+00	2.79E+00	4.76E+00	pCi/L		3602.18	m	05/10/06 14:00	05/16/06	17182	Sec	n	No
ZN-65	2007	7.86E+00	6.34E+00	1.12E+01	pCi/L		3602.18	m	05/10/06 14:00	05/16/06	17182	Sec	n	No
NB-95	2007	2.16E-01	3.00E+00	4.94E+00	pCi/L		3602.18	m	05/10/06 14:00	05/16/06	17182	Sec	n	No
ZR-95	2007	2.90E+00	5.31E+00	8.97E+00	pCi/L		3602.18	ш	05/10/06 14:00	05/16/06	17182	Sec	n	No
CS-134	2007	6.97E+00	4.95E+00	5.57E+00	pCi/L		3602.18	ml	05/10/06 14:00	02/16/06	17182	Sec	n	No
CS-137	2007	-1.36E+00	2.90E+00	4.68E+00	pCi/L		3602.18	ml	05/10/06 14:00	05/16/06	17182	Sec	n	No
BA-140	2007	3.96E+00	1.34E+01	2.23E+01	pCi/L		3602.18	ml	05/10/06 14:00	05/16/06	17182	Sec		No
LA-140	2007	-3.04E-01	4.53E+00	7.46E+00	pCi/L		3602.18	Ē	05/10/06 14:00	05/16/06	17182	Sec	- N	No

Flag Values U =

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- Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery Page 12 of 19 || ||
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 - 11 [] U* High L H
 - High recovery II

Bolded text indicates reportable value.

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

Conestoga-Rovers & Associates

Kathy Shaw					EAU	Jeac-In								-
Sample ID: WG-I	W-051006	-JL-019			Collect	Start: 05	5/10/2006 14	:30		Matrix: Gr	ound Wat	er	N)	(<u>C</u>
Station:					Collect	Stop:				Volume:				
Description:					Receive	: Date: 05	5/12/2006		W %	oisture:				
LIMS Number: L286(19-13													
Radionuclide	#40S	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values	
H-3	2010	1.15E+02	1.11E+02	1.71E+02	pCi/L		10	lm		05/18/06	60	M	U	
TOTAL SR	2018	-2.36E-01	9.46E-01	1.57E+00	pCi/L		450	Ш	05/10/06 14:30	05/19/06	400	Σ	n	
MN-54	2007	7.80E-01	2.92E+00	4.93E+00	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	N N	_
<u>rm. 51</u>	2007	-1.63E-01	3.25E+00	5.38E+00	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	N N	_
EE-50	2007	1.02E+00	6.20E+00	1.02E+01	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	N N	_
CO-60	2007	1.21E+00	3.28E+00	5.56E+00	pCi/L		3736.77	Ш	05/10/06 14:30	05/16/06	16634	Sec	N N	_
ZN-65	2007	1.17E+01	7.61E+00	1.22E+01	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	й П	_
NB-95	2007	1.73E+00	2.97E+00	5.01E+00	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	Ň	
ZR-95	2007	1.12E+00	5.34E+00	8.80E+00	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	Ň	_
CS-134	2007	6.58E-01	3.28E+00	5.45E+00	pCi/L		3736.77	ml	05/10/06 14:30	05/16/06	16634	Sec	N N	_
CS-137	2007	1.16E+00	3.21E+00	5.37E+00	pCi/L		3736.77	m	05/10/06 14:30	05/16/06	16634	Sec	Ň	
BA-140	2007	-1.26E+00	1.44E+01	2.38E+01	pCi/L		3736.77	ml	05/10/06 14:30	05/16/06	16634	Sec	Ň	
I.A-140	2007	2.36E+00	4.83E+00	8.38E+00	pCi/L		3736.77	ml	05/10/06 14:30	05/16/06	16634	Sec	N	_

Flag Values U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

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1 1 1 U* High L H

Low recovery High recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company

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Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG-	BW-051006-	JL-021			Collect Collect	t Start: 05	5/10/2006 16:	00		Matrix: Gr volume:	ound Water	L		(MG)
Station: Description:					Collec Receive	t Stop: 5 Date: 05	5/12/2006		W %	oisture:				
LIMS Number: L286	09-14											-		
		Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	Count	Count	Flor Vo	
Radionuclide	SOP#	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Units	riag va	Sont
H_3	2010	6.52E+01	1.07E+02	1.70E+02	pCi/L		10	m		05/18/06	60	M	U	
TOTAL SR	2018	5.92E-01	5.57E-01	8.78E-01	pCi/L		450	m	05/10/06 16:00	05/19/06	400	W	n	
MNL54	2002	-3.36E-01	2.87E+00	4.69E+00	pCi/L		3572.28	Ш	05/10/06 16:00	05/16/06	12066	Sec	n	No
CO-58	2007	-5.78E-02	3.19E+00	5.26E+00	pCi/L		3572.28	ml	05/10/06 16:00	05/16/06	12066	Sec	n	No
FF_50	2007	-1.85E-01	6.25E+00	1.03E+01	pCi/L		3572.28	ml	05/10/06 16:00	05/16/06	12066	Sec	n	No
CO-60	2007	-1.73E-01	2.95E+00	4.85E+00	pCi/L		3572.28	m	05/10/06 16:00	05/16/06	12066	Sec	n	No
ZN-65	2007	1.08E+01	7.99E+00	1.25E+01	pCi/L		3572.28	ml	05/10/06 16:00	05/16/06	12066	Sec		No
NR-95	2007	4.39E+00	3.05E+00	5.45E+00	pCi/L		3572.28	m	05/10/06 16:00	05/16/06	12066	Sec	- N	No
Z.R-95	2007	5.61E-01	5.29E+00	8.84E+00	pCi/L		3572.28	ml	05/10/06 16:00	05/16/06	12066	Sec	n	No
CS-134	2007	3.41E+00	6.66E+00	5.39E+00	pCi/L		3572.28	ml	05/10/06 16:00	05/16/06	12066	Sec	n	No
CS-137	2007	5.59E-02	3.38E+00	5.53E+00	pCi/L		3572.28	Ш	05/10/06 16:00	05/16/06	12066	Sec	n	No
BA-140	2007	8.66E+00	1.36E+01	2.33E+01	pCi/L		3572.28	m	05/10/06 16:00	05/16/06	12066	Sec	D	No
LA-140	2007	-1.92E+00	4.56E+00	7.28E+00	pCi/L		3572.28	ml	05/10/06 16:00	05/16/06	12066	Sec	D	No
Sample ID: WG	-BW-051006	-11023			Collec	t Start: 0	5/10/2006 16	:35		Matrix: G	ound Wate			(MG)
Station:					Collec	t Stop:			-	Volume:				
Description:					Receiv	e Date: 0	5/12/2006		W %	oisture:				
LIMS Number: L28	509-15													
Dedication	sOD#	Activity	Uncertainty	MDC	Ilnits	Run #	Aliquot	Aliquot	Reference Date	Count Date	Count Time	Count Units	Flag V:	ilues
Naujoliucijue	100	COIIC	2 Olyma	>		2							T T	
SAMPLE	NA													_

Flag Values

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Compound/Analyte not detected or less than 3 sigma 1 1

Sample spilled at laboratory. Analysis cancelled

Comment:

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery ll

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11 U* High L H

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Bolded text indicates reportable value. II

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

L28609 46 of 158

BROWN ENGINEERING, INC. A Teledyne Technologies Company

Kathy Shaw

BROWN ENGINEERING, INC. A Teledyne Technologies Company

L28609

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG-	BW-051006	-JL-025			Collect	: Start: 05	/10/2006 17:2	25		Matrix: Gr	ound Wate	L		(MG)
Station:					Collect	t Stop:				olume:				
Description:					Receive	Date: 05	112/2006		% M0	oisture:				
LIMS Number: L286	09-16													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag	Values
1.3	2010	-5 54F+01	1_00E+02	1.71E+02	pCi/L		10	ml		05/18/06	60	M	U	
TOTAL SR	2018	9.26E-01	7.56E-01	1.18E+00	pCi/L		450	ml	05/10/06 17:25	05/19/06	400	M	n	
K-40	2007	7.38E+01	3.50E+01	3.16E+01	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec	+	Yes
MN-54	2007	3.05E-01	- 1.87E+00	3.11E+00	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec		No
CO-58	2007	5.53E-01	1.97E+00	3.24E+00	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec	D	No
EE_50	2007	2.06E+00	3.82E+00	6.43E+00	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec		No
CD-60	2007	-1.46E-01	2.04E+00	3.37E+00	pCi/L		3544.22	m	05/10/06 17:25	05/16/06	32000	Sec	n	No
ZN-65	2007	4.65E+01	5.87E+00	1.08E+01	pCi/L		3544.22	lm	05/10/06 17:25	05/16/06	32000	Sec		No
NB-95	2007	8.66E+00	2.52E+00	3.96E+00	pCi/L		3544.22	lm	05/10/06 17:25	05/16/06	32000	Sec	*	No
ZR-95	2007	4.30E-01	3.63E+00	5.52E+00	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec	D	No
CS-134	2007	4.39E+01	4.09E+00	5.73E+00	pCi/L		3544.22	ш	05/10/06 17:25	05/16/06	32000	Sec		No
CS-137	2007	2.39E+00	1.95E+00	3.35E+00	pCi/L		3544.22	ш	05/10/06 17:25	05/16/06	32000	Sec	D	No
BA-140	2007	6.47E+00	8.40E+00	1.41E+01	pCi/L		3544.22	m	05/10/06 17:25	05/16/06	32000	Sec	n	No
LA-140	2007	3.60E-02	3.11E+00	5.14E+00	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec	n	No
TH-228	2007	2.13E+01	3.07E+00	5.22E+00	pCi/L		3544.22	ml	05/10/06 17:25	05/16/06	32000	Sec	+	Yes

Flag Values U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery I

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Bolded text indicates reportable value.

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

(MG) No Yes β No å å ů No ů å Flag Values \supset D D D D D þ D D D þ D Units Count Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Σ Σ Ground Water 11480 11480 11480 11480 11480 11480 11480 11480 11480 Count Time 11480 400 60 05/16/06 02/16/06 05/16/06 05/16/06 05/16/06 05/16/06 05/16/06 05/16/06 05/16/06 05/19/06 05/16/06 05/18/06 Count Date Matrix: Volume: % Moisture: 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 05/11/06 09:25 Reference Date Aliquot Units EEE E Ē Ξ Ē E Ē Ē E E Collect Start: 05/11/2006 09:25 Aliquot Volume 3480.01 3480.01 3480.01 3480.01 3480.01 Receive Date: 05/12/2006 3480.01 3480.01 3480.01 3480.01 3480.01 450 10 Collect Stop: Run # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 5.47E+00 1.65E+02 1.66E+00 4.93E+00 4.42E+00 1.09E+01 6.49E+00 1.17E+01 8.73E+00 5.43E+00 5.55E+00 2.10E+01 MDC 2.84E+00 3.20E+00 5.51E+00 3.29E+00 1.01E+02 6.25E+00 8.42E+00 5.46E+00 1.33E+01 2.88E+00 Uncertainty 2.94E+00 9.54E-01 2 Sigma 3.87E+00 2.45E+00 -1.13E+00 -1.29E+00 -2.58E+00 1.09E+00 -9.83E-03 7.34E+00 1.30E+00 -4.94E+00 5.80E-01 1.78E+01 Activity Conc WG-BW-051106-JL-027 2010 2018 2007 2007 2007 2007 2007 2007 SOP# 2007 2007 2007 2007 L28609-17 Sample ID: LIMS Number: Station: Description: Radionuclide **FOTAL SR** CS-134 CS-137 BA-140 **MN-54** CO-58 CO-60 ZN-65 NB-95 ZR-95 FE-59 H-3

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Sec

11480

05/16/06

05/11/06 09:25

E

3480.01

pCi/L

7.32E+00

4.97E+00

-4.51E+00

2007

LA-140

Flag Values 11

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Compound/Analyte not detected or less than 3 sigma Ш

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma H

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Activity concentration exceeds customer reporting value 11

MDC exceeds customer technical specification 11 High Spec ЪΞ

Low recovery It

Bolded text indicates reportable value. High recovery H

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company

Kathy Shaw

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Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

Sample ID: Wo	G-BW-051106	-JL-029			Collec	t Start: 0.	5/11/2006 10:	00		Matrix: GI	ound Wat	er		(MG)
Station:					Collec	t Stop:				Volume:				
Description:					Receive	e Date: 0	5/12/2006		N %	foisture:				
LIMS Number: L2	8609-18													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag	Values
H_3	2010	3.11E+02	1.18E+02	1.63E+02	pCi/L		10	Ш		05/19/06	60	М	+	
TOTALSR	2018	-1.00E-01	9.18E-01	1.52E+00	pCi/L		450	m	05/11/06 10:00	05/19/06	400	M	n	
MN-54	2007	2.27E-01	2.75E+00	4.86E+00	pCi/L		3630.49	ml	05/11/06 10:00	05/16/06	11540	Sec	n	No
CO-58	2007	-1.72E-01	2.46E+00	4.23E+00	pCi/L		3630.49	m	05/11/06 10:00	05/16/06	11540	Sec	n	No
EE-59	2007	2.31E+00	5.03E+00	9.15E+00	pCi/L		3630.49	ш	05/11/06 10:00	05/16/06	11540	Sec	n	No
<u>CO-60</u>	2007	-1.05E+00	2.76E+00	4.75E+00	pCi/L		3630.49	ш	05/11/06 10:00	05/16/06	11540	Sec	n	No
ZN-65	2007	5.87E+00	6.73E+00	1.08E+01	pCi/L		3630.49	ml	05/11/06 10:00	05/16/06	11540	Sec	N	No
NR-95	2007	4.25E-01	2.91E+00	5.04E+00	pCi/L		3630.49	m	05/11/06 10:00	05/16/06	11540	Sec	n	No
ZR-95	2007	-1.03E+00	4.93E+00	8.37E+00	pCi/L		3630.49	m	05/11/06 10:00	05/16/06	11540	Sec	D	No
CS-134	2007	6.22E+00	3.68E+00	5.97E+00	pCi/L		3630.49	ш	05/11/06 10:00	05/16/06	11540	Sec	*N	No
CS-137	2007	6.60E-01	2.91E+00	5.11E+00	pCi/L		3630.49	'n	05/11/06 10:00	05/16/06	11540	Sec	n	No
BA-140	2007	8.73E+00	1.22E+01	2.22E+01	pCi/L		3630.49	m	05/11/06 10:00	05/16/06	11540	Sec	n	No
I.A-140	2007	2.60E+00	3.60E+00	6.91E+00	pCi/L		3630.49	Ш	05/11/06 10:00	05/16/06	11540	Sec	D	No

Flag Values U =

Compound/Analyte not detected or less than 3 sigma 1

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification ||

11

11 + High L H

11 11

Bolded text indicates reportable value. Low recovery High recovery

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum





Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESI	PBRAID-06							
Sample ID: Station:	WG-BW-051106	-JL-031			Collect	t Start: 0	5/11/2006 10	:05		Matrix: Gr /olume:	ound Wate	ST		MG)
Description:					Receive	Date: 0	12/2006		W %	oisture:				
LIMS Number:	L28609-19													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Value	
Н-3	2010	4.41E+02	1.31E+02	1.73E+02	pCi/L		10	ml		05/19/06	60	X	+	
TOTALSR	2018	-5.31E-01	1.00E+00	1.68E+00	pCi/L		450	ml	05/11/06 10:05	05/19/06	400	Σ	n	
MN-54	2007	9.84E-01	3.42E+00	5.74E+00	pCi/L		3661	m	05/11/06 10:05	05/16/06	11174	Sec	N N	0
CD-58	2007	3.26E+00	3.52E+00	6.13E+00	pCi/L		3661	ml	05/11/06 10:05	05/16/06	11174	Sec	N N	0
EE-59	2007	9.83E-01	6.49E+00	1.09E+01	pCi/L		3661	Ш	05/11/06 10:05	05/16/06	11174	Sec		0
CD-60	2007	-1.58E+00	3.57E+00	5.60E+00	pCi/L		3661	m	05/11/06 10:05	05/16/06	11174	Sec		0
ZN-65	2007	1.18E+01	8.85E+00	1.40E+01	pCi/L		3661	ml	05/11/06 10:05	05/16/06	11174	Sec		0
NB-95	2007	1.38E+00	3.55E+00	6.01E+00	pCi/L		3661	ml	05/11/06 10:05	05/16/06	11174	Sec	N N	0
ZR-95	2007	-2.88E+00	6.12E+00	9.83E+00	pCi/L		3661	m	05/11/06 10:05	05/16/06	11174	Sec		0
CS-134	2007	6.39E+00	4.89E+00	7.30E+00	pCi/L		3661	m	05/11/06 10:05	05/16/06	11174	Sec		0
CS-137	2007	-4.30E-01	3.61E+00	5.84E+00	pCi/L		3661	Ш	05/11/06 10:05	05/16/06	11174	Sec	n	0
BA-140	2007	-1.72E+00	1.55E+01	2.53E+01	pCi/L		3661	ml	05/11/06 10:05	05/16/06	11174	Sec		0
LA-140	2007	5.16E+00	4.65E+00	8.51E+00	pCi/L		3661	m	05/11/06 10:05	05/16/06	11174	Sec		0

Flag Values II D +

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma

11 11 11

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification U* High L H

Low recovery High recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company



Conestoga-Rovers & Associates

Kathy Shaw					EX001-3E	SPBKAID-00						
Sample ID:	WG-BW-051100	5-JL-035			Collect Start:	05/11/2006 12	:05		Matrix: Gr	ound Wat	L.	M)
Station: Description:					Collect Stop. Receive Date:	05/12/2006		W %	oisture:			
LIMS Number:	L28609-20											
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values
H-3	2010	-2.93E+01	1.04E+02	1.74E+02	pCi/L	10	m		05/19/06	60	M	U
TOTAL SR	2018	-2.92E-01	9.68E-01	1.62E+00	pCi/L	450	m	05/11/06 12:05	05/19/06	400	M	D
MN-54	2007	2.23E+00	2.31E+00	3.99E+00	pCi/L	3603.96	Ш	05/11/06 12:05	02/16/06	32000	Sec	U No
CO-58	2007	1.63E+00	2.27E+00	3.89E+00	pCi/L	3603.96	ml	05/11/06 12:05	05/16/06	32000	Sec	U No
EE-59	2007	1.32E+00	4.85E+00	8.01E+00	pCi/L	3603.96	ml	05/11/06 12:05	05/16/06	32000	Sec	U No
CO-60	2007	-8.17E-01	2.35E+00	3.78E+00	pCi/L	3603.96	ml	05/11/06 12:05	05/16/06	32000	Sec	U No
ZN-65	2007	1.56E+01	6.01E+00	9.82E+00	pCi/L	3603.96	ml	05/11/06 12:05	05/16/06	32000	Sec	U* No
NB-95	2007	-2.54E-01	2.41E+00	3.89E+00	pCi/L	3603.96	m	05/11/06 12:05	05/16/06	32000	Sec	U No
ZR-95	2007	8.83E-01	4.10E+00	6.73E+00	pCi/L	3603.96	ml	05/11/06 12:05	05/16/06	32000	Sec	U No
CS-134	2007	9.95E+00	4.27E+00	4.23E+00	pCi/L	3603.96	ml	05/11/06 12:05	05/16/06	32000	Sec	U* No
CS-137	2007	1.49E+00	2.44E+00	4.10E+00	pCi/L	3603.96	m	05/11/06 12:05	05/16/06	32000	Sec	U No
BA-140	2007	3.13E-01	1.01E+01	1.68E+01	pCi/L	3603.96	m	05/11/06 12:05	05/16/06	32000	Sec	U No
1 A_1A0	2002	2.46E+00	3.64E+00	6.30E+00	pCi/L	3603.96	ш	05/11/06 12:05	05/16/06	32000	Sec	U No

Compound/Analyte not detected or less than 3 sigma Flag Values U =

11

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification I

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11 H High L H

Low recovery High recovery 11 11

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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QC Results Summary

QC Summary Report 5/19/2006 3:50:36P	X	for L28609				ATELEDYN BROWN ENGI A Teledyne Technologi	NEERING se company	
			Н-3					
			Method Blank Summ	ıary				
TBE Sample IDRadionuclideWG3994-1H-3	<u>Matrix</u> WO	Count Date/Time 05/17/2006 21:45		Blank Result < 1.590E+00	<u>Units</u> pCi/Total		Qualifier P/F U P	
WG3978-1	OM	05/17/2006 12:59		< 1.810E+00	pCi/Total		₽	
			LCS Sample Summ	ary				
TBE Sample IDRadionuclideWG3978-2H-3	<u>Matrix</u> WO	Count Date/Time 05/18/2006 6:21	Spike Value 5.05E+002	LCS Result 4.240E+02	<u>Units</u> pCi/Total	<u>Spike Recovery</u> 84.0	RangeQualifierP/F70-130+P	
Spike ID: 3H-041706-1 Spike conc: 5.05E+002 Spike Vol: 1.00E+000 WG3994-2	OM	05/18/2006 0:03	5.05E+002	4.460E+02	pCi/Total	88.4	70-130 + P	
Spike ID: 3H-041706-1 Spike conc: 5.05E+002 Spike Vol: 1.00E+000								
			Duplicate Summar	ry				
TBE Sample IDRadionuclideWG3978-5H-3L28597-7	<u>Matrix</u> WG	Count Date/Time 05/17/2006 13:56	Original Result < 1.820E+02	DUP Result < 1.710E+02	<u>Units</u> pCi/L	RPD	Range Qualifier P/F <30 ** NE	1
 + Positive Result U Compound/analyte was analy * < 5 times the MDC are not ev ** Nuclide not detected *** Spiking level < 5 times activi P Pass F Fail Not evaluated 	zed, peak 1 valuated ty	not identified and/or	not detected above MDC				Page: 1	120009 22 OL
NE INUL EVALUATOR								

L28609 53 of 158

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for

L28609



5/19/2006

L28609

H-3

Associated Samples for

WG3978

SAMPLENUM

L28609-2 L28609-3 L28609-1

WG-BW-051006-MS-016 WG-BW-051006-MS-018 WG-BW-051006-MS-014 CLIENTID



2 Page:

Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated Nuclide not detected

Spiking level < 5 times activity

Pass

Fail + D * * * a r Z

Not evaluated

QC Summ	ary Report 2006 3:50:36PM	ų	for	L28609				Ŷ	A TELEDYN BROWN ENGI A Teledyne Technologie	NEERING 55 Company	
					TOTAL S	SR					
					Metho	od Blank Summ	ary				
<u>TBE Sample ID</u> WG4000-1	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WO	Count I 05/19/2	Date/Time 006 2:51			Blank Result < 6.330E-01	<u>Units</u> pCi/Total		Qualifier <u>P/F</u> U P	
					LCS	Sample Summa	ıry				
<u>TBE Sample ID</u> WG4000-2	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WO	Count] 05/19/2	Date/Time 2006 2:51	Spike Value 5.84E+001		LCS Result 5.910E+01	<u>Units</u> pCi/Total	<u>Spike Recovery</u> 101.2	RangeQualifierP/F70-130+P	
Spike ID: 90SR-C Spike conc: 2.34E- Spike Vol: 2.50E-	11905 +002 001										
					Duj	plicate Summar	y				
TBE Sample ID WG4000-3 L28609-1	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WG	Count] 05/19/2	Date/Time 2006 2:51		Original Result < 5.960E-01	DUP Result < 7.250E-01	<u>Units</u> pCi/L	RPD	Range Qualifier <u>P/F</u> <30 ** NE	1
+ Positive U Compc * < 5 tim ** Nuclid	e Result und/analyte was analyze tes the MDC are not eva e not detected	ed, peak r Iluated	lot identif	fied and/or no	ot detected abo	we MDC				Page: 3	L28609
*** Spiking P Pass F Fail NE Not ev	g level < 5 times activity aluated	~									55 Oİ

Report	
Summary	
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L28609 for



SR-90 (FAST) L28609

WG4000 **Associated Samples for**

SAMPLENUM	CLIENTID
·L28609-1	WG-BW-051006-MS-014
L28609-2	WG-BW-051006-MS-016
L28609-3	WG-BW-051006-MS-018
L28609-4	WG-BW-051006-MS-020
L28609-5	WG-BW-051006-MS-022
L28609-6	WG-BW-051006-MS-024
L28609-7	WG-BW-051006-MS-026
L28609-8	WG-BW-051006-MS-028
L28609-9	WG-BW-051106-MS-030
L28609-10	WG-BW-051006-JL-013
L28609-11	WG-BW-051006-JL-015
L28609-12	WG-BW-051006-JL-017
L28609-13	WG-BW-051006-JL-019
L28609-14	WG-BW-051006-JL-021
L28609-16	WG-BW-051006-JL-025
L28609-17	WG-BW-051106-JL-027
L28609-18	WG-BW-051106-JL-029
L28609-19	WG-BW-051106-JL-031
L28609-20	WG-BW-051106-JL-035

Positive Result

Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated

Nuclide not detected

+ D * * * a H Z

Spiking level < 5 times activity Pass Fail Not evaluated





4 Page:

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Raw Data

Customer: Exelon Work Order: 128609

Page: 1

nalyst	R.T	2	БJ	ЕJ	ВJ		Б Ц		с Ч	F	24	R.T	ì	EJ		F	2		ГI		ВJ		БJ		БJ		L2	28	509 교	9 !	58	of	158
Decay & E. Ingrowth A	Factor	T 7 .	.208	.211	.21		.211		.21	2.1.2	TTZ.	205		.208			.206		.22		.22		.221		.22		.228		.231				
q Bff	in)	0	60	60	60		60		60	4	0	202	0	60	2		60		60		60		60		60		60		60				
Bka Bk	unts dt (m	76.1	1.92	1.92	1.92		1.92		1.92		1.92	50 5	1.7 <i>c</i>	1 92			1.92		1.92		1.92		1.92		1.92		1.92		1.92				
Samole	dt (min) co	60	60	60	60	:	60		60		60	c,	0	50	2		54.61		60		60		60		60		60		60				
Total	counts	116	68	133	122		91		130		114		Tea		# T C		364		105		149		134		66		121		211				
ter ter	E E	LS7	LS7	LS7	1.87		LS7		LS7		LS7		LS7	5	127		LS7		LS7		LS7		LS7		LS7		LS7		LSJ				
4	ate/time	18-may-06 07:44	18-may-06 08:47	18-may-06 09:51	18_max_06	10:54	18-may-06 11:57		18-may-06 13:01		18-may-06 14:04		18-may-06 15:08		18-may-Ub 16:11		18-may-06	8T:8T	18-may-06	19:16	18-may-06	20:20	18-may-06	21:24	18-may-06	22:27	18-may-06	23:31	19-may-06	±C:00			
-	ount eight Recovery I										_				~										0				0				
	Milking M Date/time W	0	0	0		5	0		0		D	- ACREAN	0		0		5		0														
IESPBRAID-06	Scavenge Date/time				ł		*	*		*		*								*		+		•	•	+	ĸ	•					
roject : <u>EX001-</u>	Volume/ Aliquot	10 ml	MDC: 1.79E+02 '	MDC: 1.81E+02	LU ML MDC: 1.78E+02	10 ml	MDC: 1.79E+02	TU ML MDC 1 78E+02		MDC: 1.79E+02	10 ml	MDC: 1.79E+02	10 ml	MDC: 1.83E+02		MDC: 1.81E+02		10 ml MDC: 1 918-02	PUC: 1.718104	10 ml MDC: 1 71E+02	FUUC: 1. / 181702	10 ml MDC: 1 719402	MUC: 1.11E+02	10 ml	MUC: 1.15+02	10 ml	MDC: T./TE+UZ	10 ml	MUC: 1.638+04	10 ml MDC: 1.63E+02			
е I	Reference Date/time		1.09E+02	1.03E+02	1.12E+02		1.1E+02	1 038103	1	1.126+02		1.08E+02		1.24E+02		1.5E+02			T. / ZE+UZ		70+9T0 · T		70+377.7		1.07 <u>8</u> +02		1E+02		7.01210.1	1.18E+02			
	Run Analysis #	- H-3 -MS-014	3E+00 Error: 1 H-3 -MS-016	.56E+01 Error: H-3	-MS-018 41E+01 Error: 1	H-3 -MS-020	36E+01 Error: H-3	-MS-022		-MS-024 15E+01 Error:	-WS-026	.28E+00 Error:	H-3 -MS-030	96E+02 * Error:	H-3	5-JL-013 198402 * Rrror:	H-3	5-JL-015	.04E+03 * Error: H-3	5-JL-017	5.48K+UL EFFOF: H-3		. <u>15E+U2 Error:</u> H_3	5-JL-021	.52E+01 Error: H-3	5-JL-025	5.54E+01 Error: H-3	6-JL-027	.78E+01 Error: H-3	6-JL-029 .11E+02 * Error:			
Nuclide: <u>H-3</u>	Sample ID	L28609-1 WG-BW-051006	Activity: 4. L28609-2 WG-WW-051006	Activity: -9 L28609-3	WG-BW-051006 Activity: 6.	L28609-4 WG-BW-051006	<u>Activity: 2.</u> L28609-5	WG-BW-051006	ACCIVICY: -0 L28609-6	WG-BW-051006	L28609-7	Activity: -4	L28609-9 WG-BW-051106	Activity: 1.	L28609-10	WG-BW-051006	L28609-11	WG-BW-051006	Activity: 1. L28609-12	WG-BW-051006	ACTIVITY:	WG-BW-051006	Activity: 1.	WG-BW-051006	Activity: 6. L28609-16	WG-BW-051006	Activity: -	WG-BW-05110(<u>Activity: 1</u> L28609-18	WG-BW-051100 Activity: 3.			

	Эесау &	Ingrowth Analyst Factor	рд Д		БJ			
	н	BÉÉ.	.217		.216			
		Bkg dt (min)	60		60	;		
N		Bkg ounts	1.92		1.92	2 - -		
Page:		Sample dt (min) c	60		60	5		
		Total counts	242		107	204		
		Counter ID	LS7		10,	101		
		Count (Date/time	19-may-06	01:38		19-10-10 19-19-10	71:70	
		Recoverv						
		Mount Weight	0			0		
	1	Milking Tata/time	דמרכן רבווכ					
	BESPBRAID-06	Scavenge	חמרב/ רחוום					*
stomer: <u>Exelon</u>	oject : <u>EX001-</u> .	Volume/	TOUPLIE	10 ml	MDC: 1.73E+02		10 ml	MDC: 1.74E+02
Cu	Pr	Reference	Date/time		1.31E+02			1 04FL07
6		Analysis	н-3	31	2 * Error:	н-3	135	
: <u>L2860</u>	 Э	Run	# 6	06-JL-0	4.41E+0	0	06-JL-0	. 400 0
Work Order	Nuclide: <u>H</u>	Sample ID	Client ID T.28609-1	WG-BW-0511	Activity:	L28609-2	WG-BW-0511	

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GK GK GK НB ų GK Ц Analyst Яg ВR Яg GR Яg GK В GK Ч Ingrowth .999 .999 Decay & .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 Factor .345 .35 . .353 .335 .358 .345 .344 .343 .346 .343 .344 .343 .347 .354 .352 .354 Eff. 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 400 dt (min) Bkg 299 340 363 321 294 284 289 277 307 342 289 312 264 262 291 292 counts Bkg 400 400 400 400 400 400 400 400 400 400 400 400 dt (min) 400 400 400 400 Sample 273 318 338 282 337 362 counts 298 266 241 293 299 265 307 231 253 Total 252 Counter хзв X3C X4A X4C X4D X3A X2C TD Y3A XIC XID X2A X2B X2D X1B УЗВ Y3D 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:47 19-may-06 02:51 19-may-06 02:47 19-may-06 02:51 19-may-06 19-may-06 19-may-06 19-may-06 Recovery Date/time 02:47 02:47 Count 02:51 02:47 36.83 109.68 112.37 85.22 41.67 36.83 62.63 48.66 71.51 43.01 36.83 52.15 83.06 51.61 96.51 96.24 Weight Mount 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Milking Date/time Scavenge Date/time Project : EX001-3ESPBRAID-06 MDC: 1.57E+00 MDC: 1.18E+00 MDC: 1.66E+00 MDC: 6.75E-01 MDC: 1.38E+00 MDC: 1.59E+00 MDC: 1.65E+00 MDC: 8.78E-01 MDC: 6.62E-01 Customer: Exelon MDC: 1.03E+00 MDC: 6.51E-01 MDC: 5.12E-01 MDC: 1.12E+00 MDC: 4.88E-01 MDC: 8.38E-01 MDC: 5.96E-01 Ľ 450 ml 450 ml E 450 ml 450 ml Volume/ Aliquot 딭 450 ml 450 ml 450 ml 450 ml E Ľ 450 ml 450 ml 450 ml 450 450 450 450 450 11-may-06 10-may-06 14:00 10-may-06 11-may-06 10-may-06 Reference Date/time 16:00 09:25 MG-BW-051006-JL-013 11:15 Activity: -2.37E-01 Error: 8.31E-01 14:30 17:25 Activity: -1.29E+00 Error: 9.54E-01 09:15 Activity: 3.37E-01 Error: 1.02E+00 L28609-13 TOTAL SR 10-mi Error: 9.46E-01 Activity: 5.92E-01 Error: 5.57E-01 Error: 7.56E-01 WG-BW-051006-MS-020 13:45 Activity: -3.25E-01 Error: 3.83E-01 15:05 Activity: -1.42E-01 Error: 5.03E-01 L28609-7 TOTAL SR 10-me 16:05 Activity: 2.77E-01 Error: 3.08E-01 L28609-8 TOTAL SP 10-16:40 Activity: -1.49E-01 Error: 3.04E-01 Error: 3.89E-01 12:10 Activity: -8.07E-01 Error: 9.36E-01 14:00 Activity: -8.55E-01 Error: 6.41E-01 Activity: -2.04E-01 Error: 4.01E-01 11:35 10:10 Activity: -2.92E-01 Error: 3.49E-01 10:50 Activity: -1.23E-01 Error: 6.2E-01 TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR Analysis Nuclide: <u>SR-90 (FAST)</u> WG-BW-051006-JL-017 WG-BW-051006-JL-019 WG-BW-051006-JL-021 WG-BW-051006-JL-015 Activity: -2.36E-01 WG-BW-051006-JL-025 WG-BW-051106-JL-027 WG-BW-051106-MS-030 Activity: -3.07E-01 WG-BW-051006-MS-026 WG-BW-051006-MS-028 WG-BW-051006-MS-018 WG-BW-051006-MS-016 WG-BW-051006-MS-022 WG-BW-051006-MS-024 Activity: 9.26E-01 WG-BW-051006-MS-014 Work Order: L28609 Run # L28609-16 L28609-14 L28609-10 L28609-11 L28609-12 L28609-17 L28609-6 L28609-5 L28609-9 Sample ID Client ID L28609-4 L28609-1 L28609-2 L28609-3

Page:

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L28,609

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Decay & Ingrowth Analyst ВR GK GK .999 .999 .999 Factor .345 .344 .354 Eff. 400 400 400 dt (min) Bkg 264 289 277 counts Bkg 4 Page: Sample dt (min) 400 400 400 counts 259 263 Counter Total 264 X2A X2B X2C β 19-тау-06 16:19 19-may-06 16:19 19-may-06 Mount Count Weight Recovery Date/time 16:19 Count 35.22 34.95 34.14 0 0 0 Date/time Scavenge Milking Date/time Date/tin Project : EX001-3ESPBRAID-06 MDC: 1.62E+00 * MDC: 1.68E+00 * Customer: Exelon MDC: 1.52E+00 Aliquot Volume/ 450 ml 450 ml 450 ml Activity: -5.31E-01 Error: 1E+00 L28609-20 TOTAL SR 11-may-06 WG-BW-051106-JL-035 12:05 Activity: -2.92E-01 Error: 9.68E-01 M 11-may-06 10:00 Error: 9.18E-01 <u>N</u> TOTAL SR 11-may-06 10:05 Reference Date/time TOTAL SR TOTAL SR Run Analysis Nuclide: SR-90 (FAST) WG-BW-051106-JL-029 WG-BW-051106-JL-031 Work Order: <u>L28609</u> Activity: -1E-01 # Sample ID F Client ID L28609-18 L28609-19

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Sec	. Revie	ew: Anal	et: LII	MS: /	-	========	======================================
=== VAX TBE	===== /VMS T 23 030	eledyne Br 17322 HpGe	own Eng. *******	Laborat ** Aqui	cory G Lsitio	amma Rep n Date/T 	ime: 15-MAY-2006 13:18:23.35
 LIM	s No.,	Customer	Name, Cli	ent ID	: L286	09-1 WG	BRAID
Sam Sam Qua Sta Enc MDA	ple ID ple Ty ntity art Cha Chanr A Const) : 23I pe : WG : 3.7 annel : 50 hel : 409 cant : 0.6	28609-1 72980E+00 Ener 90 Pk S 00 Lib:	L Syy Tol Srch Se rary Us	: 1. ns: 5. ed: L	S G 50000 F .00000 I IBD	mple Date: 10-MA1-2000 1001 eometry : 2335L090704 RGFILE : 23BG050506MT eal Time : 0 03:30:08.88 Live time : 0 03:30:00.00
Ξ.	- T+	Fnerav	Area	Bkgnd	FWHM	Channel	%Eff Cts/Sec %Err Fit
F	1 10 2 10 3 10 4 10 5 10 6 0 7 0 8 0 9 0 11 0 12 0 13 0 14 0 15 0 16 0 17 0	33.80* 35.62* 37.67* 41.43* 42.44* 63.32* 92.97* 198.19* 238.00* 295.27* 351.69* 609.09* 1120.03* 1460.44* 1598.04 1743.26 1764.62* *" = Peak	38 40 3 7 56 49 121 107 55 42 104 78 39 56 17 13 18 area was	12 108 127 146 306 430 585 287 243 212 152 83 33 30 5 14 18 modifi	1.17 2.16 1.48 0.93 2.43 1.10 1.12 1.13 1.06 1.03 1.06 1.44 1.34 1.79 1.16 4.96 1.04 ed by	67.76 71.40 75.50 83.00 85.02 126.74 185.98 396.23 475.80 590.26 703.03 1217.61 2239.57 2920.84 3196.29 3487.08 3529.85 backgrou	9.40E-02 2.99E-03 42.5 5.31E+00 1.24E-01 3.21E-03 87.1 1.62E-01 2.78E-04789.0 2.48E-01 5.27E-04304.5 2.74E-01 4.46E-03 55.2 9.42E-01 3.87E-03 78.7 1.70E+00 9.58E-03 43.2 1.90E+00 8.49E-03 31.2 1.73E+00 4.40E-03 55.6 1.50E+00 3.35E-03 69.9 1.32E+00 8.23E-03 25.6 8.59E-01 6.15E-03 27.2 5.53E-01 3.07E-03 36.6 4.60E-01 4.42E-03 34.7 4.31E-01 1.32E-03 35.0 4.04E-01 1.03E-03 67.1 4.00E-01 1.44E-03 63.9 nd subtraction
1	Juclide	e Line Act:	ivity Repo	ort			
		e Tune: na	tural				Uncorrected Decay Corr 2-Sigma

Nuclide	Type: nacurus	_			Uncorrected	nCi/L	%Error
Nuclide K-40 TH-228	Energy 1460.81 238.63 240.98	Area 56 55	%Abn 10.67* 44.60* 3.95	%Eff 4.595E-01 1.727E+00 1.714E+00	рС1/L 6.533E+01 4.140E+00 Lir	6.533E+01 4.161E+00 ne Not Found	69.32 111.30

Flag: "*" = Keyline

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Page : Summary of Nuclide Activity Sample ID : 23L28609-1 Acquisition date : 15-MAY-2006 13:18:23 17 Total number of lines in spectrum 15 Number of unidentified lines 11.76% Number of lines tentatively identified by NID 2 Nuclide Type : natural 2-Sigma Decay Corr Uncorrected Decay Corr pCi/L 2-Sigma Error %Error Flags 6.533E+01 4.529E+01 69.32 pCi/L Decay Hlife Nuclide 6.533E+01 K-40 1.28E+09Y 1.00 111.30 4.632E+00 4.161E+00 1.01 4.140E+00 1.91Y TH-228 _____ _____ Total Activity : 6.947E+01 6.949E+01 6.949E+01 Grand Total Activity : 6.947E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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Unidentified Energy Lines Sample ID : 23L28609-1

ItEnergyAreaBkgndFWHMChannel LeftPwCts/SecSEITSEITFHSJE1033.8038121.1767.7665262.99E-0384.99.40E-021035.62401082.1671.4065263.21E-03****1.24E-011037.6731271.4875.5065262.78E-04****2.48E-011041.4371460.9383.0065265.27E-04****2.48E-011042.44563062.4385.0265264.46E-03****2.74E-01063.32494301.10126.7412383.87E-03****9.42E-01092.971215851.12185.98181129.58E-0386.31.70E+000198.191072871.13396.2339298.49E-0362.31.90E+000295.27422121.03590.26586103.35E-03****1.50E+000351.691041521.06703.03697108.23E-0351.21.32E+000609.0978831.441217.611212106.15E-0354.48.59E-0101120.0339331.342239.572235133.07E-0373.25.53E-0101598.04<	Samp	le ID : .	231120000	-						0.17	ջբff	Flags
1033.803812 1.17 67.76 65 26 $2.99E-03$ 84.9 $9.40E-02$ 1035.6240108 2.16 71.40 65 26 $3.21E-03$ **** $1.24E-01$ 1037.673127 1.48 75.50 65 26 $2.78E-04$ **** $2.48E-01$ 10 41.43 7146 0.93 83.00 65 26 $5.27E-04$ **** $2.48E-01$ 10 42.44 56 306 2.43 85.02 65 26 $4.46E-03$ **** $2.74E-01$ 0 63.32 49 430 1.10 126.74 123 8 $3.87E-03$ **** $9.42E-01$ 0 63.32 49 430 1.10 126.74 123 8 $3.87E-03$ **** $9.42E-01$ 0 92.97 121 585 1.12 185.98 181 12 $9.58E-03$ 86.3 $1.70E+00$ 0 198.19 107 287 1.13 396.23 392 9 $8.49E-03$ 62.3 $1.90E+00$ 0 295.27 42 212 1.03 590.26 586 10 $3.35E-03$ $****$ $1.50E+00$ 0 351.69 104 152 1.06 703.03 697 10 $8.23E-03$ 51.2 $1.32E+00$ 0 120.03 39 33 1.34 2239.57 2235 13 $3.07E-03$ 73.2 $5.53E$	Tt	Enerqy	Area	Bkgnd	FWHM	Channel	Left	₽w	Cts/Sec	SELL	9 ET T	11030
	10 10 10 10 10 0 0 0 0 0 0 0 0 0 0 0 0	33.80 35.62 37.67 41.43 42.44 63.32 92.97 198.19 295.27 351.69 609.09 1120.03 1598.04 1743.26 1764.62	38 40 3 7 56 49 121 107 42 104 78 39 17 13 18	12 108 127 146 306 430 585 287 212 152 83 33 5 14 18	1.17 2.16 1.48 0.93 2.43 1.10 1.12 1.13 1.03 1.06 1.44 1.34 1.16 4.96 1.04	67.76 71.40 75.50 83.00 85.02 126.74 185.98 396.23 590.26 703.03 1217.61 2239.57 3196.29 3487.08 3529.85	65 65 65 123 181 392 586 697 1212 2235 3192 3192 3477 53523	26 26 26 26 12 9 10 10 10 10 10 13 8 14 5	2.99E-03 3.21E-03 2.78E-04 5.27E-04 4.46E-03 3.87E-03 9.58E-03 8.49E-03 3.35E-03 8.23E-03 6.15E-03 3.07E-03 1.32E-03 1.32E-03 1.44E-03	84.9 **** **** 86.3 62.3 *** 54.4 54.2 54.4 73.2 69.9 ****	9.40E-03 $1.24E-00$ $2.48E-00$ $2.74E-00$ $9.42E-00$ $1.70E+00$ $1.50E+00$ $1.50E+00$ $1.32E+00$ $8.59E-00$ $5.53E-00$ $4.31E-00$ $4.04E-00$ $4.00E-00$	2 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

17 Total number of lines in spectrum Number of unidentified lines 15 Number of lines tentatively identified by NID 2 11.76응

Nuclide Type : natural

Nuclide	Type : natu	ral	Wtd Mean	Wtd Mean Decay Corr	Decay Corr	2-Sigma	ਸੀਕਰਰ
Nuclide K-40 TH-228	Hlife 1.28E+09Y 1.91Y Total Acti	Decay 1.00 1.01 wity :	pCi/L 6.533E+01 4.140E+00 6.947E+01	pCi/L 6.533E+01 4.161E+00 6.949E+01	2-Sigma Error 4.529E+01 4.632E+00	%Error 69.32 111.30	riago

Grand Total Activity : 6.947E+01 6.949E+01

Flags:	"E" :	= Keyline not found = Manually edited	"M" = Manually accepted "A" = Nuclide specific abn. limit
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Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Idenc.					Not /MDA
Muglide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	ACC/ MDI
Nucliae			2 705F±01	0.000E+00	1.763
K-40 TH-228	6.533E+01 4.161E+00	4.529E+01 4.632E+00	7.557E+00	0.000E+00	0.551

---- Non-Identified Nuclides ----

Nuglido	Key-Line Activity K.L. (pCi/L) Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
NUCLICE	())))))))))))))))))))))))))))))))))))))			0 000E+00	0.185
	6.977E+00	2.183E+01	3.772E+01	0.000E+00	-0.290
BE-7	-3.839E+02	7.787E+02	1.322E+03	0.000E+00	-0.227
NA-24	-8.663E+00	2.250E+01	3.818E+01	0.000E+00	0.018
CR-51	7 400E - 02	2.282E+00	4.0376+00	0.000E+00	0.232
MN-54	9 942E-01	2.559E+00	4.279E+00	0.000E+00	-0.246
CO = 57	-1 058E+00	2.579E+00	4.301E+00	0.000 ± 00	0.093
0-58	7 753E-01	4.723E+00	8.353E+00	0.000 ± 00	0.374
FE-59	1.597E+00	2.233E+00	4.264E+00	0.000E+00	0.902
CO-60	9 933E+00	6.529E+00	1.101E+01	0.000E+00	-0.258
ZN-65	-1 440E+00	3.386E+00	5.585E+00	0.000 ± 00	1.997
SE-75	1 138E+01	2.936E+00	5.700E+00	0.000 ± 00	-0.573
SR-85	-2.160E+00	2.342E+00	3.770E+00	0.000 ± 00	-0.363
Y-88	-2.100E+00	2.366E+00	3.928E+00	0.000 ± 00	0.045
NB-94	1.959E - 01	2.494E+00	4.316E+00	0.0005+00	-0.076
NB-95	5.778E = 01	4.453E+00	7.606E+00	0.0000000	0.273
ZR-95	-3.182E+01	6.530E+01	1.164E+02	0.000 ± 00	0.085
MO-99	2.861E-01	2.648E+00	4.530E+00	0.000 ± 00	0.072
RU-103	2.783E+00	2.202E+01	3.856E+01	0.000E+00	0.277
RU-106	2.765 ± 100	2.336E+00	4.172E+00	0.000E+00	-0.093
AG-110m	1.13 ± 00	3.287E+00	5.582E+00	0.000E+00	-0.788
SN-113	-5.215001	3.302E+00	4.432E+00	0.000E+00	-0.485
SB-124	= 3.491E+00	6.870E+00	1.127E+01	0.000E+00	-0.291
SB-125	-5.4030+00	3.047E+01	5.059E+01	0.000E+00	0.112
TE-129M	-1.4740+01	3.687E+00	6.388E+00	0.000E+00	0.827
I-131	F 021E+00	3.853E+00	6.073E+00	0.000E+00	0.509
BA-133	5.0210+00	3.253E+00	5.000E+00	0.000 ± 00	0.124
CS-134	2.547E+00	3.135E+00	5.466E+00	0.000E+00	0.390
CS-136	1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	2.554E+00	4.619E+00	0.000E+00	-0.312
CS-137	1 221E+00	2.542E+00	4.261E+00	0.000E+00	0.127
CE-139	-1.3312+00	1.117E+01	1.971E+01	0.000E+00	-0.213
BA-140	2.4960+00	3.652E+00	6.208E+00	0.000E+00	-0 400
LA-140	-1.3240+00	4.873E+00	8.178E+00	0.000E+00	-1 007
CE-141	-3.2710+00	2.064E+01	3.250E+01	0.000E+00	-0 143
CE-144		8.848E+00	1.277E+01	0.000E+00	-0.496
EU-152	-1.825E+00	5.393E+00	8.718E+00	0.000E+00	0.129
EU-154	-4.326E+00	6.398E+01	1.119E+02	0.000E+00	-0.418
RA-226		9 131E+00	1.562E+01	0.000E+00	-0.418
AC-228	-6.525E+UU	9.116E+00	1.559E+01	0.0008+00	-0.446
TH-232	-6.514E+UU	2.051E+01	3.429E+01	0.0008+00	-0.540
U-235	-1.18/E+U1	2.863E+02	5.149E+02	0.000E+00	0.140 0.116
U-238	7.22/E+UI	1.475E+01	2.214E+01	0.000E+00	0.410
AM-241	9.208E+00	1.1/00/01			

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			_		0609-1 WG BR
	0F /1E /2006 -	16.48.05/10/20)06 10:10, 3	.730E+00,62	obuj i ne bit
A,23L28609-1	,05/15/2000 .	.06/2	24/2005 07:59,	2335L090704	
B,23L28609-1	,LIBD	A 529F±01	3,705E+01,,	1.763	
C,K-40 ,YES,	6.533E+01,	4.5295+017	7 557E+00,,	0.551	
C.TH-228 ,YES,	4.161E+00,	4.6326+00,	3 772E+01.	0.185	
C BE-7 ,NO ,	6.977E+00,	2.1836+01,	1 222E + 03	-0.290	
C NA - 24, NO	-3.839E+02,	7.7878+02,	1.522 ± 10077	-0.227	
C CP = 51 NO	-8.663E+00,	2.250E+01,	3.010ET01/7	0.018	
C, CIC J = 100	7.400E-02,	2.282E+00,	4.03/E+00,,	0 232	
C, MI = 54 MO	9.942E-01,	2.559E+00,	4.2/9E+00,,	-0.246	
C, CO-57, NO,	-1.058E+00,	2.579E+00,	4.301E+00,,	-0.240	
C, CO-58 , NO ,	7 753E-01,	4.723E+00,	8.353E+00,,	0.095	
C, FE-59, NO,	1.597E+00.	2.233E+00,	4.264E+00,,	0.374	
C, CO-60 , NO ,	1.007 ± 1007	6.529E+00,	1.101E+01,,	0.902	
C,ZN-65 ,NO ,	9.935H1007	3.386E+00,	5.585E+00,,	-0.258	
C,SE-75 ,NO ,	-1.440 ± 00	2 936E+00,	5.700E+00,,	1.997	
C,SR-85 ,NO ,	1.138E+01,	2.342E+00.	3.770E+00,,	-0.573	
C,Y-88 ,NO ,	-2.160E+00,	2.3420.00	3.928E+00,,	-0.363	
C,NB-94 ,NO ,	-1.424E+00,	2.300 ± 007	4.316E+00,,	0.045	
C.NB-95 ,NO ,	1.959E-01,		7 606E+00,,	-0.076	
C.ZR-95 ,NO ,	-5.778E-01,	4.453E+00,	1.164E+02.	0.273	
C_MO-99 ,NO ,	3.182E+01,	6.530E+01,	1.530E+00.	0.085	
C RU-103 , NO ,	3.861E-01,	2.648E+00,	2.550D+0077	0.072	
C $RU = 106$ NO	2.783E+00,	2.202E+01,	3.0500+01//	0.277	
$C \Lambda G = 110 \text{m}$ NO	1.154E+00,	2.336E+00,	4.1/25+00,,	-0.093	
$C, AG \pm 113$ NO .	-5.213E-01,	3.287E+00,	5.5826+00,,	-0 788	
C, SN-113, NO	-3.491E+00,	3.302E+00,	4.432E+00,,	-0.485	
C, SB-124, NO	-5,463E+00,	6.870E+00,	1.1276+01,,	0.291	
C,SB-125 ,NO ,	-1.474E+01,	3.047E+01,	5.059E+01,,	-0.251	
C, TE = 129M, NO,	7 136E-01,	3.687E+00,	6.388E+00,,	0.112	
C,1-131 ,NO ,	5.021E+00	3.853E+00,	6.073E+00,,	0.027	
C, BA-133 , NO ,	2.547E+00	3.253E+00,	5.000E+00,,	0.509	
C,CS-134 ,NO ,	2.5471007	3.135E+00,	5.466E+00,,	0.124	
C,CS-136 ,NO ,	6.764E-01	2 554E+00,	4.619E+00,,	0.390	
C,CS-137 ,NO ,	1.801E+00,	2.5012+00	4.261E+00,,	-0.312	
C,CE-139 ,NO ,	-1.331E+00,	1.117E+01.	1.971E+01,,	0.127	
C,BA-140 ,NO ,	2.496E+00,	1.117000	6,208E+00,,	-0.213	
C,LA-140 ,NO ,	-1.3248+00,	3.052 <u>0</u> +007	8.178E+00,,	-0.400	
C.CE-141 ,NO ,	-3.271E+00,	4.873E+00,	3 250E+01.	-1.007	
C.CE-144 ,NO ,	-3.273E+01,	2.064E+01,	1 277E+01.	-0.143	
C EU-152 , NO	-1.825E+00,	8.848E+00,	2.277 <u>0</u> +0277	-0.496	
C $EII = 154$. NO	, -4.326E+00,	5.393E+00,	0.710E100//	0.129	
$C B \Delta = 226$ NO	, 1.439E+01,	6.398E+01,	$1 = C \cap E : \cap 1$	-0.418	
$C \Lambda C 228 NO$	-6.525E+00,	9.131E+00,	1.502E+V1,,	-0 418	
C TH_{220} NO	6.514E+00,	9.116E+00,	1.5595+01,,	-0 346	
C, 1D = 252, NO	, 	2.051E+01,	3.4乙9些+01,,	0.140	
C, U-235, NO	, 7.227E+01,	2.863E+02,	5.149E+UZ,	0.170	
C, U-238, NO	9.208E+00.	1.475E+01,	2.214E+01,	, 0.410	
C,AM-241 ,NO	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				

LIMS: Analyst: Sec. Review: VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 15-MAY-2006 16:49:19.47 TBE07 P-10768B HpGe ******** Aquisition Date/Time: 15-MAY-2006 13:18:26.64 LIMS No., Customer Name, Client ID: L28609-2 WG BRAID Smple Date: 10-MAY-2006 10:50:00. Geometry : 0735L090904 : 07L28609-2 Sample ID : 07BG050506MT : WG Sample Type BKGFILE : 3.45890E+00 L Real Time : 0 03:30:48.85 Energy Tol : 1.30000 Ouantity Pk Srch Sens: 5.00000 Live time : 0 03:30:46.29 Start Channel : 40 : 4090 End Channel Library Used: LIBD MDA Constant : 0.00 Cts/Sec %Err Fit FWHM Channel %Eff Bkqnd Area Energy Pk It 7.22E-01 9.09E-03 35.6 1.38E+00 133.37 2.08E+00 1.08E-02 31.2 4.56E+00 1.11 455 115 66.26* 1 1 2.41 280.04 1.98E+00 1.10E-02 28.1 8.68E-01 426 137 139.57* 2 1 397.68 1.61E+00 9.62E-03 18.4 2.18E+00 2.01 353 139 198.37* 3 1 591.53 1.02 1.43E+00 1.09E-02 20.9 2.50E+00 121 122 295.27* 4 1 1.28 704.97 9.96E-01 3.96E-03 43.5 5.58E-01 165 138 351.98* 5 1 1.09 1192.88 9.81E-01 1.21E-02 16.0 1.35E+00 113 50 595.89 1 6 1.63 1219.72 4.54E-01 3.04E-03 38.0 1.44E+00 86 153 609.32* 7 1 4.06 3530.08 24 38 1764.77* 1 8

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flaq: "*" = Keyline

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Page : 2

Summary of Nuclide Activity Sample ID : 07L28609-2 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "M" = Manually accepted "A" = Nuclide specific abn. limit

Page :

3

Acquisition date : 15-MAY-2006 13:18:26 Unidentified Energy Lines Sample ID : 07L28609-2 %Eff Flags Cts/Sec %Err Channel Left Pw FWHM Bkgnd Area Energy It 7.22E-01 9 9.09E-03 71.2 133.37 129 1.11 2.08E+00 455 276 11 1.08E-02 62.3 115 66.26 1 280.04 2.41 1.98E+00 426 392 11 1.10E-02 56.2 137 139.57 1 397.68 2.01 1.61E+00 353 9.62E-03 36.8 139 198.37 1 588 7 591.53 121 1.02 700 10 1.09E-02 41.8 1.43E+00 122 295.27 1 704.97 1.28 165 1192.88 1188 11 3.96E-03 87.0 9.96E-01 138 351.98 1 1.09 113 1219.72 1214 12 1.21E-02 31.9 9.81E-01 50 595.89 1 1.63 86 3530.08 3523 19 3.04E-03 76.1 4.54E-01 153 609.32 1 4.06 24 38 1764.77 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 8 Total number of lines in spectrum 8 Number of unidentified lines 0.00% Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ____ Act/MDA Key-Line MDA error MDA Act error K.L. Activity (pCi/L) (pCi/L) Ided Nuclide 0.207 0.000E+00 3.588E+01 2.121E+01 -0.094 7.428E+00 0.000E+00 1.454E+03 BE-7 8.926E+02 0.091 -1.373E+02 0.000E+00 6.770E+01 NA-24 3.521E+01 -0.116 0.000E+00 6.173E+00 3.994E+01 K-40 2.490E+01 0.268 -4.651E+00 0.000E+00 CR-51 4.533E+00 2.661E+00 0.235 1.213E+00 0.000E+00 MN-54 3.749E+00 2.212E+00 -0.301 8.816E-01 0.000E+00 4.190E+00 CO-57 2.660E+00 0.189 0.000E+00 -1.263E+00 9.489E+00 CO-58 5.628E+00 -0.336 1.798E+00 0.000E+00 4.235E+00 FE-59 2.681E+00 0.561 -1.422E+00 0.000E+00 CO-60 1.101E+01 6.306E+00 -0.519 0.000E+00 6.182E+00 ZN-65 5.092E+00 3.205E+00 2.653 -2.644E+00 0.000E+00 SE-75 6.186E+00 3.192E+00 -0.412 1.641E+01 0.000E+00 SR-85 4.619E+00 3.028E+00 -0.337 -1.903E+00 0.000E+00 4.040E+00 Y-88 2.527E+00 0.099 0.000E+00 -1.362E+00 4.624E+00 NB-94 2.803E+00 -0.094 4.585E-01 0.000E+00 NB-95 7.987E+00 4.924E+00 -0.404 -7.536E-01 0.000E+00 ZR-95 1.114E+02 7.068E+01 0.491 -4.507E+01 0.000E+00 4.695E+00 MO-99 2.726E+00 -0.779 2.305E+00 0.000E+00 3.506E+01 RU-103 2.328E+01 -0.104 -2.730E+01 0.000E+00 4.022E+00 RU-106 2449E+00

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SN-113 SB-124 SB-125 TE-129M I-131 BA-133 CS-134 CS-136 CS-137 CE-139 BA-140 LA-140 CE-141 CE-144 EU-152 EU-154 RA-226 AC-228 TH-228 TH-232	$\begin{array}{c} -1.144E+00\\ -4.738E-01\\ 3.930E+00\\ -1.061E+01\\ -8.857E-01\\ 9.441E+00\\ 6.188E+00\\ -2.081E+00\\ 3.181E+00\\ -7.198E-01\\ -2.569E+00\\ 4.717E+00\\ 4.535E-02\\ 1.154E+01\\ -4.734E+00\\ 2.114E-01\\ -2.322E+01\\ -5.856E+00\\ 4.062E+00\\ -5.846E+00\end{array}$	3.277E+00 5.956E+00 6.777E+00 3.115E+01 3.794E+00 3.815E+00 4.917E+00 3.216E+00 2.659E+00 2.430E+00 1.154E+01 3.832E+00 4.831E+00 1.999E+01 8.656E+00 4.598E+00 6.221E+01 1.037E+01 4.871E+00 1.035E+01	5.300E+00 4.231E+00 1.137E+01 4.958E+01 6.209E+00 6.185E+00 5.048E+00 4.698E+00 3.944E+00 1.876E+01 7.004E+00 6.877E+00 2.940E+01 1.224E+01 7.707E+00 1.016E+02 1.704E+01 8.482E+00 1.701E+01 2.960E+01	0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00	-0.216 -0.112 0.345 -0.214 -0.143 1.527 1.226 -0.417 0.677 -0.183 -0.137 0.673 0.007 0.392 -0.387 0.027 -0.229 -0.344 0.479 -0.344 0.324
AC-228 TH-228 TH-232 U-235 U-238 AM-241	-5.858E+00 4.062E+00 -5.846E+00 9.587E+00 1.152E+02 -5.983E+00	4.871E+00 1.035E+01 2.038E+01 2.841E+02 2.121E+01	8.482E+00 1.701E+01 2.960E+01 4.770E+02 3.321E+01	0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00	-0.344 0.324 0.241 -0.180

		<u>_</u>	1-0H,00 1.286	:09-2	WG	BR
05/15/20	06 16:49,05/10/2	$006 \ 10:50, 3.$	459E+00, 1200			
A,07L28609-2 ,05/15/20	,06/	23/2005 07:26,0	0 207			
B,07L28609-2, $L1BD$	2.121E+01,	3.588E+01,,	0.207			
C, BE-7 , NO , 7.428E+00	8,926E+02,	1.454E+03,,	-0.094			
C, NA-24 , NO , -1.373E+02	3 521E+01,	6.770E+01,,	0.091			
C,K-40 ,NO , 6.1/3E+00	, 2 490E+01,	3.994E+01,,	-0.116			
C, CR-51 , NO , -4.651E+00	2 661E+00,	4.533E+00,,	0.268			
C, MN-54 , NO , 1.213E+00	2.0022+00	3.749E+00,,	0.235			
C, CO-57 , NO , 8.816E-01	2.212100,	4.190E+00,,	-0.301			
C, CO-58 , NO , -1.263E+00	5, 528E+00	9.489E+00,,	0.189			
C,FE-59 ,NO , 1.798E+00	2.620 ± 100	4.235E+00,,	-0.336			
C,CO-60 ,NO , -1.422E+00	$C = 206 \overline{E} + 00$	1.101E+01,,	0.561			
C.ZN-65 ,NO , 6.182E+00	2.305 ± 100	5.092E+00,,	-0.519			
C,SE-75 ,NO , -2.644E+0	3.205 ± 100	6.186E+00,,	2.653			
C.SR-85 ,NO , 1.641E+0	1, 3.1920+00, 2.000	4.619E+00,	-0.412			
C.Y-88 ,NO , -1.903E+0	0, 3.020E+00, 00	4.040E+00,,	-0.337			
C.NB-94 ,NO , -1.362E+0	0, 2.52/E+00, 0	4 624E+00,	0.099			
C NB-95 ,NO , 4.585E-0	1, 2.803E+00, 1.00	7.987E+00,,	-0.094			
C ZB-95 ,NO , -7.536E-0	1, 4.924E+00,	1 114E+02,	-0.404			
C MO-99 , NO , -4.507E+0	1, 7.068E+0.068E+0	4.695E+00.7	0.491			
C RU-103 , NO , 2.305E+0	0, 2.726E+00, 2.726E+00, 0.1	$4.000 \pm 000, 7$	-0.779			
C RU-106 , NO , -2.730E+C	1, 2.328E+01,	4 022E+00.	-0.104			
C AG-110m NO , -4.176E-0	1, 2.449E+00,	4.0221+00,7	-0.216			
C = N - 113, NO, $-1.144E + 0$	3.277E+00,	4.231E+00	-0.112			
$C_{\text{SR}} = 124$ NO , -4.738E^{-3}	1, 5.956E+00,	4.23107077	0.345			
C SB-125 .NO , 3.930E+(6.777E+00,	1.1571.0177	-0.214			
C TE-129M NO1.061E+()1, 3.115E+01,	4.930 ± 017	-0.143			
C T-131 NO , -8.857E-0	3.794E+00,	C 195E+00	1.527			
$C P \lambda_{-1} = 133$, NO, 9.441E+	3.815E+00,	5.10JE+00//	1.226			
C, BA^{-133} NO . 6.188E+	4.917E+00,	5.048E+00,7	-0.417			
C, CS = 134 , NO , $-2.081E+$	00, 3.216E+00,	4.9916+00,,	0.677			
$C, CS^{-130}, NO, 3.181E+$	00, 2.659E+00,	4.698E+00,,	-0.183			
C, CS = 137, NO, $-7.198E$ -	01, 2.430E+00,	3.944E+00,,	-0 137			
C, CE = 139, NO, -2.569E+	00, 1.154E+01,	1.876E+01,	0.673			
C, BA = 140, NO, 4.717E+	00, 3.832E+00,	7.004E+00,,	0.007			
C, LA = 140, NO, 4, 535E-	02, 4.831E+00,	6.87/E+00,,	0.392			
C, CE - 141, NO, 1 154E+	01, 1.999E+01,	2.940E+01,	-0.387			
C, CE - 144, NO, $-4, 734E$	00, 8.656E+00,	1.224E+01,,	0.027			
C, EU-152, NO, 2, 114E-	01, 4.598E+00,	7.707E+00,,	0.027			
C, EU-154 , NO , 2.111	-01, 6.221E+01,	1.016E+02,,	-0.225			
C, RA-226 , NO , -2.9221	+00, 1.037E+01,	1.704E+01,,	-0.344			
C,AC-228 ,NO , -5.850H	4.871E+00	8.482E+00,,	0.479			
C, TH-228 , NO , 4.082E	+00, 1.035E+01	, 1.701E+01,,	-0.344			
C,TH-232 ,NO , -5.846E	+00 2.038E+01	, 2.960E+01,,	0.324			
C,U-235 ,NO , 9.58/E	±02 2.841E+02	, 4.770E+02,,	0.241			
C,U-238 ,NO , 1.152E	+00 2.121E+01	, 3.321E+01,,	-0.180			
C,AM-241 ,NO , -5.983E	+00, 2.11	•				

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Sec. Review: A	nalyst: I	LIMS: 🗸	/ 			========
======================================	======================================	. Labora **** Aqu	atory Gamma disition Dat	Report: 15-1 e/Time: 15-1	MAY-2006 16:52: MAY-2006 14:21:	:04.60 :56.04
LIMS No., Custom	er Name, C	lient II): WG L28609	-3 BRAIDWOO Smple Dat	D e: 10-MAY-2006	11:35:00.
Sample ID : Sample Type : Quantity : Start Channel : End Channel : MDA Constant :	WG 3.66080E+0 90 En 4090 Pk 0.00 Li	0 L ergy To Srch S brary U	l : 1.70000 ens: 5.00000 sed: LIBD	Geometry BKGFILE Real Time Live time	: 0435L090804 : 04BG050506M : 0 02:30:01. : 0 02:30:00.	Г 54 00
Pk It Energy	Area	Bkgnd	FWHM Channe	el %Eff	Cts/Sec %Err	Fit
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	x 77 x 6 x 59 x 61 x 22 x 34 x 40 x 88 22 x 67 x 11 x 15	283 196 243 206 160 77 121 97 61 47 23 17	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	8.55E-03 42.0 6.11E-04478.3 6.57E-03 52.2 6.74E-03 49.1 2.50E-03112.4 3.73E-03 47.8 4.41E-03 54.4 9.79E-03 25.9 1 2.44E-03 67.1 1 7.47E-03 25.2 1 1.21E-03110.9 1 1.69E-03 64.9	1.84E+00 7.33E-01 1.89E+00 2.06E+00 3.38E+00 6.78E+00 1.43E+00 1.02E+00 3.07E+00 2.07E+00 2.41E+00 9.26E-01 4.66E-01

/

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al			Uncorrected	Decay Corr	2-Sigma
Nuclide AC-228 TH-228	Energy 835.50 911.07 238.63 240.98	Area 11 22 34	%Abn 1.75 27.70* 44.60* 3.95	%Eff 6.054E-01 5.652E-01 1.520E+00 1.507E+00	pCi/L Lin 5.719E+00 2.718E+00 4.620E+01	pCi/L ne Not Found 5.729E+00 2.732E+00 4.644E+01	%Error 221.84 224.76 95.55

Flag: "*" = Keyline

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Page : 2

Acquisition date : 15-MAY-2006 14:21:56 Summary of Nuclide Activity Sample ID : 04L28609-3 12 Total number of lines in spectrum 9 Number of unidentified lines 25.00% Number of lines tentatively identified by NID 3 Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pCi/L 5.729E+00 12.71E+00 221.84 pCi/L Decay Hlife Nuclide 6.140E+00 224.76 2.718E+00 2.732E+00 5.719E+00 1.00 5.75Y AC-228 1.91Y 1.01 --------TH-228 _____ 8.461E+00 Total Activity : 8.437E+00 8.461E+00 Grand Total Activity : 8.437E+00 "M" = Manually accepted "A" = Nuclide specific abn. limit Flags: "K" = Keyline not found "E" = Manually edited

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3 Page : Acquisition date : 15-MAY-2006 14:21:56 Unidentified Energy Lines Sample ID : 04L28609-3 Flags %Eff Cts/Sec %Err Channel Left Pw FWHM Bkqnd Area Energy Ιt 6.44E-01 9 8.55E-03 84.1 130 133.00 1.53 1.40E+00 283 8 6.11E-04 **** 77 66.22 1 186.31 183 1.11 277 10 6.57E-03 **** 1.82E+00 196 6 92.87 1 281.26 1.85 1.68E+00 243 391 11 6.74E-03 98.2 59 140.34 1 397.32 1.73 1.32E+00 9 4.41E-03 **** 206 61 198.36 587 1 591.30 1.38 1.17E+00 121 699 12 9.79E-03 51.9 40 295.34 1 704.72 1.79 9 2.44E-03 **** 7.85E-01 97 88 352.05 1193.87 1189 1 1.62 61 1219.61 1215 12 7.47E-03 50.5 7.73E-01 22 596.63 1 1.79 3.43E-01 3530.36 3525 15 1.69E-03 **** 47 67 609.50 1 2.45 17 15 1765.23 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 12 Total number of lines in spectrum 9 Number of unidentified lines 25.00% Number of lines tentatively identified by NID 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr %Error Flags 2-Sigma Error pCi/L pCi/L 221.84 Decay Hlife 12.71E+00 Nuclide 5.729E+00 5.719E+00 171.18 1.00 6.082E+00 5.75Y AC-228 3.553E+00 3.535E+00 1.01 1.91Y TH-228 _____ _____ 9.282E+00 9.254E+00 Total Activity : 9.282E+00 Grand Total Activity : 9.254E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)(pCi/L) Nuclide 0.310 0.000E+00 1.845E+01 1.271E+01 0.376 0.000E+00 5.729E+00 9.442E+00 AC-228 6.082E+00 3.553E+00 тн-228 ---- Non-Identified Nuclides ----Act/MDA MDA error Key-Line MDA Act error Activity K.L. (pCi/L)Ided (pCi/L) Nuclide

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BE-7 NA-24 K-40 CR-51 MN-54 CO-57 CO-58 FE-59 CO-60 ZN-65 SE-75 SE-75 SR-85 Y-88 NB-94 NB-95 ZR-95	2.308E+00 -6.291E+01 3.382E+00 2.785E+00 -1.356E+00 -6.880E-01 4.540E-01 3.700E+00 -1.531E+00 3.803E+00 -1.558E+00 1.814E+01 2.020E-01 1.777E+00 2.013E+00 -1.211E+00	2.542E+01 1.127E+03 4.109E+01 2.822E+01 2.894E+00 2.837E+00 3.201E+00 6.059E+00 4.073E+00 3.975E+00 4.007E+00 3.680E+00 3.224E+00 3.277E+00 5.789E+01	4.182E+01 1.858E+03 7.897E+01 4.615E+01 4.575E+00 4.665E+00 5.370E+00 1.064E+01 6.691E+00 1.275E+01 6.420E+00 7.895E+00 6.111E+00 5.591E+00 9.228E+00 1.479E+02	0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00	0.055 -0.034 0.043 0.060 -0.296 -0.147 0.085 0.348 -0.229 0.298 -0.243 2.298 0.033 0.324 0.360 -0.131 0.935 0.282
ZR-95 MO-99 RU-103 RU-106	1.384E+02 2.230E+00 -1.010E+01	7.891E+01 3.430E+00 3.057E+01 3.174E+00	1.479E+02 5.829E+00 4.846E+01 5.027E+00	0.000E+00 0.000E+00 0.000E+00	0.382 -0.209 -0.291 0.705
AG-110m SN-113 SB-124 SB-125	-1.481E+00 4.541E+00 -1.417E+00 -4.518E+00	3.599E+00 7.291E+00 8.288E+00 2.699E+01	6.439E+00 5.120E+00 1.315E+01 5.968E+01	0.000E+00 0.000E+00 0.000E+00 0.000E+00	-0.277 -0.343 -0.142
TE-129M I-131 BA-133 CS-134	-8.467E+00 2.359E+00 2.622E+00 1.855E+00	4.582E+00 5.094E+00 4.819E+00	7.857E+00 7.530E+00 5.177E+00 6.751E+00	0.000E+00 0.000E+00 0.000E+00 0.000E+00	0.300 0.348 0.358 0.215
CS-136 CS-137 CE-139 BA-140 LA-140	1.453E+00 1.218E-01 -5.740E-01 6.363E+00 2.876E+00	3.952E+00 3.468E+00 2.896E+00 1.405E+01 4.393E+00	5.709E+00 4.686E+00 2.354E+01 7.834E+00 8.662E+00	0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00	0.021 -0.122 0.270 0.367 -0.320
CE-141 CE-144 EU-152 EU-154	-2.776E+00 -1.356E+01 2.796E+00 7.512E-02	6.298E+00 2.488E+01 1.092E+01 5.963E+00 7.464E+01	3.577E+01 1.535E+01 9.896E+00 1.259E+02	0.000E+00 0.000E+00 0.000E+00 0.000E+00	-0.379 0.182 0.008 0.334 0.268
RA-226 TH-232 U-235 U-238 AM-241	4.209E+01 5.719E+00 1.122E+01 3.182E+02 -1.934E+01	+ 1.269E+01 2.564E+01 3.588E+02 2.712E+01	2.134E+01 3.710E+01 6.332E+02 4.195E+01	0.000E+00 0.000E+00 0.000E+00 0.000E+00	0.302 0.502 -0.461

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		16.52.05/10/20	06 11:35, 3.	661E+00,WG	L28609-3	BR
A,04L28609-3	,05/15/2008	03/1	4/2005 09:04,0	435L090804		
B,04L28609-3	,LIBD	1 071FL01	1.845E+01,	0.310		
C.AC-228 ,YES,	5.729E+00,	1.2710+01	9 442E+00,	0.376		
C.TH-228 ,YES,	3.553E+00,	6.082E+00,	4 182E+01.	0.055		
C BE-7 ,NO ,	2.308E+00,	2.542E+01,	4.1020.00, 0.00, 0.00	-0.034		
C NA-24 NO	-6.291E+01,	1.1276+03,	7.850 ± 01	0.043		
C K = 10 NO	3.382E+00,	4.109E+01,	/.89/E+01/	0.060		
C, R=40 (10)	2.785E+00,	2.822E+01,	4.6156+01,,	-0.296		
C, CR-51, NO,	-1.356E+00,	2.894E+00,	4.5/5E+00,,	-0.147		
C, MN = 54, NO ,	-6 880E-01,	2.837E+00,	4.665E+00,,	0.085		
C, CO-57 , NO ,	4540E-01	3.201E+00,	5.370E+00,,	0.005		
C, CO-58 , NO ,	$\frac{1}{2} \cdot \frac{1}{2} 6.059E+00,	1.064E+01,,	0.340			
C,FE-59 ,NO ,	1 531F+00	4.073E+00,	6.691E+00,,	-0.229		
C,CO-60 ,NO ,	-1.001 ± 000	7.376E+00,	1.275E+01,,	0.298		
C,ZN-65 ,NO ,	, 3.803E+00,	3.975E+00,	6.420E+00,,	-0.243		
C,SE-75 ,NO	, -1.558E+00,	4.007E+00	7.895E+00,,	2.298		
C,SR-85 ,NO	, 1.814E+01,	4.007 <u>0</u> ,007	6.111E+00,,	0.033		
C,Y-88 ,NO	, 2.020E-01,	3.0000100) 3.0000100)	5.481E+00,,	0.324		
C.NB-94 ,NO	, 1.777E+00,	3.2246+00	5 591E+00,,	0.360		
C.NB-95 ,NO	, 2.013E+00,	3.2776+00	9 228E+00,	-0.131		
C ZR-95 , NO	, -1.211E+00,	5.789E+00,	1 479E+02	0.935		
C MO - 99, NO	, 1.384E+02,	7.891E+01,	I. 929E+00	0.382		
C RII-103 .NO	2.230E+00,	3.430E+00,	5.825H+0077	-0.209		
C $RU = 106$ NO	-1.010E+01,	3.057E+01,	4.0400+01,	-0.291		
$C, RO \pm 000, JOO$	1.461E+00,	3.174E+00,	5.02/2+00,,	0.705		
C, AG=110 MO	4.541E+00,	3.599E+00,	6.439E+00,,	-0 277		
C, SN-113 , NO	-1.417E+00,	7.291E+00,	5.120E+00,,	_0.343		
C, SB-124, NO	-4.518E+00,	8.288E+00,	1.315E+01,,	0.142		
C, SB-125 , NO	-8 467E+00,	3.699E+01,	5.968E+UI,,	-0.142		
C, TE-IZ9M , NO	2359E+00	4.582E+00,	7.8578+00,,	0.300		
C,1-131 ,NO	, 2.5352+00	5.094E+00,	7.530E+00,,	0.340		
C, BA-133 , NO	, <u>2.022</u> <u>1</u> ,00,	4.819E+00,	5.177E+00,,	0.358		
C,CS-134 ,NO	$, 1.055 \pm 00, 1.055 \pm 00$	3.952E+00,	6.751E+00,,	0.215		
C,CS-136 ,NO	, 1.455E+00, 1	3 468E+00,	5.709E+00,,	0.021		
C,CS-137 ,NO	, <u>1.210E-01</u> ,	2896E+00	4.686E+00,,	-0.122		
C,CE-139 ,NO	, -5.740E-01,	1.405E+01.	2.354E+01,,	0.270		
C,BA-140 ,NO	, 6.363E+00,	1.4000101/	7.834E+00,,	0.367		
C.LA-140 ,NO	, 2.876E+00,	4.39504007	8.662E+00,,	-0.320		
C.CE-141 ,NO	, -2.776E+00,	$6.290 \pm 00,$	3577E+01,	-0.379		
C.CE-144 ,NO	, -1.356E+01,	2.488E+01,	1 535E+01.	0.182		
C EU-152 , NO	2.796E+00,	1.092E+01,	2.9995102777	0.008		
C FII-154 . NO	7.512E-02,	5.963E+00,	1 2505+02	0.334		
$C P \lambda - 226$ NC	4.209E+01,	7.464E+01,	$1.239 \pm 02,7$	0.268		
$C_{TH} 220$ NC), 5.719E+00,	1.269E+01,	$\Delta \cdot \bot \Im \oplus \Box + \Box + \Box + I I$	0.302		
C_{11}), 1.122E+01,	2.564E+01,	3./100+01/1	0.502		
	3.182E+02,	3.588E+02,	6.33ZE+UZ,,	-0 461		
C, U-230, NC	-1.934E+01,	2.712E+01,	4.195E+U1,,	-0.101		
C, AM-241, NC	, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,					

Sec.	Revi	ew: Analy	vst: LIM	1S:	-	=======================================	======================================	======================================	====== :53:36	======= 5.14
===== VAX/\ TBE13	/MS I 3 P-1	Celedyne Bro 0727B HpGe	own Eng. 1 *******	Laborat ** Aqu:	cory G isitio	amma Repo n Date/T	ime: 15-MA	Y-2006 14	:33:20).01
LIMS Samp Quan Star End MDA	No., le II le Ty tity t Chan Chan Cons	Customer 1 Customer 1 () : 13L () () : 3.7 annel : 25 nel : 409 tant : 0.0	Name, Clio 28609-4 2610E+00 Ener 0 Pk S 0 Libr	ent ID Egy Tol Erch Se Eary Us	: WG L : 1 :ns: 5 sed: L	28609-4 S G .50000 F .00000 I IBD	EX BRAID Smple Date Seometry SKGFILE Real Time Live time	: 10-MAY-2 : 1335L090 : 13BG0505 : 0 02:20: : 0 02:20:	006 1 904 06MT 02.60 00.00	3:45:00.
Pk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	It 1211111111111111111111111111111111111	Energy 53.16 63.33* 77.21* 92.58* 198.69* 238.77* 241.77* 295.03* 351.80* 582.91* 597.27 609.17* 743.13 1120.32* 1461.26*	Area E 100 15 17 12 73 35 46 37 110 23 77 110 28 20 5	3kgnd 199 441 262 266 231 152 145 175 141 66 69 71 25 29 30 8	FWHM 1.85 2.09 1.03 1.01 1.34 1.23 1.24 1.13 1.37 1.89 6.80 1.50 1.92 2.38 2.02 2.18	Channel 106.30 126.62 154.36 185.07 397.12 477.22 483.22 589.68 703.16 1165.19 1193.91 1217.71 1485.59 2240.08 2922.35 3530.05	<pre>%Eff 3.01E-01 6.21E-01 1.09E+00 1.52E+00 1.73E+00 1.72E+00 1.52E+00 1.52E+00 1.34E+00 9.26E-01 9.10E-01 8.97E-01 7.73E-01 5.69E-01 4.69E-01 4.11E-01</pre>	Cts/Sec ? 1.19E-02 1.79E-032 2.01E-031 1.40E-032 8.69E-03 4.20E-03 4.20E-03 5.44E-03 4.46E-03 1.31E-02 2.69E-03 9.15E-03 1.30E-02 3.37E-03 2.40E-03 6.11E-043 2.25E-03	Err 27.2 69.3 65.8 69.9 39.8 64.9 48.0 70.4 24.7 77.6 27.1 18.7 38.6 65.5 302.5 50.0	Fit 2.24E+00 2.66E+00 3.34E-01 3.71E+00 1.67E+00 1.67E+00 4.62E-01 3.03E+00 1.87E+00 2.60E+00 1.86E+00 1.31E+00 4.22E-01 1.24E+00

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natural				Uncorrected	Decay Corr pCi/L	2-Sigma %Error
Nuclide K-40 TH-228	Energy 1460.81 238.63 240.98	Area 5 35 46	%Abn 10.67* 44.60* 3.95	%Eff 4.687E-01 1.732E+00 1.720E+00	8.862E+00 3.940E+00 5.808E+01	8.862E+00 3.960E+00 5.838E+01	605.06 129.75 96.02

Flag: "*" = Keyline
L28609 78 of 158

Page : 2 Acquisition date : 15-MAY-2006 14:33:20 Summary of Nuclide Activity Sample ID : 13L28609-4 16 Total number of lines in spectrum 12 Number of unidentified lines 25.00% Number of lines tentatively identified by NID 4 Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L 8.862E+00 53.62E+00 605.06 pCi/L Decay Hlife Nuclide 1.00 8.862E+00 5.138E+00 129.75 K-40 1.28E+09Y 3.960E+00 1.01 3.940E+00 1.91Y _____ TH-228 _____ 1.282E+01 1.280E+01 Total Activity : 1.282E+01 Grand Total Activity : 1.280E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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3 Page : Acquisition date : 15-MAY-2006 14:33:20 Unidentified Energy Lines Sample ID : 13L28609-4 Flags Channel Left Pw Cts/Sec %Err %Eff FWHM Bkgnd Area Energy Ιt 3.01E-01 102 9 1.19E-02 54.5 106.30 6.21E-01 1.85 122 10 1.79E-03 **** 199 100 53.16 126.62 1 2.09 147 12 2.01E-03 **** 1.09E+00 441 15 63.33 154.36 1 1.52E+00 1.03 8 1.40E-03 **** 262 17 77.21 181 2 185.07 1.01 1.90E+00 266 9 8.69E-03 79.6 12 92.58 397.12 392 1 1.52E+00 585 10 4.46E-03 **** 1.34 231 73 198.69 1 589.68 1.34E+00 1.13 697 12 1.31E-02 49.4 175 37 295.03 1 703.16 9.26E-01 Т 141 1.37 1165.19 1160 11 2.69E-03 **** 110 351.80 1 9.10E-01 1193.91 1186 16 9.15E-03 54.1 1.89 66 23 582.91 1 8.97E-01 69 6.80 1217.71 1212 11 1.30E-02 37.4 77 597.27 1 1.50 1485.59 1481 10 3.37E-03 77.3 7.73E-01 71 110 609.17 1 5.69E-01 25 1.92 2240.08 2233 14 2.40E-03 **** 28 743.13 1 3530.05 3522 16 2.25E-03 **** 4.11E-01 2.38 29 20 1120.32 1 2.18 8 19 1764.81 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 16 Total number of lines in spectrum 12 Number of unidentified lines 25.00% Number of lines tentatively identified by NID 4 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Decay Corr Uncorrected %Error Flags 2-Sigma Error pCi/L pCi/L 605.06 53.62E+00 Decay Hlife 8.862E+00 Nuclide 8.862E+00 115.93 5.117E+00 1.00 1.28E+09Y 4.414E+00 K-40 4.391E+00 1.01 1.91Y _ _ _ _ _ _ _ _ _ _ TH-228 _____ 1.328E+01 1.325E+01 Total Activity : 1.328E+01 Grand Total Activity : 1.325E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L) (pCi/L) Nuclide 0.160 0.000E+00 5.541E+01 0.484 5.362E+01 0.000E+00 8.862E+00 9.116E+00 K-40 5.117E+00 4.414E+00 TH-228

---- Non-Identified Nuclides ----

	Key-Line Activity K.L.	Act error	MDA (pCi/L)	MDA error	Act/MDA
Nuclide	(pCi/L) Ided	○ 007E±01	4.900E+01	0.000E+00	0.378 -0.191
BE-7	1.851E+01	2.0571+02 9.765E+02	1.560E+03	0.000E+00	-0.959
NA-24	-2.974E+02	3.703E+01	4.725E+01	0.000E+00	-0.072
CR-51	-4.531E+01	3.386E+00	5.529E+00	0.000E+00	-0.196
MN-54	-3.989E-01	3.300 ± 00	5.001E+00	0.000E+00	-0.533
CO-57	-9.795E-01	3.335E+00	5.159E+00	0.000E+00	0.279
CO-58	-2.749E+00	6.638E+00	1.136E+01	0.000E+00	-0.256
FE-59	3.172E+00	3.524E+00	5.592E+00	0.000E+00	0.891
CO-60	-1.432E+00	8 226E+00	1.340E+01	0.000E+00	0.203
ZN-65	1.194E+01	$A_{215E+00}$	7.053E+00	0.000E+00	2.219
SE-75	1.429E+00	4.2100 + 00 3.987E + 00	7.673E+00	0.000E+00	0.143
SR-85	1.703E+01	3.500E+00	5.934E+00	0.000E+00	-0.741
Y-88	8.500E-01	3.3200+00 3.368E+00	5.063E+00	0.000E+00	0.252
NB-94	-3.750E+00	3.300 ± 00 3.466 ± 00	5.914E+00	0.000E+00	0.172
NB-95	1.489E+00	5.788E+00	9.811E+00	0.000E+00	0.546
ZR-95	1.685E+00	9.968E+01	1.524E+02	0.000E+00	0.021
MO-99	8.324E+01	3.572E+00	5.822E+00	0.000E+00	-0.728
RU-103	1.207E-01	3.3720+00 3.127E+01	4.762E+01	0.000 ± 00	0.462
RU-106	-3.468E+01	2.875E+00	4.991E+00	0.000E+00	0.361
AG-110m	2.307E+00	4.076E+00	6.969E+00	0.000E+00	0.559
SN-113	2.514E+00	4.0702700	5.427E+00	0.000E+00	0.110
SB-124	3.036E+00	8 931E+00	1.485E+01	0.000E+00	0.090
SB-125	1.630E+00	2.962E+01	6.540E+01	0.000E+00	0.019
TE-129M	5.875E+00	4.842E+00	8.080E+00	0.000E+00	0.542
I-131	1.558E-01	5 290E+00	7.931E+00	0.000E+00	1.366
BA-133	4.300E+00	5.290 ± 100	6.220E+00	0.000E+00	-0.171
CS-134	8.494E+00	4.162E+00	6.724E+00	0.000E+00	0.130
CS-136	-1.147E+00	4.1020+00	5.351E+00	0.000E+00	0.156
CS-137	6.949E-01	3.2171+00 3.046E+00	5.036E+00	0.000E+00	0.398
CE-139	7.869E-01	1.433E+01	2.484E+01	0.000E+00	0.514
BA-140	9.875E+00	1.352E+00	7.989E+00	0.000E+00	-0.744
LA-140	4.103E+00	5.877E+00	9.322E+00	0.000E+00	-0.482
CE-141	-6.932E+00	2.355E+01	3.807E+01	0.000E+00	-0.850
CE-144	-1.837E+01	1.232E+01	1.556E+01	0.000E+00	-0.185
EU-152	-1.323E+01	5.348E+00	1.048E+01	0.000E+00	0.117
EU-154	-1.938E+00	7.995E+01	1.377E+02	0.000E+00	0.053
RA-226	1.609E+01	1.261E+01	2.169E+01	0.000E+00	0.053
AC-228	1.151E+00	1.259E+01	2.166E+01	0.0008+00	-0.808
TH-232	1.149E+00	2.460E+01	3.897E+01	0.0008+00	0.146
U-235	-3.149E+01	2.578E+02	6.114E+02	0.0005+00	-0 207
U-238	8.896E+01	2.3701.02 $2.389E \pm 01$	4.180E+01	0.0008+00	0.207
AM-241	-8.656E+00	5.00000			

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					2 JOCELOO WG	т.28609-4	ΕX
		05/15/2006	16:53,05/10/20)06 13:45,	3.7266400,00		
A,13L28609-4		, 05/15/2000	,08/0)5/2005 08:16	,13350090904		
B,13L28609-4		, ULDD	5.362E+01,	5.541E+01,,	0.160		
C,K-40 ,YE	ss,	8.862E+00,	5.117E+00,	9.116E+00,,	0.484		
C,TH-228 ,YH	ss,	4.414E+00,	2.897E+01,	4.900E+01,,	0.378		
C,BE-7,NC),	1.851E+01,	9.765E+02.	1.560E+03,,	-0.191		
C, NA-24 , NC	Э,	-2.974E+02,	3.121E+01.	4.725E+01,,	-0.959		
C, CR-51 , NC	с,	-4.531E+01,	3.1210.01	5.529E+00,,	-0.072		
C.MN-54 ,NC	с, с	-3.989E-01,	$3.300 \pm 00,$	5.001E+00,,	-0.196		
C.CO-57 ,NC	Ο,	-9.795E-01,	$3.030\pm00,$	5 159E+00,	-0.533		
C.CO-58 ,N	ο,	-2.749E+00,	3.335E+00,	1 136E+01.	0.279		
C FE-59 ,N	ο,	3.172E+00,	6.638E+00,	5.592E+00.	-0.256		
C $CO-60$, N	Ο,	-1.432E+00,	3.524E+00,	1.340E+01.	0.891		
C_{ZN-65} , N	0,	1.194E+01,	8.226E+00,	7.053E+00.	0.203		
C SE = 75 N	0,0	1.429E+00,	4.2158+00,	7.033 ± 0077	2.219		
C, SE=75 N	iO , Oi	1.703E+01,	3.987E+00,	7.673E+00,,	0.143		
C, SK^{-0}	IO .	8.500E-01,	3.520E+00,	5.9346+00,,	-0.741		
C, Y = 00 , N	ιο , το	-3.750E+00,	3.368E+00,	5.0636+00,,	0.252		
C, NB - 94		1.489E+00,	3.466E+00,	5.914E+00,,	0.172		
C, NB-95, N	JO J	1.685E+00,	5.788E+00,	9.811E+00,,	0.546		
$C, ZR - 95$, Γ	νΟ , ΙΟ	8.324E+01,	9.968E+01,	1.5248+02,,	0.021		
C,MO-99 , r		1 207E - 01,	3.572E+00,	5.822E+00,,	0.021		
C,RU-103 ,I		_3 468E+01.	3.127E+01,	4.762E+01,,	-0.720		
C,RU-106 ,I		2307E+00	2.875E+00,	4.991E+00,,	0.462		
C,AG-110m ,I	NO,	2.5071+00	4.076E+00,	6.969E+00,,	0.361		
C, SN-113 ,1	NO ,	2.51401007	6,535E+00,	5.427E+00,,	0.559		
C,SB-124 ,	NO,	3.0300+00,	8.931E+00,	1.485E+01,,	, 0.110		
C,SB-125 ,	NO,	1.6300+00,	3 962E+01,	6.540E+01,	0.090		
C,TE-129M ,	NO,	5.8/56+00,	4 842E+00,	8.080E+00,	, 0.019		
C,I-131 ,	NO,	1.558E-01,	5.290E+00,	7.931E+00,	, 0.542		
C,BA-133 ,	NO,	4.300E+00,	5.2902+00, 6.406E+00,	6.220E+00,	, 1.366		
C,CS-134 ,	NO,	8.494E+00,	4.162E+00.	6.724E+00,	, -0.171		
C,CS-136 ,	NO,	-1.1478+00,	4.10201007	5.351E+00,	, 0.130		
C,CS-137 ,	NO,	6.9498-01,	3.21/E+00	5,036E+00,	, 0.156		
C.CE-139 ,	NO,	7.869E-01,	$3.040\pm00,$	2 484E+01,	0.398		
C.BA-140 ,	NO,	9.875E+00,	1.433E+01,	7 989E+00,	0.514		
C LA - 140	, NO	4.103E+00,	4.352E+00,	9.322E+00.	-0.744		
C CE-141	, NO ,	-6.932E+00,	5.8//E+00,	3.807E+01.	0.482		
C, CE = 144	NO ,	-1.837E+01,	2.355E+U1,	1 556E+01.	-0.850		
C EII_{-152}	NO ,	-1.323E+01,	1.232E+01,	1 0495+01	-0.185		
C, EU = 152	NO .	-1.938E+00,	, 6.348E+00,	1.040E+0±/	0.117		
	NO -	1.609E+01,	, 7.995E+01,	1.3/10+02	0.053		
C, RA=220	NO	1.151E+00	, 1.261E+01,	2.107E+01	0.053		
C, AC^{-220}	NO	1.149E+00	, 1.259E+01,	2.100E+U1,	-0.808		
C, II 225	NO	-3.149E+01	, 2.460E+01,	3.09/5+01,	0 146		
C, U-233	NO /	8.896E+01	, 3.578E+02,	6.114E+02	-0 207		
C, U-230	NO	-8.656E+00	, 3.389E+01,	4.180E+01	11 -0.207		
C,AM-241	, 110 ,	0.0001.00	-				

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Sec.	Rev	iew: Ar	halyst: L	IMS: _/	/ 				=====	
==== VAX/ TBE1	==== VMS ' 0 12	====== <i> </i> Teledyne 892256 H]	======================================	Labora *** Aqu	tory (Gamma Re on Date/	port: 16-MA Time: 15-MA	AY-2006 0 AY-2006 1 	7:28:3 7:21:3	34.66 16.96
LIMS	IMS No., Customer Name, Client ID: WG L28609-5 EX BRAID									
Samp Samp Quan Star End MDA	le I le T tity Chan Cons	D : ype : annel : nel : tant :	10L28609-5 WG 3.65190E+00 80 Ene 4090 Pk 0.00 Lil) L ergy Tol Srch Se orary Us	- : 1 ens: 5 sed: L	.30000 .00000 IBD	Smple Date Geometry BKGFILE Real Time Live time	: 10-MAY-3 : 1035L09 : 10BG050 : 0 14:07 : 0 14:07	2006 3 1004 506MT :08.2 :00.0	14:00:00. 7 0
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		66.21* 87.37* 92.58* 139.90 185.68* 198.39* 238.67* 242.14 295.20* 351.90* 499.80 583.25 595.86 609.07 1120.06 1237.90	267 95 59 331 45 293 82 203 82 203 82 203 82 203 84 121 84 203 84 121 84 203 84 121 84 203 84 121 84 203 84 203 84 203 84 203 84 203 84 82 82 82 82 82 82 82 82 82 82 82 82 82	1667 1178 1636 1461 1087 1122 767 749 931 654 307 295 328 360 129 138	1.41 1.12 1.61 0.89 1.34 1.63 1.40 1.38 1.40 1.38 1.65 1.99 1.35 1.51 2.20 2.07	131.65 174.00 184.43 279.13 370.75 396.18 476.80 483.74 589.95 703.43 999.48 1166.51 1191.76 1218.20 2241.26 2477.22	6.31E-01 1.19E+00 1.30E+00 1.68E+00 1.59E+00 1.55E+00 1.40E+00 1.39E+00 1.21E+00 1.07E+00 8.11E-01 7.18E-01 7.06E-01 6.94E-01 4.33E-01 2.56E-01	1.87E-03 1.17E-031 6.52E-03 8.86E-041 5.77E-03 1.62E-03 3.99E-03 6.24E-03 7.90E-03 2.39E-03 1.29E-045 4.00E-03 8.10E-03 2.57E-03 5.24E-045 2.85E-045	62.6 .36.2 20.7 .43.0 24.0 71.0 24.9 21.1 15.2 27.6 598.4 18.7 12.2 22.7 100.1 262.9	3.04E+00 1.01E+00 7.80E-01 8.37E-01 3.11E+00 1.85E+00 1.69E+00 2.80E-01 1.63E+00 5.37E-01 2.36E+00 1.34E+00 1.61E+00 1.56E+00
17 18	1	1460.68 1764.33	* 14 * 47	131 107	2.27 1.61	2923.30 3531.50	3.56E-01 5 3.13E-01	2.85E-04 9.18E-04	60.0	8.75E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural 2-Sigma Uncorrected Decay Corr %Error pCi/L pCi/L %Eff %Abn Energy Area Nuclide 525.70 5.557E+00 3.559E-01 5.557E+00 10.67* 14 K-40 1460.81 286.03 1.254E+01 1.254E+01 1.595E+00 3.28* 45 186.21 RA-226 141.97 1.931E+00 1.920E+00 1.401E+00 44.60* 82 238.63 TH-228 49.72 5.412E+01 5.383E+01 1.388E+00 3.95 203 240.98 Line Not Found ____ 1.683E+00 _ _ _ _ _ _ 10.50* 143.76 ____ U-235 Line Not Found _____ _____ 1.659E+00 4.70 163.35 - - - -7.616E-01 286.03 7.616E-01 1.595E+00 54.00 185.71 45 ----- Line Not Found _____ 1.524E+00 4.70 _____ 205.31

Flag: "*" = Keyline

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2

Page :

Acquisition date : 15-MAY-2006 17:21:16 Summary of Nuclide Activity Sample ID : 10L28609-5 18 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 13 27.78% 5 Nuclide Type : natural 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L 525.70 29.21E+00 Decay Hlife 5.557E+00 Nuclide 5.557E+00 286.03 1.00 3.586E+01 1.28E+09Y 1.254E+01 2.741E+00 141.97 K-40 1.254E+01 RA-226 1600.00Y 1.00 1.931E+00 286.03 K 1.920E+00 21.78E-01 1.01 1.91Y 7.616E-01 TH-228 7.616E-01 1.00 U-235 7.04E+08Y _____ _____ 2.079E+01 2.078E+01 Total Activity : 2.079E+01 Grand Total Activity : 2.078E+01 "M" = Manually accepted "A" = Nuclide specific abn. limit Flags: "K" = Keyline not found "E" = Manually edited

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0.000E+00

3 Page : Acquisition date : 15-MAY-2006 17:21:16 Unidentified Energy Lines Sample ID : 10L28609-5 Flags Channel Left Pw Cts/Sec %Err %Eff FWHM Bkgnd Area Energy Ιt 6.31E-01 8 5.25E-03 58.8 131.65 128 1.41 1.19E+00 6 1.87E-03 **** 1667 267 66.21 172 1 1.12 174.00180 9 1.17E-03 **** 1.30E+00 1178 95 87.37 1 184.43 1.68E+00 1.61 1636 275 8 6.52E-03 41.5 59 92.58 1 279.13 1.55E+00 0.89 9 5.77E-03 47.9 1461 331 139.90 1 396.18 392 1.21E+00 1.63 584 12 6.24E-03 42.3 1122 293 198.39 1 589.95 1.07E+00 931 1.38 699 11 7.90E-03 30.4 317 295.20 1 703.43 654 1.34 8.11E-01 9 2.39E-03 55.2 401 351.90 996 1 999.48 Т 7.18E-01 1.65 1166.51 1161 11 1.29E-04 **** 307 121 499.80 1 7.06E-01 1.99 1191.76 1186 11 4.00E-03 37.4 295 7 583.25 1 6.94E-01 1.35 1218.20 1212 12 8.10E-03 24.4 328 203 595.86 1 4.33E-01 360 1.51 2241.26 2236 14 2.57E-03 45.3 412 609.07 1 129 2.20 4.01E-01 2477.22 2470 12 5.24E-04 **** 131 1120.06 1 2.07 3531.56 3521 17 9.18E-04 **** 3.13E-01 138 27 1237.90 1 1.61 107 47 1764.33 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 18 Total number of lines in spectrum 13 Number of unidentified lines 27.78% Number of lines tentatively identified by NID 5 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Decay Corr Uncorrected %Error Flags 2-Sigma Error pCi/L pCi/L 525.70 Decay 29.21E+00 Hlife Nuclide 5.557E+00 5.557E+00 286.03 1.00 3.586E+01 1.28E+09Y 1.254E+01 K-40 1.254E+01 141.97 1.00 2.741E+00 1600.00Y 1.931E+00 RA-226 1.920E+00 1.01 1.91Y _____ TH-228 _____ 2.003E+01 2.002E+01 Total Activity : 2.003E+01 Grand Total Activity : 2.002E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)(pCi/L) Nuclide 0.24(0.000E+00 2.316E+01 0.212 2.921E+01 0.000E+00 5.557E+00 5.912E+01 K-40 0.43(3.586E+01

1.254E+01 4.492E+00 RA-226 2.741E+00 1.931E+00 TH-228

---- Non-Identified Nuclides ----

	Key-Line Activity K.L.	Act error	MDA (pCi/L)	MDA error	Act/MDA
Nuclide	(pC1/L) 1ded		01	0 000E+00	-0.357
_	7 628E+00	1.319E+01	2.139E+01	0.000E+00	-0.911
BE-7	-7.0200+00	6.826E+02	1.046E+03	0.000E+00	-0.347
NA-24	$= 9.031 \pm 00$	1.463E+01	2.367E+01	0.000E+00	0.133
CR-51	-0.2011100	1.568E+00	2.574E+00	0.000E+00	0.055
MN-54	$3.420E^{-01}$	1.497E+00	2.487E+00	0.000E+00	-0.633
CO-57	1.300E-01	1.534E+00	2.409E+00	0.000 ± 00	0.316
CO-58	-1.526E+00	3.184E+00	5.319E+00	0.00000-00	0.113
FE-59	1.682E+00	1.605E+00	2.667E+00	0.0005+00	1.004
CO-60	3.011E-01	4.221E+00	6.277E+00	0.0005+00	0.408
ZN-65	6.305E+00	2.038E+00	3.413E+00	0.000 ± 00	4.393
SE-75	1.391E+00	1.847E+00	3.532E+00	0.000E+00	-0.300
SR-85	1.552E+01	1.717E+00	2.732E+00	0.000E+00	-0.195
Y-88	-8.202E-01	1.478E+00	2.413E+00	0.000 ± 00	0.315
NB-94	-4.709E-01	1.585E+00	2.644E+00	0.000E+00	-0.054
NB-95	8.336E-01	2.788E+00	4.559E+00	0.000E+00	-0.363
ZR-95	-2.445E-01	4 445E+01	7.157E+01	0.000E+00	0.649
MO-99	-2.599E+01	2.022E+00	2.909E+00	0.000E+00	-0.195
RU-103	1.889E+00	1.418E+01	2.335E+01	0.000 ± 00	0.280
RU-106	-4.555E+00	1.469E+00	2.469E+00	0.000 ± 00	-0.150
AG-110m	6.9I3E-UI	1,953E+00	3.236E+00	0.000E+00	0.142
SN-113	-4.854E-01	3.673E+00	2.668E+00	0.000E+00	0.225
SB-124	3.791E-01	4.283E+00	7.165E+00	0.000E+00	-0.497
SB-125	1.614E+00	1.853E+01	2.994E+01	0.000 ± 00	-0.207
TE-129M	-1.489E+01	2.448E+00	3.947E+00	0.000 ± 00	2.107
I-131		2.532E+00	3.843E+00	0.000 ± 00	2.363
BA-133	8.0976+00	2.784E+00	3.191E+00	0.000E+00	-0.230
CS-134	7.5418+00	1 963E+00	3.159E+00	0.000E+00	0.398
CS-136		1.601E+00	2.706E+00	0.000E+00	-0.370
CS-137	1.07/E+00	1.526E+00	2.475E+00	0.000 ± 00	-0.013
CE-139	-9.15IE-01	6.922E+00	1.131E+01	0.000 ± 00	0.629
BA-140	-1.4278-01	2.390E+00	4.168E+00	0.000E+00	0.296
LA-140	2.6228+00	3.280E+00	4.650E+00	0.000E+00	0.333
CE-141	1.3/6E+00	1.364E+01	1.945E+01	0.000E+00	-1.285
CE-144	6.4/1E+00	5 573E+00	7.527E+00	0.000E+00	0.027
EU-152	-9.673E+00	3 116E+00	5.171E+00	0.000E+00	-0.194
EU-154	1.388E-01	6 307E+00	9.614E+00	0.000E+00	-0.194
AC-228	-1.861E+UU	6.296E+00	9.597E+00		0.341
TH-232	-1.8578+00	1 404E+01	1.946E+01		0.204
U-235	6.63/E+00	1.692E+02	2.824E+02	0.000E+00	-1 099
U-238	5.753E+UI	1.369E+01	2.014E+01	0.0008+00	1.000
AM-241	-2.214E+UI	1.000-00			

						1.28609-5	ΕX
	-	0 = /1 = /2006	07:28.05/10/20	06 14:00,	3.652E+00,WG	120000 3	
A,10L28609-	5	,05/10/2000	,06/0	9/2005 08:04	,1035L091004		
B,10L28609-	5	, LIDU	2 921E+01,	2.316E+01,,	0.240		
C,K-40 ,	YES,	5.55/E+00,	3.586E+01	5.912E+01,,	0.212		
C,RA-226 ,	YES,	1.254E+01,	2.741E+00.	4.492E+00,,	0.430		
C.TH-228 ,	YES,	1.931E+00,	2.7410707	2.139E+01,	-0.357		
C.BE-7 ,	NO,	-7.628E+00,	1.3190+017	1.046E+03,	-0.911		
C.NA-24 /	NO,	-9.531E+02,	6.820E+02	2.367E+01,	-0.347		
C.CR-51 ,	NO,	-8.201E+00,	1.463E+01,	2 574E+00,	0.133		
C.MN-54 /	NO,	3.428E-01,	1.566E+00,	2 487E+00,	0.055		
C.CO-57	NO,	1.360E-01,	1.49/8+00,	2.409E+00.	-0.633		
C.CO-58 ,	NO ,	-1.526E+00,	1.534E+00,	5 319E+00.	0.316		
C FE-59	NO ,	1.682E+00,	3.184E+00,	2.515100,	0.113		
C C C - 60	NO ,	3.011E-01,	1.605E+00,	5.007E+00	1.004		
C_{7N-65}	NO ,	6.305E+00,	4.221E+00,	0.277100077	0.408		
C, ZR = 75	NO .	1.391E+00,	2.038E+00,	3.413E+00,7	4.393		
C, SE=75	NO .	1.552E+01,	1.847E+00,	3.5526+0011	-0.300		
C, SK^{-0}	NO .	-8.202E-01,	1.717E+00,	2.732E+00,	-0.195		
C, 1 = 00	NO ,	-4.709E-01,	1.478E+00,	2.4138+00,,	0 315		
C, NB - 94	NO .	8.336E-01,	1.585E+00,	2.6448+00,,	-0.054		
C, NB - 95	NO /	-2.445E-01,	2.788E+00,	4.559E+00,,	-0.363		
C, ZR-95	, NO , NO	-2.599E+01,	4.445E+01,	7.157E+01,	0.649		
C, MO-99	, NO ,	1.889E+00,	2.022E+00,	2.909E+00,,	, 0.049		
C, RU-103	, INO ,	-4.555E+00,	1.418E+01,	2.335E+01,	, -0.199		
C, RU-106	, NO ,	6 913E-01,	1.469E+00,	2.469E+00,	, 0.200		
C,AG-110m	, NO ,	-4.854E-01	1.953E+00,	3.236E+00,	, -0.130		
C, SN-113	, NO ,	$= \frac{1}{2} \cdot 0 = \frac{1}{2} = 0 = \frac{1}{2}$	3.673E+00,	2.668E+00,	, 0.142		
C,SB-124	, NO ,	1.614E+00	4.283E+00,	7.165E+00,	, 0.225		
C,SB-125	,NO ,	1.0140100, 1.489E+01.	1.853E+01,	2.994E+01,	, -0.497		
C,TE-129M	,NO,	-1.400 - 1.4	2.448E+00,	3.947E+00,	, -0.207		
C,I-131	, NO ,	-0.1775 017	2.532E+00,	3.843E+00,	, 2.107		
C,BA-133	,NO,	8.0976+00,	2.784E+00,	3.191E+00,	, 2.363		
C,CS-134	,NO,	7.5416+00,	1.963E+00,	3.159E+00,	, -0.230		
C,CS-136	,NO,	-7.272E-01,	1.601E+00,	2.706E+00,	, 0.398		
C,CS-137	,NO,	1.07/E+00	1.526E+00,	2.475E+00,	, -0.370		
C,CE-139	,NO,	-9.151E-01,	6.922E+00.	1.131E+01,	, -0.013		
C, BA-140	,NO,	-1.427E-01,	2.390E+00.	4.168E+00,	, 0.629		
C,LA-140	,NO,	2.622E+00,	2.390E+00	4.650E+00,	0.296		
C,CE-141	, NO	1.376E+00,	1 264E+01	1.945E+01,	,, 0.333		
C,CE-144	, NO	6.471E+00,	T.304B1047	7.527E+00	,, -1.285		
C.EU-152	, NO	, -9.673E+00,	5.573 ± 00	5.171E+00	0.027		
C.EU-154	, NO	, 1.388E-01,	3.110E+00,	9 614E+00	-0.194		
C.AC-228	, NO	, -1.861E+00,	6.3U/E+UU,	9597E+00	-0.194		
C. TH-232	, NO	, -1.857E+00,	6.296E+00,	1.946E+01	0.341		
C.II-235	, NO	, 6.637E+00,	, <u>1.404E+01</u> ,	2.824E+02	0.204		
C.U-238	, NO	, 5.753E+01,	, 1.692E+02,	2.0240.02	-1.099		
C.AM-241	, NO	, -2.214E+01	, 1.369E+01,	2.01 <u>-</u> 101	, ,		

Sec.	Revi	ew: Ana	lyst: LI	ms: _/	-		==========	======================================	====== :33:02	=======
===== VAX/V TBE1:	===== /MS T 1 P-2	===== eledyne E 0610B HpG	Brown Eng. Be ********	Laborat ** Aqui	ory Galsitio	amma Rep n Date/T	ort: 16-MA ime: 15-MA	Y-2006 17	1:22:42	2.95
LIMS Samp Quan Star End MDA	No., le ID le Ty tity t Chanr Chanr Const	Customer ppe : Wo : 3 annel : 4 nel : 4 cant : 0	Name, Cli LL28609-6 G .57490E+00 0 Ener 090 Pk S .00 Lib:	L rgy Tol Srch Se rary Us	: WG L : 1. ns: 5. ed: L]	28609-6 G 30000 F 00000 I IBD	EX BRAID mple Date: Geometry BKGFILE Real Time Live time	10-MAY-2 1135L09 11BG050 0 14:10 0 14:10	2006 1! 0204 506MT :19.14 :00.00	5:05:00.
Pk 1 2 3 4 5 6 7 8 9 10 11 12 14 15 16 17 12 2 2	It 10 0 0 0 0 0 0 0 0 0 0 0 0 0	Energy 63.62 66.52 75.01 92.60 140.07 185.85 198.32 238.55 241.65 295.44 351.84 510.89 583.12 595.80 609.00 911.38 1095.24 1119.96 1407.57 1460.23 1762.86	Area 991 312 212 285 368 355 414 430 175 422 676 907 192 227 574 138 50 154 37 386 173	Bkgnd 3745 1267 1322 1590 1417 1319 1367 890 765 904 576 625 301 378 319 281 123 178 94 155 95	FWHM (2.79 1.07 1.19 1.52 1.17 1.31 1.19 1.46 1.40 1.55 1.40 1.55 1.35 1.40 1.77 1.99 1.51 1.82 1.72	Channel 126.41 132.22 149.25 184.54 279.73 371.56 396.56 477.23 483.46 591.32 704.40 1023.23 1168.01 1193.43 1219.89 1825.77 2194.05 2243.57 2819.44 2924.85 3530.50	<pre>%Eff 5.24E-01 6.08E-01 8.53E-01 1.27E+00 1.69E+00 1.62E+00 1.42E+00 1.41E+00 1.23E+00 1.08E+00 8.06E-01 7.27E-01 7.15E-01 7.02E-01 5.13E-01 4.45E-01 4.37E-01 3.65E-01 3.65E-01 3.04E-01</pre>	Cts/Sec 1.94E-02 6.13E-03 4.16E-03 5.60E-03 7.21E-03 8.12E-03 8.42E-03 8.42E-03 8.42E-03 1.33E-02 1.78E-02 3.77E-03 4.46E-03 1.13E-02 2.70E-03 9.87E-04 3.02E-03 9.87E-04 3.02E-03 9.87E-04 3.39E-03 3.39E-0	<pre>%Err 13.2 1 21.2 28.0 25.9 19.2 19.9 18.0 13.4 28.9 15.1 7.7 7.0 18.9 18.8 7.3 29.3 43.5 21.1 55.4 9.1 3 15.4</pre>	Fit 03E+00 8.23E-01

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Nuclide Line Activity Report

Nuclide	Type: natura	1			Uncorrected Decay Corr	2-Sigma %Error
Nuclide K-40 RA-226 AC-228	Energy 1460.81 186.21 835.50 911.07	Area 386 355 138	%Abn 10.67* 3.28* 1.75 27.70*	%Eff 3.540E-01 1.615E+00 5.493E-01 5.134E-01	1.515E+02 1.515E+02 9.941E+01 9.941E+01 Line Not Found 1.433E+01 1.436E+01	18.17 39.77 58.70 26.73
TH-228	238.63 240.98	430 175	44.60* 3.95	1.421E+00 1.410E+00	4.663E+01 4.688E+01 1.297E+01 1.297E+01	57.81 37.84
TH-232	583.14 911.07 969.11	192 138	30.25 27.70* 16.60	5.134E-01 4.895E-01	1.433E+01 1.433E+01 Line Not Found	58.70
U-235	143.76 163.35		10.50* 4.70	1.695E+00 1.678E+00	Line Not Found	

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185.71 205.31	355	54.00 4.70	1.615E+00 1.546E+00	6.038E+00 6.038E+00 39.77 Line Not Found	
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Flag: "*" = Keyline

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2

Page : Acquisition date : 15-MAY-2006 17:22:42 Summary of Nuclide Activity Sample ID : 11L28609-6 21 Total number of lines in spectrum 14 Number of unidentified lines 33.33% Number of lines tentatively identified by NID 7 Nuclide Type : natural 2-Sigma Decay Corr Uncorrected Decay Corr %Error Flags 2-Sigma Error pCi/L pCi/L 18.17 Decay 0.275E+02 Hlife Nuclide 1.515E+02 1.00 1.515E+02 39.77 3.954E+01 1.28E+09Y 9.941E+01 K-40 1.00 9.941E+01 58.70 0.843E+01 1600.00Y 1.436E+01 RA-226 1.00 1.433E+01 26.73 0.270E+01 5.75Y 1.010E+01 AC-228 1.005E+01 58.70 1.01 1.91Y 0.841E+01 1.433E+01 TH-228 1.433E+01 39.77 K 1.00 2.401E+00 TH-232 1.41E+10Y 6.038E+00 6.038E+00 1.00 7.04E+08Y _____ U-235 _____ 2.957E+02 2.956E+02 Total Activity : 2.957E+02 Grand Total Activity : 2.956E+02 "M" = Manually accepted

Flags: "K" = Keyline not found "E" = Manually edited

"A" = Nuclide specific abn. limit

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Page : 3

Unidentified Energy Lines Sample ID : 11L28609-6

Acquisition date : 15-MAY-2006 17:22:42

Samp.	le ID :	TTUZOOOD	0						err	%Eff !	Flaqs
τ+	Enerav	Area	Bkgnd	FWHM	Channel	Left	Ρw	Cts/Sec	2011 2	0 11 1 1	5
10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	63.62 66.52 75.01 92.60 140.07 198.32 295.44 351.84 510.89 595.80 609.00 1095.24 1119.96 1407.55 1762.86 gs: "T"	991 312 212 285 368 414 422 676 907 227 574 50 154 7 37 173 = Tentat	3745 1267 1322 1590 1417 1367 904 576 625 378 319 123 178 94 95	2.79 1.07 1.19 1.52 1.17 1.19 1.55 1.19 2.78 1.35 1.40 1.77 1.99 1.51 1.72	126.41 132.22 149.25 184.54 279.73 396.56 591.32 704.40 1023.23 1193.43 1219.89 2194.05 2243.57 2819.44 3530.50	120 120 146 181 276 391 586 699 1015 1187 22189 2236 2236 2236 2236 2236 2236	$ \begin{array}{c} 16\\ 6\\ 9\\ 11\\ 12\\ 10\\ 13\\ 13\\ 10\\ 13\\ 12\\ 10\\ 16\\ 13\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	1.94E-02 6.13E-03 4.16E-03 5.60E-03 7.21E-03 8.12E-03 8.28E-03 1.33E-02 1.78E-02 4.46E-03 1.13E-02 9.87E-04 3.02E-03 7.17E-04 3.39E-03	26.4 42.4 56.0 51.9 38.4 36.0 30.1 15.4 14.0 37.6 14.7 87.0 42.2 **** 30.9	5.24E-01 6.08E-01 8.53E-01 1.27E+00 1.69E+00 1.57E+00 1.23E+00 1.08E+00 8.06E-01 7.15E-01 7.02E-01 4.45E-02 4.37E-02 3.65E-02 3.04E-02) - - - - - - - - - - - - - - - - - - -

Summary of Nuclide Activity

Total number of lines in spectrum Number of unidentified lines 21 14 Number of lines tentatively identified by NID 7 33.33%

Nuclide Type : natural

Nuclide	Ι	Wtd Mean Decay Corr	Mean Wtd Mean rrected Decay Corr Decay Corr 2-Sigm	a r Flags
Nuclide K-40 RA-226 AC-228 TH-228 TH-232	2 -	pCi/L 1.515E+02 9.941E+01 1.363E+00 1.046E+01 1.297E+01 2.757E+02	Ci/L pCi/L 2-Sigma Error %Eirc 15E+02 1.515E+02 0.275E+02 18.17 41E+01 9.941E+01 3.954E+01 39.77 60E+00 1.363E+00 9.759E+00 716.22 40E+01 1.046E+01 0.269E+01 25.68 97E+01 1.297E+01 0.491E+01 37.88 756E+02 2.757E+02 2.757E+02 10.491E+01	2 3 1
AC-228 TH-228 TH-232	1 1	1.046E+01 1.297E+01 2.757E+02	40E+01 1.046E+01 0.269E+01 25.68 97E+01 1.297E+01 0.491E+01 37.86 56E+02 2.757E+02	25.68 37.84

Grand Total Activity : 2.756E+02 2.757E+02

Grai		-
Flags:	"K" = Keyline not found "E" = Manually edited	"M" = Manually accepted "A" = Nuclide specific abn. limit

Interference Report

Interfe	ring	Interfered			
Nuclide	Line	Nuclide	Line		
TH-232	911.07	AC-228	911.07		

Combined Activity-MDA Report

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
NUCLIUE	())))))))))))))))))))))))))))))))))))))				6.108
K-40	1.515E+02	2.752E+01	2.480E+01	0.000E+00	1 653
R-40 PN-226	9,941E+01	3.954E+01	6.013E+01	0.000E+00	0 142
RA-220	1 363E+00	9.759E+00	9.593E+00	0.000E+00	2 207
AC-ZZO	1.046E+01	2.686E+00	4.533E+00	0.000E+00	2.307
TH-228	1 297E+01	4.909E+00	1.070E+01	0.0008+00	1.213
TH-232	I.2971101				
Non-10	dentified Mucriaco				
	Key-Line		MT) X	MDA error	Act/MDA
	Activity K.L.	Act error	$(\mathbf{pCi} / \mathbf{I})$		
Nuclide	(pCi/L) Ided		(pcr/m)		
		1 353E+01	2.219E+01	0.000E+00	-0.015
BE-7	-3.358E-01	f_{38E+02}	1.076E+03	0.000E+00	-0.417
NA-24	-4.484E+02	$1.487E\pm01$	2.396E+01	0.000E+00	-0.310
CR-51	-7.421E+00	1 6028+00	2.647E+00	0.000E+00	0.250
MN-54	6.611E-01	1 5025+00	2.448E+00	0.000E+00	-0.329
CO-57	-8.051E-01	1.6255+00	2.696E+00	0.000E+00	0.179
CO-58	4.820E-01	1.635E+00	5.666E+00	0.000E+00	1.097
FE-59	6.213E+00	3.744E+00	2.544E+00	0.000E+00	-0.354
CO-60	-9.011E-01	1.305E+00	6 402E+00	0.000E+00	1.593
ZN-65	1.020E+01	4.073E+00	3 382E+00	0.000E+00	-0.248
SE-75	-8.375E-01	2.074E+00	3.550E+00	0.000E+00	5.031
SR-85	1.786E+01	2.0078+00	2.997E+00	0.000E+00	-0.641
Y-88	-1.923E+00	1.929E+00	2.9971700	0.000E+00	-0.267
NB-94	-6.789E-01	1.565E+00	2.3440100	0.000E+00	0.679
NB-95	1.848E+00	1.5986+00	2.7200+00	0.000E+00	0.173
ZR-95	7.879E-01	2.746E+00	4.5400+00	0.000E+00	0.194
MO-99	1.423E+01	4.427E+01	2.547570702	0.000E+00	0.229
RU-103	6.588E-01	1.738E+00	2.875 ± 00	0.000E+00	-0.043
RU-106	-1.041E+00	1.454E+01	2.4076+01	0.000E+00	-0.232
AG-110m	-5.870E-01	1.550E+00	2.534E+00	0.000E+00	0.171
SN-113	5.755E-01	2.019E+00	3.372E+00	0.000E+00	0.577
SB-124	1.498E+00	3.442E+00	2.595E+00	0.000E+00	0.524
SB-125	3.871E+00	4.378E+00	7.386E+00	0.000 ± 00	-0.054
TE-129M	-1.710E+00	1.918E+01	3.14/E+01	0.000E+00	-0.198
T-131	-7.878E-01	2.409E+00	3.9848+00	0.000 ± 00	2.311
BA-133	9.159E+00	2.606E+00	3.963E+00	0.00000+00	2.634
CS-134	8.335E+00	3.012E+00	3.164E+00	0.00000+00	-0.405
CS - 136	-1.307E+00	2.027E+00	3.228E+00	0.00000+00	0.450
CS-137	1.293E+00	1.698E+00	2.871E+00	0.000 ± 00	0.279
CE = 139	7.227E-01	1.586E+00	2.5908+00	0.000E+00	0.312
BA = 140	3.713E+00	7.191E+00	1.190E+01	0.000E+00	0 183
$I_{\Delta} = 140$	7.166E-01	2.364E+00	3.915E+00	0.000E+00	-0.825
CE - 141	-3.832E+00	3.429E+00	4.643E+00		-1 079
CF = 1AA	-2.010E+01	1.381E+01	1.864E+01		_n 828
	-6.549E+00	5.984E+00	7.912E+00	0.0008+00	-0.020 n ngk
	4,933E-01	3.118E+00	5.128E+00	U.UUUE+UU	_n 274
EU-104 TI 00E	-5.266E+00	1.398E+01	1.925E+01	0.000E+00	-0.274
U-233	7 722E+01	1.720E+02	2.884E+02	0.0008+00	0.200
	-1 072E+01	2.430E+01	3.333E+01	0.0008+00	-0.344
AMI-24⊥	1.0/22.02				

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						T 28609-6	ΕX	
N 11T 20609	-6	.05/16/2006	07:33,05/10/20	06 15:05, 3	1.575E+00,WG			
$A_1 \perp \perp 20009$	-0 -6	LTBD	,09/0)1/2005 07:43,	11356090204			
B, 11L20009	-0 VFC	1 515E+02	2.752E+01,	2.480E+01,,	6.108			
C, K-40	, IEC, VEC	9.941E+01.	3.954E+01,	6.013E+01,,	1.653			
C, RA-226	, IES,	1.363E+00.	9.759E+00,	9.593E+00,,	0.142			
C, AC-228	, IED,	1.046F+01	2.686E+00,	4.533E+00,,	2.307			
C,TH-228	, YES,	1.0400101, 1.047F+01	4.909E+00,	1.070E+01,,	1.213			
C,TH-232	, YES,	2.257 ± 01	1.353E+01,	2.219E+01,,	-0.015			
C,BE-7	,NO ,	-3.330E-01,	6.738E+02,	1.076E+03,,	-0.417			
C,NA-24	, NO ,	-4.4040+02,	1 487E+01	2.396E+01,,	-0.310			
C,CR-51	,NO ,	-7.4210+00,	1 602E+00,	2.647E+00,,	0.250			
C,MN-54	,NO,	6.611E-01	1.503E+00.	2.448E+00,,	-0.329			
C,CO-57	,NO,	-8.051E-01	1.635E+00.	2.696E+00,,	0.179			
C,CO-58	,NO,	4.820E-01,	3.744E+00	5.666E+00,,	1.097			
C,FE-59	,NO,	6.213E+00,	1.585E+00.	2.544E+00,,	-0.354			
C,CO-60	,NO,	-9.011E-01,	1.003E+00	6.402E+00,,	1.593			
C,ZN-65	,NO,	1.020E+01,	4.0731100	3.382E+00,,	-0.248			
C,SE-75	,NO,	-8.3/5E-UL,	2.0745+00,	3.550E+00,,	5.031			
C,SR-85	,NO,	1.786E+UI,	2.0076+00	2.997E+00,,	-0.641			
C,Y-88	,NO,	-1.923E+00,	1.929E+00	2 544E+00.	-0.267			
C,NB-94	,NO ,	-6.789E-01,	1.505E+00,	2.312+00,,	0.679			
C,NB-95	,NO,	1.848E+00,	1.598E+00,	4 548E+00.	0.173			
C,ZR-95	,NO,	7.879E-01,	2.746E+00,	7.347E+01.	0.194			
C, MO-99	,NO,	1.423E+01,	4.42/E+01,	2.875E+00	0.229			
C,RU-103	,NO,	6.588E-01,	1.738E+00,	$2.075\pm00,7$	-0.043			
C, RU-106	,NO,	-1.041E+00,	1.454E+U1,	2.407070101777	-0.232			
C,AG-110m	,NO,	-5.870E-01,	1.550E+00,	2.3340+0077	0.171			
C,SN-113	,NO,	5.755E-01,	2.019E+00,	3.372E+00,,	0.577			
C,SB-124	, NO ,	1.498E+00,	3.442E+00,	2.595E+00,,	0.524			
C.SB-125	, NO ,	3.871E+00,	4.378E+00,	$7.300\pm00,,$	-0.054			
C.TE-129M	1,NO,	-1.710E+00,	1.918E+01,	3.1476+01,	-0.198			
C.I-131	,NO,	-7.878E-01,	2.409ビ+00,	3.964E+00,,	2 311			
C.BA-133	, NO ,	9.159E+00,	2.606E+00,	3.963E+00,,	2.51			
C.CS-134	, NO ,	8.335E+00,	3.012E+00,	3.1646+00,,	-0 405			
C CS-136	NO,	-1.307E+00,	2.027E+00,	3.2288+00,,	0.100			
C CS - 137	NO ,	1.293E+00,	1.698E+00,	2.8/1E+00,,	0.400			
C CE - 139	, NO ,	7.227E-01,	1.586E+00,	2.590E+00,,	0.275			
C BA = 140	NO ,	3.713E+00,	7.191E+00,	1.190E+01,,	0.512			
C $LA = 140$	NO .	7.166E-01,	2.364E+00,	3.915E+00,,	0.105			
C, DA = 140	, NO ,	-3.832E+00,	3.429E+00,	4.643E+00,,	-0.025			
C $CF - 1AA$, NO	-2.010E+01,	1.381E+01,	1.864E+01,,	-1.0/2			
C, CE^{-1+4}	NO	-6.549E+00,	5.984E+00,	7.912E+00,,	-0.020			
C, EU=152	NO	4.933E-01,	3.118E+00,	5.128E+00,,	0.096			
	NO	-5.266E+00,	1.398E+01,	1.925E+01,,	-0.2/4			
C, U^{-2}		7.722E+01.	1.720E+02,	2.884E+02,,	0.268			
C, U = 230		-1.072E+01.	2.430E+01,	3.333E+01,,	-0.322			
C, AM-241	,110	,,						

LIMS: Analyst: Sec. Review: VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 07:39:18.84 TBE15 P-10635B HpGe ******* Aquisition Date/Time: 15-MAY-2006 17:24:00.79 LIMS No., Customer Name, Client ID: WG L28609-7 EX BRAID Smple Date: 10-MAY-2006 16:05:00. Geometry : 1535L090104 : 15L28609-7 Sample ID : 15BG050506MT BKGFILE : WG Sample Type Energy Tol : 1.70000 Real Time : 0 14:15:05.30 : 3.81770E+00 L Ouantity Pk Srch Sens: 5.00000 Live time : 0 14:15:00.00 Start Channel : 40 : 4090 End Channel Library Used: LIBD MDA Constant : 0.00 Cts/Sec %Err Fit %Eff FWHM Channel Bkgnd Area Energy 1.59E-01 5.94E-03 23.5 1.53E+00 Pk It 93.48 4.52E-01 5.64E-03 22.0 1.20E+00 1.84 1500 305 53.82 1 120.02 1 1.48E+00 5.35E-03 24.4 3.04E+00 1.18 1378 290 67.01 3 268.08 1.36E+00 3.21E-03 38.9 1.73E+00 2 1.11 1426 274140.60 1.21E+00 3.37E-03 26.6 1.94E+00 1 385.70 3 1.19 1071 165 199.07* 1.05E+00 5.58E-03 20.9 1.37E+00 1 473.16 4 1.22 718 173 242.55 9.15E-01 8.68E-03 12.5 6.03E-01 1 5 1.43 579.82 838 287 295.58* 6 1 693.68 5.97E-01 2.96E-03 26.3 1.23E+00 1.36 571 445 352.20* 7 1 1.76 1183.86 5.86E-01 4.60E-03 25.6 2.77E+00 357 152 596.01

1.61 1210.48

2.14 2235.85

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3.58E-01 1.98E-03 31.8 1.13E+00

Flag: "*" = Peak area was modified by background subtraction

554

152

236

102

Nuclide Line Activity Report

609.25*

1119.64*

Flag: "*" = Keyline

1

1

1

8

9

10

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Summary of Nuclide Activity
Sample ID : 15L28609-7Page : 2
Acquisition date : 15-MAY-2006 17:24:00Total number of lines in spectrum
Number of unidentified lines
Number of lines tentatively identified by NID 1
**** There are no nuclides meeting summary criteria ****10
9
10.00%Flags: "K" = Keyline not found
"E" = Manually edited"M" = Manually accepted
"A" = Nuclide specific abn. limit

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1.060

0.000E+00

3 Page : Acquisition date : 15-MAY-2006 17:24:00 Unidentified Energy Lines Sample ID : 15L28609-7 Flags Cts/Sec %Err %Eff Channel Left Pw FWHM Bkgnd Area It Energy 1.59E-01 9 5.94E-03 46.9 90 93.48 1.84 1500 305 53.82 4.52E-01 1 110 14 5.64E-03 43.9 120.02 1.18 1378 290 1.48E+00 3 67.01 8 5.35E-03 48.9 264 268.08 1.11 1426 2741.36E+00 140.60 8 3.21E-03 77.8 1 382 385.70 1.19 1071 165 Т 199.07 7 3.37E-03 53.3 1.21E+001 473.16 470 1.22 718 173 1.05E+00 242.55 575 10 5.58E-03 41.7 1 579.82 1.43 838 287 295.58 689 10 8.68E-03 25.0 9.15E-01 1 693.68 1.36 571 445 5.97E-01 352.20 1 1183.86 1178 12 2.96E-03 52.7 1.76 357 152 1210.48 1204 17 4.60E-03 51.1 596.01 5.86E-01 1 1.61 554 236 2235.85 2227 16 1.98E-03 63.7 3.58E-01 609.25 1 2.14 152 102 1119.64 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 10 Total number of lines in spectrum 9 Number of unidentified lines 10.00% Number of lines tentatively identified by NID 1 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Act/MDA Key-Line MDA error MDA K.L. Act error Activity (pCi/L)Ided (pCi/L)Nuclide 0.053 0.000E+00 2.380E+01 1.465E+01 1.258E+00 -0.753 BE-7 0.000E+00 9.785E+02 6.358E+02 -7.371E+02 0.321 0.000E+00 NA-24 4.698E+01 2.613E+01 1.510E+01 -0.116 K-40 0.000E+00 2.547E+01 1.546E+01 -2.952E+00 0.063 0.000E+00 CR-51 2.728E+00 1.639E+00 1.715E-01 -0.176 MN-54 0.000E+00 2.589E+00 1.627E+00 -4.544E-01 -0.067 CO-57 0.000E+00 2.747E+00 1.661E+00 -1.843E-01 0.578 CO-58 0.000E+00 5.787E+00 3.408E+00 3.344E+00 0.514 0.000E+00 FE-59 2.800E+00 1.624E+00 1.440E+00 1.234 0.000E+00 CO-60 6.767E+00 4.434E+00 8.354E+00 0.304 ZN-65 0.000E+00 3.622E+00 2.151E+00 1.102E+00 4.014 SE-75 0.000E+00 3.723E+00 1.941E+00 1.494E+01 -0.042 SR-85 0.000E+00 3.143E+00 1.920E+00 -1.308E-01 0.000E+00 -0.126 Y-88 2.619E+00 1.616E+00 -3.309E-01 1.118 0.000E+00 NB-94 3.066E+00 1.770E+00 3.428E+00 -0.306 NB-95 0.000E+00 4.794E+00 3.006E+00 -1.465E+00 -0.128 ZR-95 0.000E+00

4.580E+01

1.805E+00

-9.459E+00

3.336E+00

MO-99

RU-103

7.394E+01

3.146E+00

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RU-106 $1.552E+00$ $1.613E+0$ AG-110m $-1.188E-01$ $1.645E+0$ SN-113 $-1.510E-02$ $2.166E+0$ SB-124 $-2.706E+00$ $4.017E+0$ SB-125 $-1.297E-01$ $4.671E+0$ TE-129M $1.915E+01$ $2.034E+0$ I-131 $-2.230E-01$ $2.599E+0$ BA-133 $1.089E+01$ $2.739E+0$ CS-134 $3.543E+00$ $3.216E+0$ CS-136 $-1.110E+00$ $2.086E+0$ CS-137 $9.177E-01$ $1.819E+0$ CE-139 $2.179E+00$ $1.583E+0$ BA-140 $9.799E-01$ $7.322E+0$ LA-140 $1.114E-01$ $2.407E+0$ CE-144 $-5.543E+00$ $1.340E+0$ EU-152 $-3.315E+00$ $5.867E-0$ RA-226 $-1.954E+01$ $4.295E-0$ RA-226 $1.709E+00$ $7.245E-0$ TH-228 $1.856E+00$ $3.655E-0$ TH-232 $1.706E+00$ $7.232E-0$ U-235 $1.612E+01$ $1.465E-0$ U-238 $1.590E+02$ $1.936E-0$ M-241 $-1.902E+01$ $3.615E-0$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 0.061\\ -0.044\\ -0.091\\ -0.991\\ -0.017\\ 0.565\\ -0.052\\ 2.535\\ 1.143\\ -0.327\\ 0.303\\ 0.819\\ 0.080\\ 0.028\\ -0.123\\ -0.284\\ -0.397\\ -0.098\\ -0.296\\ 0.155\\ 0.372\\ 0.155\\ 0.372\\ 0.155\\ 0.786\\ 0.485\\ -0.618\end{array}$
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					LAND ON MC	т 28609-7	ΕX
		05/16/2006	07:39,05/10/20	06 16:05,	3.818E+00,WG	П20000,	
A,15L28609-7	/ 	,05/10/2000	,03/0	9/2005 13:29),1535L090104		
B,15L28609-7	/	, LILDU	1.465E+01,	2.380E+01,,	0.053		
C,BE-7 ,N	NO ,	1.250E+00	6 358E+02,	9.785E+02,,	-0.753		
C,NA-24 ,N	NO ,	-7.371E+02,	2.613E+01	4.698E+01,,	0.321		
C,K-40 , M	, OV	1.510E+01	1.546E+01,	2.547E+01,,	-0.116		
C,CR-51 ,1	, OV	-2.952E+00,	1.639E+00.	2.728E+00,,	0.063		
C, MN-54 ,1	NO,	1.715E-01,	1.627E+00.	2.589E+00,,	-0.176		
C, CO-57 ,1	NO,	-4.544E-01,	1.661E+00.	2.747E+00,,	-0.067		
C, CO-58 ,1	NO,	-1.843E-01,	1.0010+00	5.787E+00,,	0.578		
C,FE-59 ,1	NO,	3.344E+00,	3.4000+007 1.624E+00.	2.800E+00,,	0.514		
C, CO-60 ,	NO,	1.440E+00,	1.024E+00	6.767E+00,,	1.234		
C,ZN-65 ,	NO,	8.354E+00,	4.4340+007	3.622E+00,,	0.304		
C,SE-75 ,	NO,	1.102E+00,	2.131E+00,	3.723E+00,,	4.014		
C,SR-85 ,	NO,	1.494E+01,	1.9410+00,	3.143E+00,,	-0.042		
C.Y-88 ,	NO,	-1.308E-01,	1.920E+00,	2 619E+00,	-0.126		
C,NB-94 ,	NO,	-3.309E-01,	1.616E+00,	3 066E+00,,	1.118		
C.NB-95 ,	NO,	3.428E+00,	1.770E+00,	4 794E+00,,	-0.306		
C. 7R-95	NO ,	-1.465E+00,	3.006E+00,	7 394E+01,	-0.128		
C.MO-99 ,	NO,	-9.459E+00,	4.580E+01,	3 146E+00.	1.060		
C RII-103 ,	, NO ,	3.336E+00,	1.805E+00,	2.538E+01.	0.061		
C RU-106	,NO,	1.552E+00,	1.613E+01,	2.550E+00.	-0.044		
C AG-110m	,NO,	-1.188E-01,	1.645E+00,	2.000 ± 00	-0.004		
C SN-113	, NO ,	-1.510E-02,	2.166E+00,	3.3401.00	-0.991		
C SB - 124	NO ,	-2.706E+00,	4.017E+00,	2.7501007	-0.017		
$C_{SB} = 125$,NO,	-1.297E-01,	4.671E+00,	$7.800 \pm 00,$	0.565		
$C_{TE} = 129M$	NO ,	1.915E+01,	2.034E+01,	3.300B+01/	-0.052		
C_{T-131}	NO ,	-2.230E-01,	2.599E+00,	4.205E+00,	2.535		
$C_{RA} = 133$	NO ,	1.089E+01,	2.739E+00,	4.290E+00,	1.143		
C, DA = 134	NO	3.543E+00,	3.216E+00,	3.101E+00,	-0.327		
C, CS = 134	NO .	-1.110E+00,	2.086E+00,	3.3956+00,	0 303		
C, CS = 137	NO .	9.177E-01,	1.819E+00,	3.030E+00,	0 819		
C, CE 139	NO .	2.179E+00,	1.583E+00,	2.660E+00,	, 0.020		
C, CE = 137	NO .	9.799E-01,	7.322E+00,	1.2196+01,	, 0.028		
C, BA^{-140}	NO .	1.114E-01,	2.407E+00,	4.008E+00,	-0 123		
C, LA - 140	NO /	-5.891E-01,	3.525E+00,	4.800E+00,	_0.284		
C, CE = 141	NO /	-5.543E+00,	1.340E+01,	1.9558+01,	-0.397		
C, CE - 144	NO	-3.315E+00,	5.867E+00,	8.340E+00,	-0.098		
C, EU-152	NO	-5.265E-01,	3.385E+00,	5.393E+00	,, -0.096		
C, EU = 154	, NO ,	-1 954E+01,	4.295E+01,	6.596E+01	,, =0.250		
C, RA-226	, INO ,	1.709E+00,	7.245E+00,	1.105E+01	1 0.133 1 0.272		
C, AC-228	, INU ,	1 856E+00.	3.655E+00,	4.995E+00			
C,TH-228	, INU ,	1 706E+00	7.232E+00,	1.103E+01	U.100		
C, TH-232	, INU ,	1.612E+01	1.465E+01,	2.052E+01	· · · · · · · · · · · · · · · · · · ·		
C,U-235	, NU ,	1 590E+02	1.936E+02,	3.276E+02	·/ U.485		
C,U-238	, NO ,	1 QA2F102	3.615E+01,	3.076E+01	-0.618		
C,AM-241	, NO ,	, -1.902EFUL,	0.020				

LIMS: Analyst: Sec. Review: VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 14:17:32.61 TBE07 P-10768B HpGe ******* Aquisition Date/Time: 16-MAY-2006 12:17:19.07 LIMS No., Customer Name, Client ID: L28609-8 WG BRAID Smple Date: 10-MAY-2006 16:40:00. Geometry : 0735L090904 : 07L28609-8 Sample ID BKGFILE : 07BG050506MT : WG Sample Type : 3.59230E+00 L Energy Tol : 1.30000 Real Time : 0 02:00:01.44 Quantity Pk Srch Sens: 5.00000 Live time : 0 02:00:00.00 Start Channel : 40 End Channel : 4090 Library Used: LIBD MDA Constant : 0.00 Cts/Sec %Err Fit %Eff FWHM Channel Bkgnd Area Energy Pk It 2.09E+00 8.57E-03 41.9 3.67E+00 280.25 1.98E+00 1.19E-02 32.2 1.16E+00 2.32 201 62 139.67* 1 397.72 1 1.43E+00 7.07E-03 49.6 1.83E+00 186 2.01 86 198.39* 1 2 1.02 704.75 9.96E-01 6.16E-03 41.4 2.05E+00 131 51 351.87* 3 1 53 1.51 1192.75 9.81E-01 1.49E-02 18.0 1.34E+00 44 1 595.83 4 54 1.99 1219.64 5.81E-01 4.63E-03 23.0 1.39E+00 108 609.27* 1 5 3.43 2477.12 8 33 1238.07 6 1

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

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Summary of Nuclide Activity Sample ID : 07L28609-8 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

Page : 3 Unidentified Energy Lines Acquisition date : 16-MAY-2006 12:17:19 Sample ID : 07L28609-8 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM It Energy Area 2.09E+00 277 8 8.57E-03 83.9 62 201 2.32 280.25 139.67 1 393 10 1.19E-02 64.4 186 2.01 397.72 1.98E+00 198.39 86 1 704.75 698 12 7.07E-03 99.3 1.43E+00 1.02 51 131 351.87 1 1192.75 1187 16 6.16E-03 82.8 9.96E-01 53 1.51 1 595.83 44 1219.64 1214 13 1.49E-02 35.9 9.81E-01 609.27 108 54 1.99 1 5.81E-01 2477.12 2473 11 4.63E-03 46.0 8 3.43 1 1238.07 33 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 6 6 Number of unidentified lines Number of lines tentatively identified by NID 0.00% 0 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report

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No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-4.473E+00		2.854E+01	4.700E+01	0.000E+00	-0.095
NA-24	-3.126E+03		2.378E+03	3.327E+03	0.000E+00	-0.940
K-40	-2.193E+00		4.668E+01	8.868E+01	0.000E+00	-0.025
CR-51	-1.133E+01		3.032E+01	4.796E+01	0.000E+00	-0.236
MN-54	9.318E-01		3.112E+00	5.295E+00	0.000E+00	0.176
CO-57	3.490E-01		2.985E+00	5.021E+00	0.000E+00	0.070
CO-58	2.196E-01		3.717E+00	6.072E+00	0.000E+00	0.036
FE-59	-2.117E+00		7.093E+00	1.141E+01	0.000E+00	-0.186
CO-60	-7.979E-01		3.297E+00	5.300E+00	0.000E+00	-0.151
ZN-65	3.595E+00		8.112E+00	1.385E+01	0.000E+00	0.259
SE-75	-2.582E+00		4.271E+00	6.802E+00	0.000E+00	-0.380
SR-85	1.778E+01		4.285E+00	8.331E+00	0.000E+00	2.134
Y-88	1.001E+00		3.846E+00	6.481E+00	0.000E+00	0.154
NB-94	-1.155E+00		3.266E+00	5.245E+00	0.000E+00	-0.220
NB-95	1.602E+00		3.340E+00	5.671E+00	0.000E+00	0.283
ZR-95	-2.517E+00		5.881E+00	9.275E+00	0.000E+00	-0.271
MO-99	-1.001E+02		1.036E+02	1.559E+02	0.000E+00	-0.642
RU-103	-1.333E+00		3.646E+00	5.905E+00	0.000E+00	-0.226
RU-106	-1.889E+01		2.939E+01	4.439E+01	0.000E+00	-0.426
AG-110m	2.137E+00		3.025E+00	5.282E+00	0.000E+00	0.405
SN-113	-4.145E+00		4.119E+00	6.342E+00	0.000E+00	-0.654
SB-124	6.151E+00		4.851E+00	5.116E+00	0.000E+00	1.202

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SB-125	-2.166E+00	9.349E+00	1.502E+01	0.000E+00	-0.144
TE-129M	1.023E+01	4.308E+01	7.082E+01	0.000E+00	0.145
I-131	1.428E+00	5.164E+00	8.673E+00	0.000E+00	0.165
BA-133	3.064E+00	5.370E+00	7.898E+00	0.000E+00	0.388
CS-134	1.360E+01	4.944E+00	6.463E+00	0.000E+00	2.105
CS-136	1.197E+00	4.429E+00	7.358E+00	0.000E+00	0.163
CS-137	1.596E+00	3.225E+00	5.553E+00	0.000E+00	0.287
CE-139	3.643E+00	3.192E+00	5.470E+00	0.000E+00	0.666
BA-140	1.371E+01	1.590E+01	2.764E+01	0.000E+00	0.496
LA-140	-2.532E+00	5.300E+00	8.271E+00	0.000E+00	-0.306
CE-141	-2.116E+00	6.396E+00	8.915E+00	0.000E+00	-0.237
CE-144	1.701E+00	2.596E+01	3.888E+01	0.000E+00	0.044
EU-152	-1.101E+00	1.154E+01	1.618E+01	0.000E+00	-0.068
EU-154	8.963E-02	6.259E+00	1.048E+01	0.000E+00	0.009
RA-226	-7.250E+01	7.861E+01	1.264E+02	0.000E+00	-0.574
AC-228	5.233E+00	1.251E+01	2.222E+01	0.000E+00	0.236
TH-228	7.610E+00	6.007E+00	1.081E+01	0.000E+00	0.704
TH-232	5.222E+00	1.249E+01	2.217E+01	0.000E+00	0.236
U-235	-8.787E+00	2.622E+01	3.676E+01	0.000E+00	-0.239
U-238	5.740E+01	3.770E+02	6.284E+02	0.000E+00	0.091
AM-241	-6.758E+00	2.522E+01	4.176E+01	0.000E+00	-0.162

A,07L28609) - 8		,05/16/2006	14:17,05/10/	2006 16:40,	3.592E+00	,L28609-8	WG	BR
B,07L28609)-8		,LIBD	,06	/23/2005 07:20	6,0735L090	904		
C,BE-7	, NO	,	-4.473E+00,	2.854E+01,	4.700E+01,,	-0.095			
C,NA-24	, NO	,	-3.126E+03,	2.378E+03,	3.327E+03,,	-0.940			
C,K-40	, NO	,	-2.193E+00,	4.668E+01,	8.868E+01,,	-0.025			
C,CR-51	, NO	,	-1.133E+01,	3.032E+01,	4.796E+01,,	-0.236			
C,MN-54	, NO	,	9.318E-01,	3.112E+00,	5.295E+00,,	0.176			
C,CO-57	, NO	,	3.490E-01,	2.985E+00,	5.021E+00,,	0.070			
C, CO-58	, NO	,	2.196E-01,	3.717E+00,	6.072E+00,,	0.036			
C,FE-59	, NO	,	-2.117E+00,	7.093E+00,	1.141E+01,,	-0.186			
C, CO-60	, NO	,	-7.979E-01,	3.297E+00,	5.300E+00,,	-0.151			
C,ZN-65	, NO	,	3.595E+00,	8.112E+00,	1.385E+01,,	0.259			
C,SE-75	, NO	,	-2.582E+00,	4.271E+00,	6.802E+00,,	-0.380			
C, SR-85	, NO	,	1.778E+01,	4.285E+00,	8.331E+00,,	2.134			
C,Y-88	, NO	,	1.001E+00,	3.846E+00,	6.481E+00,,	0.154			
C,NB-94	, NO	,	-1.155E+00,	3.266E+00,	5.245E+00,,	-0.220			
C,NB-95	, NO	,	1.602E+00,	3.340E+00,	5.671E+00,,	0.283			
C,ZR-95	, NO	,	-2.517E+00,	5.881E+00,	9.275E+00,,	-0.271			
C,MO-99	, NO	,	-1.001E+02,	1.036E+02,	1.559E+02,,	-0.642			
C,RU-103	, NO	,	-1.333E+00,	3.646E+00,	5.905E+00,,	-0.226			
C,RU-106	, NO	,	-1.889E+01,	2.939E+01,	4.439E+01,,	-0.426			
C,AG-110m	, NO	,	2.137E+00,	3.025E+00,	5.282E+00,,	0.405			
C, SN-113	, NO	,	-4.145E+00,	4.119E+00,	6.342E+00,,	-0.654			
C,SB-124	, NO	,	6.151E+00,	4.851E+00,	5.116E+00,,	1.202			
C,SB-125	, NO	,	-2.166E+00,	9.349E+00,	1.502E+01,,	-0.144			
C,TE-129M	, NO	,	1.023E+01,	4.308E+01,	7.082E+01,,	0.145			
C,I-131	, NO	,	1.428E+00,	5.164E+00,	8.673E+00,,	0.165			
C,BA-133	, NO	,	3.064E+00,	5.370E+00,	7.898E+00,,	0.388			
C,CS-134	, NO	,	1.360E+01,	4.944E+00,	6.463E+00,,	2.105			
C,CS-136	, NO	,	1.197E+00,	4.429E+00,	7.358E+00,,	0.163			
C,CS-137	, NO	,	1.596E+00,	3.225E+00,	5.553E+00,,	0.287			
C,CE-139	, NO	,	3.643E+00,	3.192E+00,	5.470E+00,,	0.666			
C,BA-140	, NO	,	1.371E+01,	1.590E+01,	2.764E+01,,	0.496			
C,LA-140	, NO	,	-2.532E+00,	5.300E+00,	8.271E+00,,	-0.306			
C,CE-141	, NO	,	-2.116E+00,	6.396E+00,	8.915E+00,,	-0.237			
C,CE-144	, NO	,	1.701E+00,	2.596E+01,	3.888E+01,,	0.044			
C,EU-152	, NO	,	-1.101E+00,	1.154E+01,	1.618E+01,,	-0.068			
C,EU-154	, NO	,	8.963E-02,	6.259E+00,	1.048E+01,,	0.009			
C,RA-226	, NO	,	-7.250E+01,	7.861E+01,	1.264E+02,,	-0.574			
C,AC-228	, NO	,	5.233E+00,	1.251E+01,	2.222E+01,,	0.236			
C,TH-228	, NO	,	7.610E+00,	6.007E+00,	1.081E+01,,	0.704			
C,TH-232	, NO	,	5.222E+00,	1.249E+01,	2.217E+01,,	0.236			
C,U-235	, NO	,	-8.787E+00,	2.622E+01,	3.676E+01,,	-0.239			
C,U-238	, NO	,	5.740E+01,	3.770E+02,	6.284E+02,,	0.091			
C,AM-241	, NO	,	-6.758E+00,	2.522E+01,	4.176E+01,,	-0.162			

Sec.	Rev	view: Ana	lyst: I	LIMS: –\	<u>/</u>					
==== VAX/ TBE2	/VMS 23 03	Teledyne B 3017322 HpG	rown Eng e ******	. Labora **** Aqu	atory uisiti	Gamma Re on Date/	eport: 16-M 'Time: 16-	AY-2006 1 MAY-2006	5:18:55 12:17:1	2.35
LIMS	S No.	., Customer	Name, C	lient II	D: L28	609-9 WC	BRAID			
Samp Samp Quar Star End MDA	ole i ple i ntity ct Cl Chan Cons	ID : 23 Fype : WG y : 3. hannel : 50 hnel : 40 stant : 0.	L28609-9 49730E+0 90 Pk 00 Li	0 L ergy To Srch Se brary U	l : 1 ens: 5 sed: I	.50000 .00000 JBD	Smple Date Geometry BKGFILE Real Time Live time	e: 11-MAY- : 2335L09 : 23BG050 : 0 03:01 : 0 03:01	2006 09 0704 506MT :32.87 :25.00	9:15:00.
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	33.87*	31	133	1.09	67.89	9.50E-02	2.85E-03	72.4	
2	Õ	92.91*	38	820	1.86	185.86	1.70E+00	3.47E-031	58.0	
3	0	139.96*	83	511	0.94	279.88	2.05E+00	7.65E-03	49.1	
4	0	185.91*	28	561	1.41	371.70	1.95E+00	2.53E-031	.79.5	
5	0	351.93*	47	203	1.23	703.50	1.32E+00	4.27E-03	63.5	
6	0	510.89*	46	142	2.22	1021.27	9.85E-01	4.26E-03	70.5	
7	0	595.92	65	72	1.05	1191.27	8.74E-01	5.93E-03	28.3	
8	0	609.38*	52	108	1.57	1218.18	8.59E-01	4.78E-03	47.2	
9	0	1460.36*	25	40	2.16	2920.66	4.60E-01	2.34E-03	70.7	
10	0	1763.95*	7	28	2.11	3528.50	4.01E-01	6.05E-041	L89.8	

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

0 1763.95*

10

Nuclide Type: natural Uncorrected Decay Corr 2-Sigma pCi/L %Error %Eff pCi/L Nuclide %Abn Energy Area 3.687E+01 3.687E+01 141.41 10.67* 4.595E-01 1460.81 25 K-40 359.05 3.067E+01 3.067E+01 3.28* 1.946E+00 RA-226 186.21 28

Flag: "*" = Keyline

Summary of Nuclide Activity Page : 2 Acquisition date : 16-MAY-2006 12:17:12 Sample ID : 23L28609-9 Total number of lines in spectrum 10 Number of unidentified lines 8 Number of lines tentatively identified by NID 2 20.00% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma pCi/L pCi/L 2-Sigma Error %Error Flags Nuclide Hlife Decay 3.687E+01 5.214E+01 141.41 3.067E+01 11.01E+01 359.05 K-40 1.28E+09Y 1.00 3.687E+01 RA-226 1600.00Y 1.00 3.067E+01 _____ _____ Total Activity : 6.755E+01 6.755E+01 Grand Total Activity : 6.755E+01 6.755E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

3 Page : Unidentified Energy Lines Acquisition date : 16-MAY-2006 12:17:12 Sample ID : 23L28609-9 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM Area It Energy 9.50E-02 65 7 2.85E-03 **** 67.89 133 1.09 31 33.87 0 181 12 3.47E-03 **** 1.70E+00 185.86 1.86 820 0 92.91 38 8 7.65E-03 98.2 2.05E+00 279.88 276 0.94 83 511 139.96 0 1.32E+00 698 11 4.27E-03 **** 703.50 47 203 1.23 351.93 0 1021.27 1014 16 4.26E-03 **** 9.85E-01 2.22 46 142 510.89 0 8.74E-01 1191.27 1185 11 5.93E-03 56.6 72 1.05 65 595.92 0 1218.18 1210 14 4.78E-03 94.5 8.59E-01 1.57 108 52 0 609.38 3528.50 3522 14 6.05E-04 **** 4.01E-01 28 2.11 1763.95 7 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 10 Total number of lines in spectrum Number of unidentified lines 8 20.00% Number of lines tentatively identified by NID 2 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Nuclide Hlife 141.41 3.687E+01 5.214E+01 3.687E+01 1.28E+09Y 1.00 K-40 11.01E+01 359.05 3.067E+01 3.067E+01 1.00 RA-226 1600.00Y _____ _____ 6.755E+01 6.755E+01 Total Activity : 6.755E+01 Grand Total Activity : 6.755E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA MDA error Act error Activity (pCi/L)Nuclide (pCi/L)0.746 0.000E+00 5.214E+01 4.942E+01 K-40 3.687E+01 0.220 1.101E+02 1.397E+02 0.000E+00 3.067E+01 RA-226 ---- Non-Identified Nuclides ----Key-Line MDA MDA error Act/MDA Act error Activity K.L. (pCi/L)Nuclide (pCi/L) Ided -0.378 0.000E+00 4.330E+01 -1.639E+01 2.633E+01 BE-7

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L28609	106	of	158

NA-24	-5.538E+02	1.034E+03	1.744E+03	0.000E+00	-0.318
CR-51	-1.137E+01	2.915E+01	4.940E+01	0.000E+00	-0.230
MN-54	5.986E-01	2.869E+00	5.130E+00	0.000E+00	0.117
CO-57	1.147E+00	3.585E+00	5.961E+00	0.000E+00	0.192
CO-58	-3.735E+00	3.129E+00	4.912E+00	0.000E+00	-0.760
FE-59	5.706E+00	6.598E+00	1.212E+01	0.000E+00	0.471
CO-60	2.430E+00	3.003E+00	5.714E+00	0.000E+00	0.425
ZN-65	3.473E+00	6.402E+00	1.159E+01	0.000E+00	0.300
SE-75	-3.467E+00	4.621E+00	7.526E+00	0.000E+00	-0.461
SR-85	2.005E+01	3.892E+00	7.301E+00	0.000E+00	2.746
Y-88	1.446E+00	3.077E+00	5.861E+00	0.000E+00	0.247
NB-94	5.945E-01	2.939E+00	5.128E+00	0.000E+00	0.116
NB-95	1.884E+00	3.011E+00	5.405E+00	0.000E+00	0.349
ZR-95	-6.857E-02	4.901E+00	8.490E+00	0.000E+00	-0.008
MO-99	1.761E+01	7.803E+01	1.370E+02	0.000E+00	0.129
RU-103	-5.701E-01	3.359E+00	5.646E+00	0.000E+00	-0.101
RU-106	-3.828E+01	2.731E+01	4.333E+01	0.000E+00	-0.883
AG-110m	5.736E-01	2.913E+00	5.109E+00	0.000E+00	0.112
SN-113	-1.766E+00	3.850E+00	6.455E+00	0.000E+00	-0.274
SB-124	3.017E+00	5.788E+00	5.116E+00	0.000E+00	0.590
SB-125	-2.537E+00	8.670E+00	1.459E+01	0.000E+00	-0.174
TE-129M	-7.384E+00	3.598E+01	6.070E+01	0.000E+00	-0.122
I-131	-2.576E+00	4.846E+00	8.121E+00	0.000E+00	-0.317
BA-133	3.666E+00	4.933E+00	7.514E+00	0.000E+00	0.488
CS-134	3.204E+00	4.532E+00	5.632E+00	0.000E+00	0.569
CS-136	4.189E-01	3.711E+00	6.442E+00	0.000E+00	0.065
CS-137	6.085E-01	3.235E+00	5.666E+00	0.000E+00	0.107
CE-139	-3.778E-01	3.450E+00	5.838E+00	0.000E+00	-0.065
BA-140	-6.836E+00	1.328E+01	2.256E+01	0.000E+00	-0.303
LA-140	4.157E+00	3.862E+00	7.684E+00	0.000E+00	0.541
CE-141	-4.984E-01	7.513E+00	1.094E+01	0.000E+00	-0.046
CE-144	-2.517E+01	3.271E+01	4.464E+01	0.000E+00	-0.564
EU-152	-3.829E+00	1.146E+01	1.640E+01	0.000E+00	-0.233
EU-154	-1.572E+00	7.572E+00	1.243E+01	0.000E+00	-0.127
AC-228	-3.921E+00	1.096E+01	1.924E+01	0.000E+00	-0.204
TH-228	1.322E+00	6.415E+00	1.089E+01	0.000E+00	0.121
TH-232	-3.914E+00	1.094E+01	1.921E+01	0.000E+00	-0.204
U-235	9.251E+00	3.089E+01	4.565E+01	0.000E+00	0.203
U-238	-1.552E+02	3.367E+02	5.790E+02	0.000E+00	-0.268
AM-241	-2.510E+01	1.736E+01	2.830E+01	0.000E+00	-0.887

A,23L28609	-9	,05/16/2006	15:18,05/11/2	2006 09:15, /24/2005 07:5	3.497E+00,I 9,2335L09070	L28609-9)4	WG	BR
C K = 10	VFC	3.687E+01	5 214E+01.	4.942E+01.	. 0.746			
C, R = 0	VEC	3.067E+01	1 101E+02	1.397E+02.	0.220			
C, RA=220	NO	$-1 639 F \pm 01$	2.633E+01	4 330E+01.	-0.378			
C, BE = 7	, NO ,	-1.039E+01	1 03/F±03	1.330E+02,7 1.744E+03	-0.318			
C, NA-24	, NO ,	-5.550E+02, 1 127E+01	2.03457.03	$1.940E\pm01$	-0.230			
C, CR-51	, NO ,	-1.13/E+01,	2.913E+01,	5 130F+00	0 117			
C, MN - 54	, NO ,	5.900E-01, 1 147E-00	2.0095+00,	5.150E+00,, 5.961E+00	0 192			
C, CO-57	, NO ,	1.14/E+00,	3.305 ± 00	$1.912 E \pm 00,$	-0.760			
C, CO-58	,NO,	-3.735E+00,	5.129E+00	4.9125+00,,	0.700			
C,FE-59	,NO,	5.706E+00,	6.598E+00,	1.2126+01,	0.475			
C, CO-60	,NO,	2.430E+00,	3.003E+00,	5.714E+00,,	0.425			
C,ZN-65	,NO,	3.473E+00,	6.402E+00,	1.159E+U1,,	0.300			
C,SE-75	,NO,	-3.467E+00,	4.621E+00,	7.526E+00,,	-0.461			
C,SR-85	,NO,	2.005E+01,	3.892E+00,	7.301E+00,,	2.740			
C,Y-88	,NO,	1.446E+00,	3.077E+00,	5.861E+00,,	0.247			
C,NB-94	,NO,	5.945E-01,	2.939E+00,	5.128E+00,,	0.116			
C,NB-95	,NO,	1.884E+00,	3.011E+00,	5.405出+00,,	0.349			
C,ZR-95	,NO,	-6.857E-02,	4.901E+00,	8.490E+00,,	-0.008			
C,MO-99	,NO,	1.761E+01,	7.803E+01,	1.370E+02,,	0.129			
C,RU-103	,NO,	-5.701E-01,	3.359E+00,	5.646E+00,,	-0.101			
C,RU-106	,NO,	-3.828E+01,	2.731E+01,	4.333E+01,,	-0.883			
C,AG-110m	,NO,	5.736E-01,	2.913E+00,	5.109E+00,,	0.112			
C,SN-113	,NO,	-1.766E+00,	3.850E+00,	6.455E+00,,	-0.274			
C,SB-124	,NO,	3.017E+00,	5.788E+00,	5.116E+00,,	0.590			
C.SB-125	, NO ,	-2.537E+00,	8.670E+00,	1.459E+01,,	-0.174			
C.TE-129M	, NO ,	-7.384E+00,	3.598E+01,	6.070E+01,,	-0.122			
C.I-131	, NO ,	-2.576E+00,	4.846E+00,	8.121E+00,,	-0.317			
C.BA-133	.NO .	3.666E+00,	4.933E+00,	7.514E+00,,	0.488			
C.CS-134	.NO .	3.204E+00,	4.532E+00,	5.632E+00,,	0.569			
$C_{1}CS = 136$.NO .	4.189E-01,	3.711E+00,	6.442E+00,,	0.065			
$C_{1}CS = 137$	NO .	6.085E-01,	3.235E+00,	5.666E+00,,	0.107			
$C_{1}CE_{139}$	NO .	-3.778E-01.	3.450E+00,	5.838E+00,,	-0.065			
C BA = 140	NO .	-6.836E+00.	1.328E+01,	2.256E+01,,	-0.303			
C $LA = 140$	NO	4.157E+00	3.862E+00.	7.684E+00,,	0.541			
C $CE - 141$	NO ,	-4.984E-01	7.513E+00.	1.094E+01,	-0.046			
C, CE = 14A	, NO ,	-2.517E+01	3 271E+01	4.464E+01,,	-0.564			
C, CE = 144	NO	-3 829E±00	1.146E+01	1.640E+01.	-0.233			
C, EU=15Z	, INO ,	-3.020 ± 00	7 572F+00	1.243E+01	-0.127			
C, EU = 134	, NO ,	-1.3720+00,	1 096E±01	1.924E+01	-0.204			
C, AC - 220	, NO ,	-3.9210+00,	£ 415E+00	1.089E+01	0 121			
$C, 1\pi - 220$, INO , NO	-2 Q1/E,00	1 09/F±01	$1.921E\pm01$	-0 204			
$C, 1\pi - 232$, UVU ,		3 N80F+01	4 565E±01	0 203			
C, U - 235	, UNU ,	9.4516+00, 1 EEOR:00	3.009 ± 01	5 790F±02,	-0 268			
C,U-238	, NO ,	-1.552E+02,	$3.30/E+UZ_{i}$ 1 $72CE+01$	2.720070277 2.8200101	-0 887			
C,AM-241	, NO ,	-Z.5IUE+UI,	工./36世+U工,	Z.0306+01,	, -0.007			

Analyst: LIMS: Sec. Review: VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 15:19:48.72 TBE04 P-40312B HpGe ******* Aquisition Date/Time: 16-MAY-2006 12:32:14.86 ______ _____ LIMS No., Customer Name, Client ID: L28609-10 WG BRAID Smple Date: 10-MAY-2006 11:15:00. : 04L28609-10 Sample ID Geometry : 0435L090804 : WG Sample Type : 04BG050506MT : 3.65450E+00 L BKGFILE

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Quantity: 3.65450E+00 LBKGFILE: 04BG050506MTStart Channel : 90Energy Tol : 1.70000Real Time : 0 02:47:29.88End Channel : 4090Pk Srch Sens: 5.00000Live time : 0 02:47:28.07MDA Constant : 0.00Library Used: LIBDPk It EnergyAreaBkgnd FWHM Channel %EffCts/Sec %Err

1	66.21*	35	262	1.58	132.98	6.44E-01	3.43E-03	82.5	2.45E+00
1	197.73*	89	252	3.27	396.07	1.68E+00	8.86E-03	36.6	6.23E+00
1	238.46*	45	167	1.05	477.52	1.52E+00	4.50E-03	53.8	9.60E-01
1	295.04*	29	158	1.49	590.69	1.32E+00	2.85E-03	83.9	1.56E+00
1	351.73*	80	131	1.39	704.09	1.17E+00	7.97E-03	30.7	2.15E+00
1	583.21*	20	58	1.88	1167.03	7.99E-01	1.97E-03	93.5	2.52E+00
1	595.86	31	53	1.58	1192.33	7.86E-01	3.11E-03	49.3	2.51E+00
1	609.16*	51	67	1.45	1218.93	7.73E-01	5.07E-03	36.0	1.08E+00
1	661.62	27	48	1.67	1323.84	7.26E-01	2.68E-03	54.3	8.89E-01
1	1120.29*	31	12	2.48	2241.02	4.81E-01	3.09E-03	32.7	1.12E+00
1	1460.51*	68	22	2.22	2921.22	3.92E-01	6.79E-03	23.0	2.15E+00
1	1729.01	17	2	2.15	3457.95	3.48E-01	1.72E-03	27.2	3.67E-01
	1 1 1 1 1 1 1 1 1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1 66.21* 35 262 1 197.73* 89 252 1 238.46* 45 167 1 295.04* 29 158 1 351.73* 80 131 1 583.21* 20 58 1 595.86 31 53 1 609.16* 51 67 1 661.62 27 48 1 1120.29* 31 12 1 1460.51* 68 22 1 1729.01 17 2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	166.21*352621.58132.981197.73*892523.27396.071238.46*451671.05477.521295.04*291581.49590.691351.73*801311.39704.091583.21*20581.881167.031595.8631531.581192.331609.16*51671.451218.931661.6227481.671323.8411120.29*31122.482241.0211460.51*68222.222921.2211729.011722.153457.95	166.21*352621.58132.986.44E-011197.73*892523.27396.071.68E+001238.46*451671.05477.521.52E+001295.04*291581.49590.691.32E+001351.73*801311.39704.091.17E+001583.21*20581.881167.037.99E-011595.8631531.581192.337.86E-011609.16*51671.451218.937.73E-011661.6227481.671323.847.26E-0111120.29*31122.482241.024.81E-0111460.51*68222.222921.223.92E-0111722.153457.953.48E-01	166.21*352621.58132.986.44E-013.43E-031197.73*892523.27396.071.68E+008.86E-031238.46*451671.05477.521.52E+004.50E-031295.04*291581.49590.691.32E+002.85E-031351.73*801311.39704.091.17E+007.97E-031583.21*20581.881167.037.99E-011.97E-031595.8631531.581192.337.86E-013.11E-031609.16*51671.451218.937.73E-015.07E-031661.6227481.671323.847.26E-012.68E-0311120.29*31122.482241.024.81E-013.09E-0311460.51*68222.222921.223.92E-016.79E-0311729.011722.153457.953.48E-011.72E-03	166.21*352621.58132.986.44E-013.43E-0382.51197.73*892523.27396.071.68E+008.86E-0336.61238.46*451671.05477.521.52E+004.50E-0353.81295.04*291581.49590.691.32E+002.85E-0383.91351.73*801311.39704.091.17E+007.97E-0330.71583.21*20581.881167.037.99E-011.97E-0393.51595.8631531.581192.337.86E-013.11E-0349.31609.16*51671.451218.937.73E-015.07E-0336.01661.6227481.671323.847.26E-012.68E-0354.311120.29*31122.482241.024.81E-013.09E-0332.711460.51*68222.222921.223.92E-016.79E-0323.011729.011722.153457.953.48E-011.72E-0327.2

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al					
					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
K-40	1460.81	68	10.67*	3.921E-01	1.200E+02	1.200E+02	45.98
TH-228	238.63	45	44.60*	1.521E+00	4.902E+00	4.932E+00	107.56
	240.98		3.95	1.511E+00	Li	ne Not Found	

Nuclide Type: fission

Muorrae	1/201 1100101	-			Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
CS-137	661.65	27	85.12*	7.256E-01	3.210E+00	3.211E+00	108.65

Flag: "*" = Keyline

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Summary of Nuclide Activity	Page : 2
Sample ID : 04L28609-10	Acquisition date : 16-MAY-2006 12:32:14
Total number of lines in spectrum	12
Number of unidentified lines	8
Number of lines tentatively identified	1 by NID 4 33.33%
Nuclide Type : natural	
Uncorrected	Decay Corr Decay Corr 2-Sigma
Nuclide Hlife Decay pCi/L	pCi/L 2-Sigma Error %Error Flags
K-40 1.28E+09Y 1.00 1.200E+02	1.200E+02 0.552E+02 45.98
TH-228 1.91Y 1.01 4.902E+00	4.932E+00 5.304E+00 107.56
Total Activity : 1.249E+02	1.2504+02
Nuclide Type : fission	
Uncorrected	Decay Corr Decay Corr 2-Sigma
Nuclide Hlife Decay pCi/L	pCi/L 2-Sigma Error %Error Flags
CS-137 30.17Y 1.00 3.210E+00	3.211E+00 3.489E+00 108.65
Total Activity : 3.210E+00	3.211E+00
Grand Total Activity : 1.281E+02	1.282E+02
Flags: "K" = Keyline not found	"M" = Manually accepted
"E" = Manually edited	"A" = Nuclide specific abn. limit

Unidentified E Sample ID : 04	Energy Lines 4L28609-10		Acquisitio	n date : 1	E 6-MAY-2006	'age : 3 5 12:32:14
It Energy	Area Bkgr	d FWHM Chanı	nel Left Pw	Cts/Sec	%Err %Ef	f Flags
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	35 26 89 25 29 15 80 13 20 5 31 5 31 5 31 5 17 7	$\begin{array}{cccccccccccccccccccccccccccccccccccc$.98 130 7 .07 393 11 .69 587 9 .09 700 11 .03 1162 14 .33 1187 11 .93 1213 10 .02 2236 13 .95 3453 9	3.43E-03 8.86E-03 2.85E-03 7.97E-03 1.97E-03 3.11E-03 5.07E-03 3.09E-03 1.72E-03	**** 6.44 73.3 1.68 **** 1.32 61.3 1.17 **** 7.99 98.5 7.86 72.1 7.73 65.5 4.83 54.4 3.48	E-01 E+00 E+00 7E+00 F-01 T 5E-01 3E-01 1E-01 3E-01
Flags: "T" = 5	Tentatively a	associated				
Summary of Nu Total number Number of un Number of lin	clide Activit of lines in identified lines tentative	y spectrum ines ely identified	12 8 by NID 4	33	.33%	
Nuclide Type Nuclide H K-40 1.28E TH-228 1	: natural life Decay +09Y 1.00 .91Y 1.01	Wtd Mean Uncorrected pCi/L 1.200E+02 4.902E+00	Wtd Mean Decay Corr pCi/L 1.200E+02 4.932E+00	Decay Co 2-Sigma I 0.552E 5.304E	orr 2-Sig Error %Er +02 45. +00 107.	gma ror Flags 98 56
Tota	l Activity :	1.249E+02	1.250E+02			
Nuclide Type Nuclide H CS-137 30 Tota	: fission life Decay .17Y 1.00 l Activity :	Wtd Mean Uncorrected pCi/L 3.210E+00 3.210E+00	Wtd Mean Decay Corr pCi/L 3.211E+00 3.211E+00	Decay Co 2-Sigma 1 3.489E	orr 2-Si Error %Er +00 108.	gma ror Flags 65
Grand Tota	al Activity :	1.281E+02	1.282E+02			
Flags: "K" = "E" =	Keyline not Manually edi	found ted	"M" = Manua "A" = Nucli	ally accep ide specif	ted ic abn. li	mit
Interference	Report					
No interferer	nce correctio	n performed				
Combined Acti	vity-MDA Rep	ort				
Identifi	led Nuclides					
Nuclide	Activity (pCi/L)	Act error	r Mi (pC.	DA i/L)	MDA error	Act/MDA
K-40	1.200E+02	5.518E+03	1 5.13	9E+01	0.000E+00) 2.335

TH-228 4.932E+00 5.304E+00 8.483E+00 0.000E+00 0.581	CS-137	3.211E+00	3.489E+00	5.034E+00	0.000E+00	0.638
	TH-228	4.932E+00	5.304E+00	8.483E+00	0.000E+00	0.581

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-1.949E+00		2.665E+01	4.336E+01	0.000E+00	-0.045
NA-24	-1.756E+03		2.867E+03	4.438E+03	0.000E+00	-0.396
CR-51	-4.832E+00		3.076E+01	4.966E+01	0.000E+00	-0.097
MN-54	2.167E+00		2.905E+00	5.093E+00	0.000E+00	0.425
CO-57	-2.407E+00		2.808E+00	4.522E+00	0.000E+00	-0.532
CO-58	-2.390E+00		3.263E+00	5.104E+00	0.000E+00	-0.468
FE-59	1.060E+00		6.243E+00	1.049E+01	0.000E+00	0.101
CO-60	-3.180E-01		3.361E+00	5.731E+00	0.000E+00	-0.055
ZN-65	7.732E+00		8.447E+00	1.307E+01	0.000E+00	0.591
SE-75	5.441E-01		4.151E+00	6.876E+00	0.000E+00	0.079
SR-85	1.270E+01		3.922E+00	7.298E+00	0.000E+00	1.740
Y-88	8.499E-02		3.943E+00	6.515E+00	0.000E+00	0.013
NB-94	7.177E-01		2.973E+00	4.942E+00	0.000E+00	0.145
NB-95	-6.034E-01		3.389E+00	5.423E+00	0.000E+00	-0.111
ZR-95	5.261E+00		5.607E+00	9.776E+00	0.000E+00	0.538
MO-99	7.816E+01		9.702E+01	1.685E+02	0.000E+00	0.464
RU-103	2.365E+00		3.532E+00	5.981E+00	0.000E+00	0.395
RU-106	-1.926E+01		2.879E+01	4.527E+01	0.000E+00	-0.426
AG-110m	3.540E+00		3.608E+00	5.515E+00	0.000E+00	0.642
SN-113	1.298E+00		4.200E+00	7.071E+00	0.000E+00	0.184
SB-124	4.205E-01		7.198E+00	5.427E+00	0.000E+00	0.077
SB-125	1.084E+01		8.892E+00	1.561E+01	0.000E+00	0.694
TE-129M	1.474E+01		3.802E+01	6.376E+01	0.000E+00	0.231
I-131	-4.634E+00		4.808E+00	7.592E+00	0.000E+00	-0.610
BA-133	5.125E+00		4.887E+00	7.462E+00	0.000E+00	0.687
CS-134	5.446E+00		5.063E+00	5.918E+00	0.000E+00	0.920
CS-136	2.209E+00		3.909E+00	6.770E+00	0.000E+00	0.326
CE-139	4.934E-01		2.903E+00	4.767E+00	0.000E+00	0.104
BA-140	3.551E+00		1.497E+01	2.464E+01	0.000E+00	0.144
LA-140	-1.665E-02		5.229E+00	8.554E+00	0.000E+00	-0.002
CE-141	-6.486E+00		5.677E+00	8.967E+00	0.000E+00	-0.723
CE-144	-1.771E+01		2.189E+01	3.513E+01	0.000E+00	-0.504
EU-152	-1.306E+01		1.148E+01	1.506E+01	0.000E+00	-0.867
EU-154	-4.941E-01		5.731E+00	9.477E+00	0.000E+00	-0.052
RA-226	-2.802E+00		7.433E+01	1.221E+02	0.000E+00	-0.023
AC-228	3.810E+00		1.190E+01	2.088E+01	0.000E+00	0.182
TH-232	3.802E+00		1.188E+01	2.084E+01	0.000E+00	0.182
U-235	-2.086E+01		2.308E+01	3.680E+01	0.000E+00	-0.567
U-238	5.842E+01		3.481E+02	5.756E+02	0.000E+00	0.102
AM-241	-2.731E+01		2.652E+01	4.058E+01	0.000E+00	-0.673

В

A,04L28609	9-10	,05/16/2006	15:19,05/10/	2006 11:15,	3.655E+00,L286	09-10 WG
B,04L2860	9-10	,LIBD	,03	/14/2005 09:04	,0435L090804	
C,K-40	,YES,	1.200E+02,	5.518E+01,	5.139E+01,,	2.335	
C,CS-137	,YES,	3.211E+00,	3.489E+00,	5.034E+00,,	0.638	
C,TH-228	,YES,	4.932E+00,	5.304E+00,	8.483E+00,,	0.581	
C, BE-7	,NO,	-1.949E+00,	2.665E+01,	4.336E+01,,	-0.045	
C, NA-24	, NO ,	-1.756E+03,	2.867E+03,	4.438E+03,,	-0.396	
C,CR-51	, NO ,	-4.832E+00,	3.076E+01,	4.966E+01,,	-0.097	
C, MN-54	, NO ,	2.167E+00,	2.905E+00,	5.093E+00,,	0.425	
C,CO-57	,NO,	-2.407E+00,	2.808E+00,	4.522E+00,,	-0.532	
C, CO-58	,NO,	-2.390E+00,	3.263E+00,	5.104E+00,,	-0.468	
C.FE-59	, NO ,	1.060E+00,	6.243E+00,	1.049E+01,,	0.101	
C, CO-60	, NO ,	-3.180E-01,	3.361E+00,	5.731E+00,,	-0.055	
C, ZN-65	, NO ,	7.732E+00,	8.447E+00,	1.307E+01,,	0.591	
C,SE-75	, NO ,	5.441E-01,	4.151E+00,	6.876E+00,,	0.079	
C, SR-85	, NO ,	1.270E+01,	3.922E+00,	7.298E+00,,	1.740	
C,Y-88	, NO ,	8.499E-02,	3.943E+00,	6.515E+00,,	0.013	
C,NB-94	, NO ,	7.177E-01,	2.973E+00,	4.942E+00,,	0.145	
C,NB-95	, NO ,	-6.034E-01,	3.389E+00,	5.423E+00,,	-0.111	
C,ZR-95	, NO ,	5.261E+00,	5.607E+00,	9.776E+00,,	0.538	
C, MO-99	, NO ,	7.816E+01,	9.702E+01,	1.685E+02,,	0.464	
C,RU-103	,NO,	2.365E+00,	3.532E+00,	5.981E+00,,	0.395	
C,RU-106	,NO,	-1.926E+01,	2.879E+01,	4.527E+01,,	-0.426	
C,AG-110m	,NO,	3.540E+00,	3.608E+00,	5.515E+00,,	0.642	
C,SN-113	,NO,	1.298E+00,	4.200E+00,	7.071E+00,,	0.184	
C,SB-124	,NO,	4.205E-01,	7.198E+00,	5.427E+00,,	0.077	
C,SB-125	,NO,	1.084E+01,	8.892E+00,	1.561E+01,,	0.694	
C,TE-129M	I,NO,	1.474E+01,	3.802E+01,	6.376E+01,,	0.231	
C,I-131	,NO,	-4.634E+00,	4.808E+00,	7.592E+00,,	-0.610	
C,BA-133	,NO,	5.125E+00,	4.887E+00,	7.462E+00,,	0.687	
C,CS-134	,NO,	5.446E+00,	5.063E+00,	5.918E+00,,	0.920	
C,CS-136	,NO,	2.209E+00,	3.909E+00,	6.770E+00,,	0.326	
C,CE-139	,NO,	4.934E-01,	2.903E+00,	4.767E+00,,	0.104	
C,BA-140	,NO,	3.551E+00,	1.497E+01,	2.464E+01,,	0.144	
C,LA-140	,NO,	-1.665E-02,	5.229E+00,	8.554E+00,,	-0.002	
C,CE-141	,NO,	-6.486E+00,	5.677E+00,	8.967E+00,,	-0.723	
C,CE-144	,NO,	-1.771E+01,	2.189E+01,	3.513E+01,,	-0.504	
C,EU-152	,NO,	-1.306E+01,	1.148E+01,	1.506E+01,,	-0.867	
C,EU-154	,NO,	-4.941E-01,	5.731E+00,	9.477E+00,,	-0.052	
C,RA-226	,NO,	-2.802E+00,	7.433E+01,	1.221E+02,,	-0.023	
C,AC-228	,NO,	3.810E+00,	1.190E+01,	2.088E+01,,	0.182	
C,TH-232	,NO,	3.802E+00,	1.188E+01,	2.084E+01,,	0.182	
C,U-235	,NO,	-2.086E+01,	2.308E+01,	3.680E+01,,	-0.567	
C,U-238	,NO,	5.842E+01,	3.481E+02,	5.756E+02,,	0.102	
C,AM-241	,NO,	-2.731E+01,	2.652E+01,	4.058E+01,,	-0.673	

.

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 18:18:33.92 TBE11 P-20610B HpGe ******** Aquisition Date/Time: 16-MAY-2006 13:22:26.48 LIMS No., Customer Name, Client ID: L28609-11 WG BRAID

Sample ID	:	11L2860	9-11		Smple Date	::	10-MAY-2006 12:10:00.
Sample Type	:	WG			Geometry	:	1135L090204
Quantity	:	3.54810	E+00 L		BKGFILE	:	11BG050506MT
Start Channel	:	40	Energy Tol :	1.30000	Real Time	:	0 04:55:56.30
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 04:55:49.42
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	139.78	181	588	1.11	279.16	1.69E+00	1.02E-02	26.1	
2	Õ	198.32*	71	428	1.20	396.56	1.57E+00	4.00E-03	55.6	
ຊ	Õ	238 42*	47	336	0.99	476.98	1.42E+00	2.65E-03	77.0	
4	0 0	295.30*	56	386	1.33	591.03	1.23E+00	3.14E-03	75.6	
5	0 0	352 22*	89	235	1.38	705.14	1.08E+00	5.00E-03	36.5	
5	0	595 59	98	139	1.22	1193.00	7.15E-01	5.51E-03	26.9	
7	0	608 97*	106	114	1.37	1219.83	7.02E-01	6.00E-03	24.0	
γ Ω	0	1118 92*	45	59	0.86	2241.48	4.37E-01	2.54E-03	44.1	
0 0	0	1/60 30*	92	52	2.08	2924.99	3.54E-01	5.20E-03	25.3	
10	0	1762.48*	32	22	2.64	3529.73	3.04E-01	1.79E-03	41.5	
	0									

Flag: "*" = Peak area was modified by background subtraction

LIMS:

Nuclide Line Activity Report

Nuclide	Type · natura	۹l					
NUCLIUC	Type. nacare				Uncorrected	l Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K = 40	1460.81	92	10.67*	3.540E-01	1.049E+02	1.049E+02	50.50
TH-228	238.63	47	44.60*	1.422E+00	3.180E+00	3.199E+00	154.00
	240.98		3.95	1.413E+00	Li	ine Not Found	

Flag: "*" = Keyline
L28609 114 of 158

Page : 2 Summary of Nuclide Activity Acquisition date : 16-MAY-2006 13:22:26 Sample ID : 11L28609-11 10 Total number of lines in spectrum Number of unidentified lines 8 Number of lines tentatively identified by NID 2 20.00% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags 0.530E+02 50.50 pCi/L pĈi/L Nuclide Hlife Decay 8E+09Y 1.00 1.049E+02 1.049E+02 0.530E+02 1.91Y 1.01 3.180E+00 3.199E+00 4.927E+00 K-40 1.28E+09Y 4.927E+00 154.00 TH-228 _____ Total Activity : 1.081E+02 1.081E+02 Grand Total Activity : 1.081E+02 1.081E+02 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

3 Page : Unidentified Energy Lines Acquisition date : 16-MAY-2006 13:22:26 Sample ID : 11L28609-11 %Eff Flags Channel Left Pw Cts/Sec %Err Bkgnd FWHM Area It Energy 1.69E+00 274 10 1.02E-02 52.3 1.11 279.16 588 0 139.78 181 9 4.00E-03 **** 1.57E+00392 1.20 396.56 428 71 198.32 0 1.23E+00 585 13 3.14E-03 **** 591.03 56 386 1.33 0 295.30 1.08E+00 699 10 5.00E-03 73.0 1.38 705.14 89 235 352.22 0 1193.00 1186 13 5.51E-03 53.7 7.15E-01 1.22 98 139 0 595.59 1219.83 1213 12 6.00E-03 48.0 7.02E-01 1.37 106 114 0 608.97 2241.48 2233 17 2.54E-03 88.2 4.37E-01 59 0.86 0 1118.92 45 3529.73 3522 17 1.79E-03 83.0 3.04E-01 2.64 32 22 1762.48 \cap Flags: "T" = Tentatively associated Summary of Nuclide Activity 10 Total number of lines in spectrum Number of unidentified lines 8 20.00% Number of lines tentatively identified by NID 2 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Hlife Decay Nuclide 50.50 0.530E+02 1.049E+02 1.28E+09Y 1.00 1.049E+02 K-40 154.00 4.927E+00 3.199E+00 1.01 3.180E+00 TH-228 1.91Y _____ _ _ _ _ _ _ _ _ _ _ 1.081E+02 1.081E+02 Total Activity : Grand Total Activity : 1.081E+02 1.081E+02 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----MDA error Act/MDA MDA Act error Activity (pCi/L)(pCi/L) Nuclide 2.796 3.753E+01 0.000E+00 5.300E+01 1.049E+02 K-40 0.405 7.907E+00 0.000E+00 4.927E+00 TH-228 3.199E+00 ---- Non-Identified Nuclides ----Key-Line MDA error Act/MDA MDA K.L. Act error Activity (pCi/L)Nuclide (pCi/L) Ided 0.094 0.000E+00 3.963E+01 3.707E+00 2.398E+01 BE-7

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NA-24	-1.980E+03	2.773E+03	4.317E+03	0.000E+00	-0.459
CR-51	-4.895E+01	2.615E+01	3.968E+01	0.000E+00	-1.233
MN-54	3.461E+00	2.880E+00	5.003E+00	0.000E+00	0.692
CO-57	1.011E+00	2.625E+00	4.349E+00	0.000E+00	0.232
CO-58	-6.298E-01	3.057E+00	4.934E+00	0.000E+00	-0.128
FE-59	-1.601E+00	6.093E+00	9.814E+00	0.000E+00	-0.163
CO-60	-1.981E+00	2.871E+00	4.481E+00	0.000E+00	-0.442
ZN-65	4.822E+00	7.794E+00	1.131E+01	0.000E+00	0.426
SE-75	-5.210E-03	3.721E+00	6.115E+00	0.000E+00	-0.001
SR-85	1.795E+01	3.323E+00	6.388E+00	0.000E+00	2.810
Y-88	-3.439E-01	3.134E+00	5.100E+00	0.000E+00	-0.067
NB-94	-6.725E-01	2.555E+00	4.150E+00	0.000E+00	-0.162
NB-95	1.736E+00	2.727E+00	4.630E+00	0.000E+00	0.375
ZR-95	-1.661E+00	4.935E+00	7.934E+00	0.000E+00	-0.209
MO-99	3.316E+01	9.436E+01	1.579E+02	0.000E+00	0.210
RU-103	3.080E+00	3.085E+00	5.265E+00	0.000E+00	0.585
RU-106	-2.367E+01	2.521E+01	3.986E+01	0.000E+00	-0.594
AG-110m	-7.399E-01	2.765E+00	4.512E+00	0.000E+00	-0.164
SN-113	-1.363E+00	3.610E+00	5.906E+00	0.000E+00	-0.231
SB-124	5.283E+00	5.472E+00	4.712E+00	0.000E+00	1.121
SB-125	-3.891E+00	7.708E+00	1.247E+01	0.000E+00	-0.312
TE-129M	2.367E+01	3.342E+01	5.663E+01	0.000E+00	0.418
I-131	-6.449E-01	4.560E+00	7.556E+00	0.000E+00	-0.085
BA-133	6.353E+00	4.517E+00	6.648E+00	0.000E+00	0.956
CS-134	7.989E+00	4.639E+00	5.391E+00	0.000E+00	1.482
CS-136	2.494E+00	3.858E+00	6.521E+00	0.000E+00	0.382
CS-137	1.957E+00	2.999E+00	5.118E+00	0.000E+00	0.382
CE-139	-1.483E-01	2.760E+00	4.471E+00	0.000E+00	-0.033
BA-140	3.120E+00	1.305E+01	2.153E+01	0.000E+00	0.145
LA-140	1.196E+00	4.851E+00	8.061E+00	0.000E+00	0.148
CE-141	2.409E+00	5.995E+00	8.438E+00	0.000E+00	0.285
CE-144	9.444E+00	2.389E+01	3.376E+01	0.000E+00	0.280
EU-152	-9.796E+00	1.040E+01	1.353E+01	0.000E+00	-0.724
EU-154	7.635E-01	5.462E+00	8.994E+00	0.000E+00	0.085
RA-226	2.156E+01	6.584E+01	1.103E+02	0.000E+00	0.195
AC-228	3.192E+00	1.100E+01	1.888E+01	0.000E+00	0.169
TH-232	3.186E+00	1.098E+01	1.884E+01	0.000E+00	0.169
U-235	5.828E+00	2.464E+01	3.449E+01	0.000E+00	0.169
U-238	-2.786E+01	2.935E+02	4.730E+02	0.000E+00	-0.059
AM-241	1.009E+01	3.506E+01	5.694E+01	0.000E+00	0.177

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A,11L28609	-11	,05/16/2006	18:18,05/10/	2006 12:10,	3.548E+00,	L28609-11	WG H	3
B,11L28609	-11	,LIBD	,09	/01/2005 07:43	3,1135L0902	204		
C,K-40	,YES,	1.049E+02,	5.300E+01,	3.753E+01,,	2.796			
C,TH-228	,YES,	3.199E+00,	4.927E+00,	7.907E+00,,	0.405			
C,BE-7	,NO ,	3.707E+00,	2.398E+01,	3.963E+01,,	0.094			
C.NA-24	, NO ,	-1.980E+03,	2.773E+03,	4.317E+03,,	-0.459			
C.CR-51	, NO ,	-4.895E+01,	2.615E+01,	3.968E+01,,	-1.233			
C.MN-54	, NO ,	3.461E+00,	2.880E+00,	5.003E+00,,	0.692			
C, CO-57	.NO .	1.011E+00,	2.625E+00,	4.349E+00,,	0.232			
C.CO-58	, NO ,	-6.298E-01,	3.057E+00,	4.934E+00,,	-0.128			
C.FE-59	, NO .	-1.601E+00,	6.093E+00,	9.814E+00,,	-0.163			
$C_{1}C_{0}-60$	NO .	-1.981E+00,	2.871E+00,	4.481E+00,,	-0.442			
C ZN-65	NO .	4.822E+00,	7.794E+00,	1.131E+01,,	0.426			
$C_{SE} = 75$	NO .	-5.210E-03.	3.721E+00,	6.115E+00,,	-0.001			
C SR - 85	NO .	1.795E+01,	3.323E+00,	6.388E+00,,	2.810			
C Y - 88	NO .	-3.439E-01,	3.134E+00,	5.100E+00,,	-0.067			
C NB-94	NO .	-6.725E-01,	2.555E+00,	4.150E+00,,	-0.162			
C NB-95	NO .	1.736E+00,	2.727E+00,	4.630E+00,,	0.375			
C $ZR - 95$	NO .	-1.661E+00.	4.935E+00,	7.934E+00,,	-0.209			
C MO - 99	NO .	3.316E+01.	9.436E+01,	1.579E+02,,	0.210			
C RII-103	NO .	3.080E+00,	3.085E+00,	5.265E+00,,	0.585			
C RII-106	NO .	-2.367E+01,	2.521E+01,	3.986E+01,,	-0.594			
C AG-110m	NO .	-7.399E-01,	2.765E+00,	4.512E+00,,	-0.164			
C.SN-113	, NO ,	-1.363E+00,	3.610E+00,	5.906E+00,,	-0.231			
C.SB-124	, NO ,	5.283E+00,	5.472E+00,	4.712E+00,,	1.121			
C.SB-125	NO .	-3.891E+00,	7.708E+00,	1.247E+01,,	-0.312			
C.TE-129M	.NO .	2.367E+01,	3.342E+01,	5.663E+01,,	0.418			
C.T-131	NO .	-6.449E-01,	4.560E+00,	7.556E+00,,	-0.085			
C.BA-133	.NO .	6.353E+00,	4.517E+00,	6.648E+00,,	0.956			
$C_{1}CS - 134$, NO ,	7.989E+00,	4.639E+00,	5.391E+00,,	1.482			
$C_{1}CS - 136$.NO .	2.494E+00,	3.858E+00,	6.521E+00,,	0.382			
C.CS-137	.NO ,	1.957E+00,	2.999E+00,	5.118E+00,,	0.382			
C.CE-139	NO .	-1.483E-01,	2.760E+00,	4.471E+00,,	-0.033			
C.BA-140	, NO ,	3.120E+00,	1.305E+01,	2.153E+01,,	0.145			
C.LA-140	NO ,	1.196E+00,	4.851E+00,	8.061E+00,,	0.148			
C.CE-141	, NO ,	2.409E+00,	5.995E+00,	8.438E+00,,	0.285			
C.CE-144	, NO ,	9.444E+00,	2.389E+01,	3.376E+01,,	0.280			
C.EU-152	, NO	-9.796E+00,	1.040E+01,	1.353E+01,,	-0.724			
C,EU-154	, NO ,	7.635E-01,	5.462E+00,	8.994E+00,,	0.085			
C, RA-226	, NO ,	2.156E+01,	6.584E+01,	1.103E+02,,	0.195			
C.AC-228	.NO .	3.192E+00,	1.100E+01,	1.888E+01,,	0.169			
C.TH-232	, NO .	3.186E+00,	1.098E+01,	1.884E+01,,	0.169			
C.U-235	NO .	5.828E+00,	2.464E+01,	3.449E+01,,	0.169			
C,U-238	, NO .	-2.786E+01,	2.935E+02,	4.730E+02,,	-0.059			
C,AM-241	, NO ,	1.009E+01,	3.506E+01,	5.694E+01,,	0.177			

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 18:17:23.91
TBE10 12892256 HpGe ******** Aquisition Date/Time: 16-MAY-2006 13:30:54.06
LIMS No., Customer Name, Client ID: WG L28609-12 BRAIDWOOD

Sample ID Sample Type Quantity Start Channel	: : :	10L28609 WG 3.60220H 80	9-12 E+00 L Energy Tol :	1.30000	Smple Date Geometry BKGFILE Real Time	:	10-MAY-2006 14:00:00. 1035L091004 10BG050506MT 0 04:46:24.79
End Channel MDA Constant	:	4090 0.00	Pk Srch Sens: Library Used:	5.00000 LIBD	Live time	:	0 04:46:21.55

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %	Err	Fit
1	1	66.41*	148	604	1.35	132.07	6.37E-01	8.60E-03 2	29.7	3.03E+00
2	1	139.76	86	554	1.12	278.85	1.68E+00	4.99E-03 4	7.0	2.12E+00
3	1	185.09*	28	526	2.07	369.57	1.60E+00	1.61E-0315	58.6	2.57E+00
4	1	198.08*	133	385	1.53	395.57	1.55E+00	7.76E-03 2	28.6	2.99E+00
5	1	238.30*	3	338	2.22	476.08	1.40E+00	1.97E-04**	* * *	4.53E+00
6	1	295.12*	96	343	1.36	589.79	1.21E+00	5.59E-03 4	10.0	1.56E+00
7	1	351.85*	61	246	1.44	703.34	1.07E+00	3.53E-03 5	54.2	1.11E+00
8	1	596.10	58	110	1.73	1192.24	7.06E-01	3.39E-03 3	37.3	8.38E-01
9	1	609.31*	140	160	1.62	1218.69	6.94E-01	8.14E-03 2	23.6	1.18E+00
10	1	1460.60*	13	52	2.15	2923.21	3.56E-01	7.74E-0415	56.1	9.18E-01
11	1	1543.77	32	26	6.37	3089.77	3.42E-01	1.89E-03 3	36.6	3.13E+00
12	1	1764.93*	14	45	2.33	3532.75	3.13E-01	8.39E-0412	20.8	1.94E+00

Flag: "*" = Peak area was modified by background subtraction

LIMS:

Nuclide Line Activity Report

Nuclide	Type: natura	al					
					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
K-40	1460.81	13	10.67*	3.559E-01	1.528E+01	1.528E+01	312.13
RA-226	186.21	28	3.28*	1.597E+00	2.302E+01	2.302E+01	317.23
TH-228	238.63	3	44.60*	1.402E+00	2.361E-01	2.375E-01	2046.86
	240.98		3.95	1.392E+00	Li:	ne Not Found	
U-235	143.76		10.50*	1.683E+00	Li:	ne Not Found	
	163.35		4.70	1.659E+00	Li:	ne Not Found	
	185.71	28	54.00	1.597E+00	1.398E+00	1.398E+00	317.23
	205.31		4.70	1.524E+00	Li:	ne Not Found	

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Summary of Nuclide Activity Page : 2 Acquisition date : 16-MAY-2006 13:30:54 Sample ID : 10L28609-12 Total number of lines in spectrum 12 Number of unidentified lines 9 Number of lines tentatively identified by NID 3 25.00% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags 1.528E+01 4.770E+01 312.13 K-40 1.28E+09Y 1.00 1.528E+01 1.00 2.302E+01 2.302E+01 2.375E-01 317.23 RA-226 1600.00Y 7.303E+01 1.91Y TH-228 1.01 2.361E-01 48.62E-01 2046.86 U-235 7.04E+08Y 1.00 1.398E+00 1.398E+00 4.436E+00 317.23 K ------_____ Total Activity : 3.994E+01 3.994E+01 Grand Total Activity : 3.994E+01 3.994E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines Page : 3 Acquisition date : 16-MAY-2006 13:30:54 Sample ID : 10L28609-12 FWHM Channel Left Pw Cts/Sec %Err %Eff Flags It Energy Area Bkqnd 6.37E-01 1 66.41 148 604 1.35 132.07 129 7 8.60E-03 59.5 139.76 554 1.12 278.85 276 7 4.99E-03 94.0 1.68E+00 86 1 8 7.76E-03 57.2 1.55E+00 385 1.53 395.57 392 1 198.08 133 584 11 5.59E-03 80.0 1.21E+00 1.36 589.79 295.12 96 343 1 699 10 3.53E-03 **** 1.07E+001 351.85 61 246 1.44 703.34 7.06E-01 596.10 58 110 1.73 1192.24 1186 11 3.39E-03 74.7 1 1218.69 1211 16 8.14E-03 47.1 6.94E-01 1 609.31 140 160 1.62 6.37 3089.77 3082 15 1.89E-03 73.2 3.42E-01 26 1543.77 32 1 3532.75 3525 18 8.39E-04 **** 3.13E-01 45 2.33 1 1764.93 14 Flags: "T" = Tentatively associated Summary of Nuclide Activity 12 Total number of lines in spectrum Number of unidentified lines 9 Number of lines tentatively identified by NID 3 25.00% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr 2-Sigma Decay Corr 2-Sigma Error %Error Flags Nuclide Hlife pCi/L Decay pCi/L 4.770E+01 312.13 1.528E+01 K-40 1.28E+09Y 1.00 1.528E+01 2.302E+01 317.23 RA-226 1600.00Y 1.00 2.302E+01 7.303E+01 48.62E-01 2.375E-01 2046.86 TH-228 1.91Y 1.01 2.361E-01 _____ ____ Total Activity : 3.854E+01 3.854E+01 Grand Total Activity : 3.854E+01 3.854E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA MDA error Activity Act error Nuclide (pCi/L)(pCi/L)4.588E+01 0.000E+00 0.333 K-40 1.528E+01 4.770E+01 0.207 0.000E+00 1.110E+02 RA-226 2.302E+01 7.303E+01 2.375E-01 0.000E+00 0.028 TH-228 4.862E+00 8.466E+00 ---- Non-Identified Nuclides ----Kev-Line MDA error Act/MDA

MDA

Activity K.L. Act error

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Nuclide	(pCi/L)	Ided		(pCi/L)		
BE-7	-1.212E+00		2.400E+01	3.944E+01	0.000E+00	-0.031
NA-24	-3.145E+03		2.541E+03	3.752E+03	0.000E+00	-0.838
CR-51	-2.880E+01		2.774E+01	4.382E+01	0.000E+00	-0.657
MN-54	-1.773E-01		2.736E+00	4.438E+00	0.000E+00	-0.040
CO-57	1.276E+00		2.971E+00	4.973E+00	0.000E+00	0.257
CO-58	2.482E+00		2.894E+00	4.960E+00	0.000E+00	0.500
FE-59	3.025E+00		5.494E+00	9.333E+00	0.000E+00	0.324
CO-60	1.220E+00		2.793E+00	4.761E+00	0.000E+00	0.256
ZN-65	7.860E+00		6.337E+00	1.116E+01	0.000E+00	0.704
SE-75	-2.464E+00		3.946E+00	6.410E+00	0.000E+00	-0.384
SR-85	1.761E+01		3.498E+00	6.649E+00	0.000E+00	2.648
Y-88	-1.600E+00		3.168E+00	4.930E+00	0.000E+00	-0.325
NB-94	-1.948E+00		2.845E+00	4.531E+00	0.000E+00	-0.430
NB-95	2.157E-01		3.000E+00	4.936E+00	0.000E+00	0.044
ZR-95	2.896E+00		5.314E+00	8.972E+00	0.000E+00	0.323
MO-99	-5.284E+01		9.925E+01	1.584E+02	0.000E+00	-0.334
RU-103	4.700E+00		3.071E+00	5.372E+00	0.000E+00	0.875
RU-106	-5.865E+00		2.680E+01	4.221E+01	0.000E+00	-0.139
AG-110m	-1.542E+00		2.635E+00	4.227E+00	0.000E+00	-0.365
SN-113	2.041E+00		3.733E+00	6.341E+00	0.000E+00	0.322
SB-124	-1.128E+00		6.933E+00	4.823E+00	0.000E+00	-0.234
SB-125	-1.838E+00		8.301E+00	1.365E+01	0.000E+00	-0.135
TE-129M	2.561E+01		3.512E+01	5.970E+01	0.000E+00	0.429
I-131	-1.018E+00		4.732E+00	7.626E+00	0.000E+00	-0.133
BA-133	7.285E+00		4.638E+00	6.917E+00	0.000E+00	1.053
CS-134	6.970E+00		4.947E+00	5.571E+00	0.000E+00	1.251
CS-136	-2.626E+00		3.772E+00	5.891E+00	0.000E+00	-0.446
CS-137	-1.364E+00		2.900E+00	4.679E+00	0.000E+00	-0.292
CE-139	3.284E+00		2.994E+00	5.025E+00	0.000E+00	0.654
BA-140	3.957E+00		1.344E+01	2.228E+01	0.000E+00	0.178
LA-140	-3.042E-01		4.526E+00	7.455E+00	0.000E+00	-0.041
CE-141	1.768E+00		6.532E+00	9.259E+00	0.000E+00	0.191
CE-144	-2.351E+01		2.618E+01	3.734E+01	0.000E+00	-0.630
EU-152	-3.650E+00		1.032E+01	1.447E+01	0.000E+00	-0.252
EU-154	6.591E-01		6.205E+00	1.032E+01	0.000E+00	0.064
AC-228	5.228E+00		1.058E+01	1.810E+01	0.000E+00	0.289
TH-232	5.218E+00		1.056E+01	1.807E+01	0.000E+00	0.289
U-235	-4.616E+00		2.716E+01	3.796E+01	0.000E+00	-0.122
U-238	2.437E+02		3.234E+02	5.568E+02	0.000E+00	0.438
AM-241	-4.920E+01		2.625E+01	3.900E+01	0.000E+00	-1.262

A,10L28609	-12	,05/16/2006	18:17,05/10/2	2006 14:00,	3.602E+00,WG	L28609-12	В
B.10L28609	-12	,LIBD	,06,	/09/2005 08:04	1035L091004		
С.К-40	.YES.	, 1.528E+01,	4.770E+01.	4.588E+01,,	0.333		
C,RA-226	YES,	2.302E+01,	7.303E+01,	1.110E+02,,	0.207		
C.TH-228	YES.	2.375E-01.	4.862E+00,	8.466E+00,	0.028		
C.BE-7	NO .	-1.212E+00.	2.400E+01.	3.944E+01.	-0.031		
$C_{\rm NA} = 24$	NO .	-3.145E+03.	2.541E+03	3.752E+03.	-0.838		
$C_{\rm C}CR-51$	NO .	-2.880E+01.	2.774E+01.	4.382E+01.	-0.657		
C. MN-54	NO .	-1.773E-01.	2.736E+00.	4.438E+00.	-0.040		
$C_{-}C_{0}-57$	NO .	1.276E+00.	2.971E+00.	4.973E+00.	0.257		
$C_{1}C_{2}-58$	NO .	2.482E+00.	2.894E+00.	4.960E+00.	0.500		
C FE-59	NO	3.025E+00	5 494E+00	9.333E+00.	0.324		
C C C - 60	NO	1 220E+00	2.793E+00	4.761E+00	0.256		
$C_{\rm ZN-65}$	NO ,	7.860E+00	6.337E+00	1.116E+01.	0.704		
$C_{SE} = 75$	NO	-2.464E+00	3.946E+00	6.410E+00.	-0.384		
$C_{\rm SR} = 85$	NO ,	1.761E+01	3.498E+00	6.649E+00.	2.648		
C V - 88	NO /	-1.600E+00	3.168E+00	4.930E+00	-0 325		
C NR-94	NO ,	-1.948E+00	2.845E+00	4.531E+00	-0 430		
C NB-95	, NO ,	$2.157F_{-01}$	3.000E+00	4.936E+00,,	0.130		
C, RB - 95	NO	2.13/H 01, 2.896E+00	$5.000 \pm 00,$ 5.314 ± 00	$4.930\pm00,,$ 8.972E+00	0.323		
$C, \Delta R = 99$, NO , NO	-5.28/E+01	9 925F±01	$1.584F\pm02$	-0 334		
C PII_{-103}	NO	4 700F+00	3.071F+00	5 372 E + 00	0.875		
C, $RU = 105$	NO	$-5.865 \pm 00,$	$2.680 \text{F} \pm 01$	$3.372 \pm 00,,$ A 221 ± 01	-0.139		
C, RO=100	NO	-1.542 ± 00	$2.000 \pm 01,$	4.221E+01,, 4.227E+00	-0.365		
$C_{\rm RG}$	NO	-1.042E+00, 2.041E+00	2.035E+00, 3.733E+00	4.2270+00,, 6.3/1E+00	0.300		
C, SN-113	, NO ,	-1 129 \overline{E} +00,	5.755E+00,	0.341E+00,,	-0.234		
C, SD - 124	, NO ,	-1.020E+00,	8.933E+00,	4.0250+00,,	-0.254		
C, SB-125	$, \mathbf{NO}$	-1.050E+00,	$2 512 \overline{E} + 00,$	5,970E+01,	-0.139		
C, IE - IZ M	, NO ,	2.501E+01,	3.512E+01,	$5.970 \pm 01,$	-0 133		
C, I = I	NO	-1.010E+00,	4.7526+00,	$6.917E_{+}00,$	-0.155		
C, DA=133	, NO ,	$7.205\pm00,$	$4.030\pm00,$	5.9170+00,,	1 251		
C, CS-134	$, \mathbb{N} \cup ,$	0.970E+00,	4.9475+00,	5.5710+00,,	1.251		
C, CS=130	$, \mathbb{NO}$	-2.020E+00,	$3.772 \pm 00,$	3.0910+00,,	-0.440		
C, CS = 130	, NO ,	$-1.304 \pm 00,$	$2.900\pm00,$	4.079E+00,,	-0.292		
C, CE-139	, NO ,	3.204E+00,	$2.994 \pm 100,$	2.025E+00,,	0.034		
C, BA=140	, INO ,	3.957E+00,	1.344 <u>E</u> +01,	Z.ZZOE+UI,,	0.170		
C, LA-140	, NO ,	-3.042E-01,	4.526E+00,	7.455E+00,,	-0.041		
C, CE-141	, NO ,	1.760E+00,	0.532E+00,	9.239E+00,,	0.191		
C, CE-144	, NO ,	-2.351E+01,	2.618E+U1,	3./34E+UL,,	-0.630		
C, EU-152	, NO ,	$-3.650\pm+00,$	1.032E+01,	1.44/E+01,	-0.252		
C,EU-154	,NO ,	6.591E-01,	6.205E+00,	1.032E+01,	0.064		
C, AC-228	, NO ,	5.2285+00,	1.058E+01,	1.810E+01,,	0.289		
C, TH-232	, NO ,	5.218E+00,	1.056E+01,	1.80/E+01,,	0.289		
C,U-235	, NO ,	-4.616E+00,	∠./⊥6E+U⊥, 2.224E+02	3./96E+U1,,	-0.122		
0,0-238	,NO ,	2.437E+02,	3.234E+02,	5.568E+02,,	0.438		
C,AM-241	,NO,	-4.920E+01,	2.625E+U1,	3.900E+01,,	-1.262		

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 18:19:30.89 TBE15 P-10635B HpGe ******** Aquisition Date/Time: 16-MAY-2006 13:42:06.71 LIMS No., Customer Name, Client ID: WG L28609-13 BRAIDWOOD

Smple Date: 10-MAY-2006 14:30:00. : 15L28609-13 Sample ID Geometry : 1535L090104 Sample Type : WG : 15BG050506MT BKGFILE : 3.73680E+00 L Quantity Real Time : 0 04:37:15.29 Energy Tol : 1.70000 Start Channel : 40 Live time : 0 04:37:13.56 End Channel : 4090 Pk Srch Sens: 5.00000 Library Used: LIBD MDA Constant : 0.00 Cts/Sec %Err Fit %Eff FWHM Channel Pk It Area Bkqnd Energy

4.52E-01 5.65E-03 38.2 4.13E-01 94 437 0.83 120.00 1 1 67.00 1.48E+00 3.81E-03 52.8 2.28E+00 267.69 63 378 1.09 2 1 140.41 3.58E-01 1.83E-03 46.7 1.62E+00 2.09 2235.87 30 35 3 1 1119.65*

Flag: "*" = Peak area was modified by background subtraction

LIMS:

Nuclide Line Activity Report

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Page : 2 Summary of Nuclide Activity Acquisition date : 16-MAY-2006 13:42:06 Sample ID : 15L28609-13 3 Total number of lines in spectrum 3 Number of unidentified lines Number of lines tentatively identified by NID 0.00% 0 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

3 Page : Unidentified Energy Lines Acquisition date : 16-MAY-2006 13:42:06 Sample ID : 15L28609-13 %Eff Flags Cts/Sec %Err Channel Left Pw Bkqnd FWHM It Energy Area 7 5.65E-03 76.4 4.52E-01 437 0.83 120.00 117 67.00 94 1 267.69 264 7 3.81E-03 **** 1.48E+00 1.09 63 378 140.41 1 2235.87 2232 12 1.83E-03 93.5 3.58E-01 2.09 30 35 1119.65 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 3 Total number of lines in spectrum 3 Number of unidentified lines 0.00% Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA Activity K.L. Act error (pCi/L)Ided Nuclide (pCi/L)0.000E+00 -0.431 3.969E+01 2.541E+01 -1.711E+01 BE-7 0.000E+00 -0.269 3.966E+03 -1.068E+03 2.516E+03 NA-24 -0.070 0.000E+00 7.969E+01 4.193E+01 -5.593E+00 K-40 0.236 0.000E+00 4.761E+01 2.839E+01 CR-51 1.125E+01 0.158 2.921E+00 4.926E+00 0.000E+00 MN-54 7.795E-01 -0.543 0.000E+00 2.857E+00 4.618E+00 -2.507E+00 CO-57 -0.030 3.250E+00 5.383E+00 0.000E+00 -1.632E-01 CO-58 0.000E+00 0.100 6.202E+00 1.023E+01 FE-59 1.024E+00 0.000E+00 0.217 5.559E+00 CO-60 1.207E+00 3.276E+00 0.963 0.000E+00 1.172E+01 7.605E+00 1.218E+01 ZN-65 0.000E+00 -0.072 6.466E+00 3.890E+00 SE-75 -4.652E-01 2.539 6.862E+00 0.000E+00 3.524E+00 1.743E+01 SR-85 0.000E+00 -0.082 5.052E+00 3.123E+00 Y-88 -4.132E-01 0.024 0.000E+00 4.941E+00 NB-94 1.171E-01 3.020E+00 0.345 0.000E+00 1.730E+00 2.972E+00 5.012E+00 NB-95 0.127 5.340E+00 8.797E+00 0.000E+00 ZR-95 1.116E+00 1.697E+02 0.000E+00 0.232 3.936E+01 1.018E+02 MO-99 0.000E+00 0.023 5.313E+00 3.185E+00 RU-103 1.211E-01 0.000E+00 0.405 4.799E+01 RU-106 1.945E+01 2.813E+01 -0.298 4.692E+00 0.000E+00 -1.398E+00 2.946E+00 AG-110m 0.049 3.860E+00 6.344E+00 0.000E+00 3.100E-01 SN-113 5.207E+00 0.000E+00 -1.538 3.542E+00 -8.006E+00 SB-124 -0.333 1.343E+01 0.000E+00 8.451E+00 SB-125 -4.470E+00

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0.743

0.301

0.000E+00

0.000E+00

6.350E+01

8.064E+00

3.684E+01

4.805E+00

4.721E+01

2.426E+00

TE-129M

I-131

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BA-133	1.411E-01	4.116E+00	6.781E+00	0.000E+00	0.021
CS-134	6.576E-01	3.278E+00	5.448E+00	0.000E+00	0.121
CS-136	1.290E-01	3.937E+00	6.550E+00	0.000E+00	0.020
CS-137	1.158E+00	3.208E+00	5.367E+00	0.000E+00	0.216
CE-139	9.796E-01	2.822E+00	4.689E+00	0.000E+00	0.209
BA-140	-1.264E+00	1.444E+01	2.384E+01	0.000E+00	-0.053
LA-140	2.361E+00	4.831E+00	8.377E+00	0.000E+00	0.282
CE-141	8.555E-01	6.329E+00	8.962E+00	0.000E+00	0.095
CE-144	-1.772E+01	2.460E+01	3.530E+01	0.000E+00	-0.502
EU-152	-2.078E+01	9.694E+00	1.469E+01	0.000E+00	-1.414
EU-154	-5.980E+00	5.930E+00	9.550E+00	0.000E+00	-0.626
RA-226	3.323E+01	7.332E+01	1.217E+02	0.000E+00	0.273
AC-228	-8.406E+00	1.097E+01	1.712E+01	0.000E+00	-0.491
TH-228	5.864E-01	5.335E+00	8.678E+00	0.000E+00	0.068
TH-232	-8.389E+00	1.095E+01	1.709E+01	0.000E+00	-0.491
U-235	7.215E+00	2.608E+01	3.714E+01	0.000E+00	0.194
U-238	-1.675E+01	3.233E+02	5.279E+02	0.000E+00	-0.032
AM-241	-4.180E+01	3.526E+01	5.456E+01	0.000E+00	-0.766

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A,15L28609-13	,05/16/2006	18:19,05/10/	2006 14:30,	3.737E+00,WG	L28609-13 B
B,15L28609-13	,LIBD	,03	/09/2005 13:29	,1535L090104	
C,BE-7,NO,	-1.711E+01,	2.541E+01,	3.969E+01,,	-0.431	
C,NA-24 ,NO ,	-1.068E+03,	2.516E+03,	3.966E+03,,	-0.269	
C,K-40 ,NO ,	-5.593E+00,	4.193E+01,	7.969E+01,,	-0.070	
C.CR-51 ,NO ,	1.125E+01,	2.839E+01,	4.761E+01,,	0.236	
C,MN-54 ,NO ,	7.795E-01,	2.921E+00,	4.926E+00,,	0.158	
C,CO-57 ,NO ,	-2.507E+00,	2.857E+00,	4.618E+00,,	-0.543	
C.CO-58 ,NO ,	-1.632E-01,	3.250E+00,	5.383E+00,,	-0.030	
C.FE-59 ,NO ,	1.024E+00,	6.202E+00,	1.023E+01,,	0.100	
$C \cdot CO = 60$. NO	1.207E+00,	3.276E+00,	5.559E+00,,	0.217	
$C_{2}ZN-65$ NO	1.172E+01.	7.605E+00,	1.218E+01,,	0.963	
C = 5 NO	-4.652E-01.	3.890E+00,	6.466E+00,,	-0.072	
C SR - 85 NO	1.743E+01.	3.524E+00,	6.862E+00,,	2.539	
C Y-88 NO	-4.132E-01.	3.123E+00.	5.052E+00,,	-0.082	
C NB-94 NO	1.171E-01.	3.020E+00,	4.941E+00,,	0.024	
C NB-95 NO	1.730E+00.	2.972E+00,	5.012E+00,,	0.345	
C ZR - 95 NO	1.116E+00.	5.340E+00.	8.797E+00,,	0.127	
C MO - 99 NO	3.936E+01.	1.018E+02.	1.697E+02,	0.232	
C RII = 103 NO	1.211E-01.	3.185E+00,	5.313E+00,	0.023	
C RII-106 NO	1.945E+01.	2.813E+01.	4.799E+01,,	0.405	
C = AG = 110 m NO	-1.398E+00.	2.946E+00.	4.692E+00,,	-0.298	
C SN-113 NO	3.100E-01.	3.860E+00.	6.344E+00,,	0.049	
C SB-124 NO	-8.006E+00.	3.542E+00,	5.207E+00,,	-1.538	
C SB = 125 NO	-4.470E+00.	8.451E+00.	1.343E+01,,	-0.333	
C TE - 129M NO	4.721E+01.	3.684E+01.	6.350E+01,,	0.743	
$C_{\rm I}$ $T_{\rm -131}$ NO	2.426E+00.	4.805E+00.	8.064E+00,,	0.301	
$C_{BA}=133$ NO	1.411E-01.	4.116E+00.	6.781E+00,,	0.021	
$C_1CS = 1.34$ NO	6.576E-01.	3.278E+00.	5.448E+00,,	0.121	
$C_1CS=136$ NO	1.290E-01.	3.937E+00.	6.550E+00,,	0.020	
$C_{\rm s}$ C_{\rm	1.158E+00.	3.208E+00.	5.367E+00,	0.216	
$C_{\rm L}CE=1.39$, NO ,	9.796E-01,	2.822E+00,	4.689E+00,,	0.209	
$C_{\rm BA} = 140$, NO,	-1.264E+00.	1.444E+01,	2.384E+01,,	-0.053	
$C_{1}LA = 140$, NO,	2.361E+00,	4.831E+00,	8.377E+00,,	0.282	
$C_{\rm CE} = 141$, NO	8.555E-01,	6.329E+00,	8.962E+00,,	0.095	
C CE = 144 NO	-1 772E+01.	2.460E+01.	3.530E+01.	-0.502	
C = EII - 152 NO	-2.078E+01.	9.694E+00.	1.469E+01.	-1.414	
C = 11 - 154 NO	-5.980E+00	5.930E+00.	9.550E+00,,	-0.626	
C RA = 226 NO	3.323E+01	7.332E+01.	1.217E+02.	0.273	
C AC = 228 NO	-8.406E+00	1 097E+01	1.712E+01.	-0.491	
C, TH = 228 NO,	5.864 E = 01	5.335E+00	8.678E+00	0,068	
C TH-232 NO	-8.389E+00	1.095E+01	1.709E+01	-0.491	
C II = 235 NO	7 215E+00	2.608E+01	3.714E+01	0.194	
C II-238 NO	-1.675E+01	3.233E+02	5.279E+02	-0.032	
$C \Delta M - 241 NO$	-4 180E+01	3.526E+01	5.456E+01	-0.766	
		0.0000001			

		d-C-						=========	====	=========
==== VAX/ TBE1	VMS .3 P-	Teledyne B 10727B HpGe	cown Eng.	Labora ** Aqu	tory	Gamma Re on Date/	eport: 16-M Time: 16-M	AY-2006 1 AY-2006 1	7:27: 4:06:	29.80 11.00
LIMS	B No.	, Customer	Name, Cli	ent ID): WG	L28609-1	4 BRAIDWOO	D		
Samp Samp Quar Star End MDA	ole I ntity ct Ch Char Cons	D : 13 Cype : WG : 3. nannel : 25 nnel : 40 stant : 0.	L28609-14 57230E+00 Ener 90 Pk S 00 Libr	L gy Tol rch Se ary Us	ens: 1 sed: 1	50000 .00000 JBD	Smple Date Geometry BKGFILE Real Time Live time	e: 10-MAY- : 1335L09 : 13BG050 : 0 03:21 : 0 03:21	2006 0904 506MT :09.3 :05.5	16:00:00. 8 66
Pk	It	Energy	Area B	kgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 12 13	1 1 1 1 1 1 1 1	87.31* 139.65* 185.84* 198.40* 238.78* 241.82* 295.30* 351.68* 583.10* 596.40 609.25* 868.47 1120.53*	22 142 26 95 36 74 82 210 45 41 171 29 45 25	346 397 439 362 214 259 314 252 119 116 103 75 38 46	$1.12 \\ 1.47 \\ 0.99 \\ 1.05 \\ 1.17 \\ 1.21 \\ 1.80 \\ 1.53 \\ 2.66 \\ 2.05 \\ 1.41 \\ 2.99 \\ 1.86 \\ 0.70 \\ $	174.54 279.14 371.44 396.55 477.26 483.33 590.23 702.91 1165.58 1192.17 1217.85 1736.26 2240.50 2479.93	1.39E+00 2.02E+00 1.95E+00 1.90E+00 1.73E+00 1.72E+00 1.52E+00 1.34E+00 9.26E-01 9.11E-01 8.96E-01 6.88E-01 5.69E-01	1.80E-03 1.17E-02 2.15E-03 7.88E-03 2.98E-03 6.15E-03 6.77E-03 1.74E-02 3.72E-03 3.43E-03 1.42E-02 2.36E-03 3.76E-03 2.05E-03	43.1 26.5 36.6 77.2 39.7 46.8 17.9 56.4 52.5 15.2 64.7 31.2 63.3	8.82E-01 2.36E+00 1.72E+00 1.33E+00 2.32E+00 1.22E+00 4.32E+00 3.03E+00 1.60E+00 1.87E+00 1.88E+00 2.08E+00 5.29E-01 4.89E+00
14 15	1 1	1240.19 1765.19*	25 46	27	2.81	3530.80	4.11E-01	3.80E-03	32.9	4.23E+00

Flag: "*" = Peak area was modified by background subtraction

Analyst: LIMS: _

Sec. Review:

Nuclide Line Activity Report

Nuclide T	vpe: natur	al					
Nucriae 1	Jbo: magaz				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
RA-226	186.21	26	3.28*	1.946E+00	2.552E+01	2.552E+01	312.93
TH-228	238.63	36	44.60*	1.732E+00	2.921E+00	2.939E+00	154.42
	240.98	74	3.95	1.720E+00	6.853E+01	6.894E+01	79.39
U-235	143.76		10.50*	2.023E+00	Li:	ne Not Found	
	163.35		4.70	2.011E+00	Li:	ne Not Found	
	185.71	26	54.00	1.946E+00	1.550E+00	1.550E+00	312.93
	205.31		4.70	1.871E+00	Li:	ne Not Found	

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Page : 2 Summary of Nuclide Activity Acquisition date : 16-MAY-2006 14:06:11 Sample ID : 13L28609-14 Total number of lines in spectrum 15 Number of unidentified lines 11 Number of lines tentatively identified by NID 4 26.67% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L Nuclide pCi/L Hlife Decay 2.552E+01 7.987E+01 312.93 1.00 2.552E+01 RA-226 1600.00Y 154.42 4.538E+00 2.939E+00 1.01 2.921E+00 TH-228 1.91Y 312.93 K 4.851E+00 1.00 1.550E+00 U-235 7.04E+08Y 1.550E+00 _____ _____ Total Activity : 3.000E+01 3.001E+01 3.001E+01 Grand Total Activity : 3.000E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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Page :

%Eff

1.39E+00

2.02E+00

1.90E+00

1.52E+00

1.34E+00

9.26E-01

9.11E-01

8.96E-01

6.88E-01

5.69E-01

5.28E-01

4.11E-01

2-Sigma

312.93

133.43

3

Flags

Т

Unidentified Energy Lines Acquisition date : 16-MAY-2006 14:06:11 Sample ID : 13L28609-14 Channel Left Pw Cts/Sec %Err Bkgnd FWHM Area Ιt Energy 173 6 1.80E-03 **** 346 1.12 174.54 22 87.31 1 279.14 275 8 1.17E-02 53.0 1.47 397 139.65 142 1 8 7.88E-03 73.2 396.55 393 1.05 95 362 198.40 1 585 12 6.77E-03 93.6 314 1.80 590.23 82 1 295.30 697 13 1.74E-02 35.8 252 1.53 702.91 1 351.68 210 1165.58 1157 14 3.72E-03 **** 45 119 2.66 1 583.10 1192.17 1188 11 3.43E-03 **** 116 2.05 41 1 596.40 1217.85 1210 12 1.42E-02 30.3 171 103 1.41 1 609.25 1736.26 1732 13 2.36E-03 **** 75 2.99 29 1 868.47 2240.50 2236 9 3.76E-03 62.5 45 38 1.86 1120.53 1 2479.93 2474 13 2.05E-03 **** 46 0.70 25 1240.19 1 3530.80 3522 18 3.80E-03 65.9 27 2.81 1765.19 46 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 15 11 Number of unidentified lines Number of lines tentatively identified by NID 4 26.67% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L Nuclide Hlife Decay pCi/L 7.987E+01 1.00 2.552E+01 2.552E+01 RA-226 1600.00Y 4.522E+00 3.369E+00 3.389E+00 TH-228 1.91Y 1.01 _____ _____ 2.891E+01 Total Activity : 2.889E+01 2.891E+01 Grand Total Activity : 2.889E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
RA-226	2.552E+01	7.987E+01	1.137E+02	0.000E+00	0.225
TH-228	3.389E+00	4.522E+00	8.470E+00	0.000E+00	0.400

---- Non-Identified Nuclides ----

Nuclide	Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	2.871E+00		2.527E+01	4.146E+01	0.000E+00	0.069
NA-24	-6.010E+02		2.456E+03	3.969E+03	0.000E+00	-0.151
K-40	-1.960E+01		4.170E+01	7.949E+01	0.000E+00	-0.247
CR-51	-2.984E+01		2.742E+01	4.267E+01	0.000E+00	-0.699
MN-54	-3.362E-01		2.867E+00	4.687E+00	0.000E+00	-0.072
CO-57	9.583E-01		2.681E+00	4.516E+00	0.000E+00	0.212
CO-58	-5.780E-02		3.186E+00	5.255E+00	0.000E+00	-0.011
FE-59	-1.845E-01		6.253E+00	1.027E+01	0.000E+00	-0.018
CO-60	-1.728E-01		2.949E+00	4.850E+00	0.000E+00	-0.036
ZN-65	1.075E+01		7.992E+00	1.245E+01	0.000E+00	0.864
SE-75	-3.791E-01		3.931E+00	6.464E+00	0.000E+00	-0.059
SR-85	1.823E+01		3.765E+00	7.119E+00	0.000E+00	2.561
Y-88	-4.664E-01		3.542E+00	5.720E+00	0.000E+00	-0.082
NB-94	-1.102E+00		2.983E+00	4.758E+00	0.000E+00	-0.232
NB-95	4.394E+00		3.049E+00	5.453E+00	0.000E+00	0.806
ZR-95	5.607E-01		5.292E+00	8.842E+00	0.000E+00	0.063
MO-99	-5.736E+01		9.453E+01	1.517E+02	0.000E+00	-0.378
RU-103	8.695E-01		3.203E+00	5.278E+00	0.000E+00	0.165
RU-106	-3.291E+00		2.736E+01	4.472E+01	0.000E+00	-0.074
AG-110m	-4.905E-01		2.999E+00	4.866E+00	0.000E+00	-0.101
SN-113	-2.546E+00		3.597E+00	5.774E+00	0.000E+00	-0.441
SB-124	-2.440E+00		6.925E+00	4.755E+00	0.000E+00	-0.513
SB-125	6.982E-02		8.129E+00	1.339E+01	0.000E+00	0.005
TE-129M	-3.181E+00		3.748E+01	6.111E+01	0.000E+00	-0.052
I-131	1.704E+00		4.767E+00	8.052E+00	0.000E+00	0.212
BA-133	4.509E+00		4.729E+00	7.073E+00	0.000E+00	0.637
CS-134	3.408E+00		6.664E+00	5.385E+00	0.000E+00	0.633
CS-136	-2.367E+00		3.927E+00	6.238E+00	0.000E+00	-0.379
CS-137	5.591E-02		3.377E+00	5.530E+00	0.000E+00	0.010
CE-139	5.815E-01		2.926E+00	4.818E+00	0.000E+00	0.121
BA-140	8.660E+00		1.359E+01	2.332E+01	0.000E+00	0.371
LA - 140	-1.917E+00		4.561E+00	7.276E+00	0.000E+00	-0.263
CE - 141	5.131E+00		5.652E+00	8.637E+00	0.000E+00	0.594
CE - 144	1.456E+00		2.422E+01	3.467E+01	0.000E+00	0.042
EU-152	-1.006E+01		1.100E+01	1.427E+01	0.000E+00	-0.705
EU-154	5.268E+00		5.568E+00	9.519E+00	0.000E+00	0.553
AC-228	-1.912E+00		1.156E+01	1.933E+01	0.000E+00	-0.099
TH-232	-1,908E+00		1.154E+01	1.929E+01	0.000E+00	-0.099
II-235	7 127E-01		2.457E+01	3.507E+01	0.000E+00	0.020
II-238	1 990E+02		3.491E+02	5.989E+02	0.000E+00	0.332
AM-241	-2.762E+01		2.422E+01	3.880E+01	0.000E+00	-0.712
سلسنك لسكك غدهد						

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A.13L28609	-14	,05/16/2006	17:27,05/10/2	2006 16:00,	3.572E+00,WG	L28609-14	В
B,13L28609	-14	,LIBD	,08/	/05/2005 08:1	6,1335L090904		
C.RA-226	.YES.	2.552E+01,	7.987E+01,	1.137E+02,,	0.225		
C.TH-228	YES.	3.389E+00,	4.522E+00,	8.470E+00,,	0.400		
C.BE-7	.NO .	2.871E+00,	2.527E+01.	4.146E+01,,	0.069		
$C_{\rm NA}$ -24	.NO .	-6.010E+02,	2.456E+03,	3.969E+03,,	-0.151		
C K - 40	.NO .	-1.960E+01.	4.170E+01,	7.949E+01,,	-0.247		
$C_{\rm CR} = 51$	NO .	-2.984E+01.	2.742E+01,	4.267E+01,,	-0.699		
$C_{MN} = 54$	NO .	-3.362E-01.	2.867E+00,	4.687E+00,,	-0.072		
$C_{1}C_{2}-57$	NO .	9.583E-01,	2.681E+00.	4.516E+00,,	0.212		
$C_{1}C_{0}-58$	NO	-5.780E-02.	3.186E+00.	5.255E+00.	-0.011		
C, EE = 59	NO .	-1.845E-01.	6.253E+00.	1.027E+01.	-0.018		
C C C - 60	NO /	-1 728E-01.	2.949E+00.	4.850E+00.	-0.036		
$C_{\rm ZN-65}$	NO ,	1 075E+01	7.992E+00.	1.245E+01.	0.864		
C SE - 75	NO ,	-3.791E-01	3.931E+00	6.464E+00.	-0.059		
C $SR = 85$	NO ,	1.823E+01	3,765E+00	7.119E+00.	2.561		
C_{V-88}	NO ,	-4.664E-01	3.542E+00	5.720E+00.	-0.082		
C NB-94	NO	-1 102E+00	2.983E+00	4 758E+00	-0.232		
C NB-95	, NO ,	4.394E+00	3.049E+00	5 453E+00,,	0.806		
C, RB = 95	, NO ,	5.607E-01	5.292E+00	8 842E+00	0.063		
$C, \Delta R^{-} 99$	NO	_5 736F±01	9 $453E+01$	1.517E+02	-0.378		
$C_{\rm PII} = 102$, NO ,	8 695F-01	3 203E+00	5.278E+00	0 165		
C, RU=103	$, \mathbb{NO}$	-3 291E±00	$2.736E\pm01$	$4 472E \pm 01$	-0 074		
C, RO=100	$, \mathbb{NO}$	-3.291E+00, -4 905F-01	2.730 <u>H</u> +01, 2.999E±00	4.4720,01,, 4.866E+00	-0 101		
$C_{\rm QN} = 113$, NO ,	-4.905E 01, -2 546E±00	$3.597E\pm00$	5.774E+00	-0 441		
$C_{\rm SN}$	NO	$-2.340\pm00,$	6.925E+00	4.755E+00	-0 513		
$C_{1}SD^{-1}Z^{-1}$, NO ,	-2.4400+00,	8 129E+00	1.339E+01	0.005		
C, SB = 125	, NO ,	-3 181E+00	$3.748F\pm01$	111E+01	-0.052		
C, IE = IZ M	, NO	-3.1010+00, 1.704F+00	4 767F+00	8 052E+00	0.032		
C, I = I J I	, NO,	1.704E+00, 1.509E+00	4.7075+00,	7 073E+00,	0.637		
C, BA-133	, NO ,	4.309E+00,	4.7295+00,	5 385F+00,,	0.037		
C, CS = 134	, INO ,	3.400E+00,	2.0040+00,	5.303E+00,,	-0.379		
C, CS = 137	, NO ,	-2.50/E+00,	3.3270+00,	5 530E+00,,	0.010		
C, CS = 137	, NO ,	5.591E-02,	2.377E+00,	J.JJUE+00,, / 818E±00	0.010		
C, CE-139	, NO ,	5.615E-01,	2.9200+00, 1.259E+01	4.010E+00,,	0.121		
C, BA - 140	, NO ,	1,017E+00,	1.559E+01,	2.352E+01,	-0.263		
C, LA-140	, NO ,	-1.91/E+00,	4.5010+00,	9 627E,00	0.200		
C, CE = 141	, NO ,	5.131E+00,	3.052E+00,	2.037E+00,	0.042		
C, CE = 144	, NO ,	1.456E+00,	2.422E+01, 1 100E,01	3.407E+01,	0.042		
C, EU-15Z	, INU , NO	-1.000E+01,	$\mathbf{T} \cdot \mathbf{T} \mathbf{U} \mathbf{U} \mathbf{E} + \mathbf{U} \mathbf{T},$	1.42/6+V1,, 0.510E,00	-0.705		
C, EU = 154	, NO ,	5.260E+UU,	5.500E+00, 1.1ECE.01	9.519E+00,,	0.000		
C, AC-228	, INO , NTO	-1.912E+UU,	1.1506+U1, 1.1540.01	1 0000,01	-0.099		
C, 1H-23Z	, INO ,	$-1.900\pm00,$	1.1346+V1, 0.4570,01		-0.033		
C, U - 235	, INU ,	1.12/E-UL,	∠.43/凸+U⊥, 2 /01豆.00	5.50/E+01,			
C, U-238	, NO ,	1.990E+02,	3.491E+UZ		0.332		
C,AM-241	,NO,	-2./62E+01,	Z.4ZZE+UI,	3.8808+01,,	-0./12		

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-MAY-2006 00:11:07.17 TBE07 P-10768B HpGe ******** Aquisition Date/Time: 16-MAY-2006 15:17:31.93

LIMS No., Customer Name, Client ID: WG L28609-16 BRAIDWOOD

LIMS:

Sample TD	:	07L28609	9-16		Smple Date	::	10-MAY-2006 17:25:00.
Sample Type	:	WG			Geometry	:	0735L090904
Ouantity	:	3.544201	E+00 L		BKGFILE	:	07BG050506MT
Start Channel	:	40	Energy Tol :	1.30000	Real Time	:	0 08:53:27.99
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 08:53:20.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.18*	296	1467	1.33	133.20	7.19E-01	9.26E-03	23.6	2.68E+00
2	3	77.05*	724	979	0.82	154.96	1.10E+00	2.26E-02	8.0	4.46E+00
3	1	87.18*	232	966	0.95	175.21	1.42E+00	7.24E-03	23.4	7.23E-01
4	1	89.94	193	755	0.86	180.75	1.49E+00	6.02E-03	22.5	1.21E+00
5	1	139.76*	233	1187	1.01	280.42	2.09E+00	7.29E-03	27.3	6.36E-01
6	1	186.03*	150	1367	1.41	372.99	2.02E+00	4.67E-03	51.2	2.00E+00
7	1	198.43*	292	981	1.19	397.79	1.98E+00	9.13E-03	20.1	5.34E+00
8	2	238.61*	719	602	1.08	478.18	1.81E+00	2.25E-02	7.2	9.76E-01
9	2	241.92	819	705	1.17	484.80	1.80E+00	2.56E-02	6.4	
10	2	295.18*	1647	450	1.20	591.36	1.61E+00	5.15E-02	3.4	2.93E+00
11	2	299.77	148	562	1.48	600.52	1.59E+00	4.62E-03	30.5	
12	1	351.91*	2692	715	1.13	704.83	1.43E+00	8.41E-02	2.8	2.46E+00
13	1	583.18*	166	386	1.49	1167.44	1.01E+00	5.20E-03	27.4	1.20E+00
14	1	595.71	212	403	2.48	1192.50	9.97E-01	6.61E-03	21.3	2.13E+00
15	1	609.29*	3087	422	1.40	1219.68	9.81E-01	9.65E-02	2.3	9.75E-01
16	1	768.26	265	343	2.13	1537.62	8.29E-01	8.29E-03	16.5	2.34E+00
17	1	786.33	71	286	2.28	1573.77	8.15E-01	2.21E-03	52.7	1.19E+00
18	1	934.03	152	182	1.28	1869.15	7.17E-01	4.75E-03	18.5	2.90E+00
19	1	964.28	86	160	1.87	1929.63	7.00E-01	2.68E-03	31.1	1.21E+00
20	1	1120.41*	607	149	1.53	2241.85	6.26E-01	1.90E-02	5.9	2.60E+00
21	1	1155.18	100	248	2.36	2311.36	6.12E-01	3.11E-03	40.2	7.01E-01
22	1	1238.10	285	162	2.06	2477.17	5.81E-01	8.91E-03	11.7	1.35E+00
23	1	1377.96	201	174	2.19	2756.80	5.37E-01	6.27E-03	17.4	2.83E+00
24	1	1460.97*	170	178	2.56	2922.76	5.15E-01	5.32E-03	23.7	1.89E+00
25	1	1508.58	137	84	3.46	3017.95	5.04E-01	4.28E-03	16.5	2.25E+00
26	1	1729.43	163	80	2.33	3459.43	4.60E-01	5.10E-03	14.5	6.56E-01
27	1	1764.41*	496	93	2.29	3529.35	4.54E-01	1.55E-02	6.6	1.14E+00
28	1	1847.63	107	55	3.04	3695.70	4.42E-01	3.34E-03	18.1	1.11E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

MUCITUC	Type. macara.	-			Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K-40	1460.81	170	10.67*	5.151E-01	7.383E+01	7.383E+01	47.36
RA-226	186.21	150	3.28*	2.020E+00	5.379E+01	5.379E+01	102.50

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TH-228	238.63	719	44.60*	1.815E+00	2.115E+01	2.128E+01	14.41
	240.98	819	3.95	1.802E+00	2.742E+02	2.759E+02	12.76

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Page : 2 Summary of Nuclide Activity Acquisition date : 16-MAY-2006 15:17:31 Sample ID : 07L28609-16 28 Total number of lines in spectrum Number of unidentified lines 22 Number of lines tentatively identified by NID 6 21.43% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags 3.497E+01 47.36 pCi/L pCi/L Nuclide Hlife Decay 3.497E+01 1.00 7.383E+01 7.383E+01 K-40 1.28E+09Y 5.513E+01 102.50 5.379E+01 1.00 5.379E+01 RA-226 1600.00Y 0.307E+01 14.41 1.01 2.115E+01 2.128E+01 TH-228 1.91Y _____ _____ Total Activity : 1.488E+02 1.489E+02 1.489E+02 Grand Total Activity : 1.488E+02 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

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Unidentified Energy Lines Sample ID : 07L28609-16 Page : 3 Acquisition date : 16-MAY-2006 15:17:31

-	-										
It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	66.18	296	1467	1.33	133.20	130	8	9.26E-03	47.2	7.19E-01	
3	77.05	724	979	0.82	154.96	147	12	2.26E-02	16.0	1.10E+00	
1	87.18	232	966	0.95	175.21	173	6	7.24E-03	46.8	1.42E+00	
1	89.94	193	755	0.86	180.75	179	5	6.02E-03	45.1	1.49E+00	
1	139.76	233	1187	1.01	280.42	277	8	7.29E-03	54.6	2.09E+00	
1	198.43	292	981	1.19	397.79	394	8	9.13E-03	40.3	1.98E+00	
2	295.18	1647	450	1.20	591.36	584	22	5.15E-02	6.8	1.61E+00	
2	299.77	148	562	1.48	600.52	584	22	4.62E-03	61.0	1.59E+00	
1	351.91	2692	715	1.13	704.83	700	11	8.41E-02	5.6	1.43E+00	
1	583.18	166	386	1.49	1167.44	1162	13	5.20E-03	54.8	1.01E+00	Т
1	595.71	212	403	2.48	1192.50	1185	14	6.61E-03	42.6	9.97E-01	
1	609.29	3087	422	1.40	1219.68	1214	13	9.65E-02	4.7	9.81E-01	
1	768.26	265	343	2.13	1537.62	1531	15	8.29E-03	33.0	8.29E-01	
1	786.33	71	286	2.28	1573.77	1567	14	2.21E-03	* * * *	8.15E-01	
1	934.03	152	182	1.28	1869.15	1864	10	4.75E-03	37.0	7.17E-01	
1	964.28	86	160	1.87	1929.63	1923	22	2.68E-03	62.2	7.00E-01	Т
1	1120.41	607	149	1.53	2241.85	2236	11	1.90E-02	11.8	6.26E-01	
1	1155.18	100	248	2.36	2311.36	2302	20	3.11E-03	80.4	6.12E-01	
1	1238.10	285	162	2.06	2477.17	2469	16	8.91E-03	23.4	5.81E-01	
1	1377.96	201	174	2.19	2756.80	2747	19	6.27E-03	34.8	5.37E-01	
1	1508.58	137	84	3.46	3017.95	3011	14	4.28E-03	33.0	5.04E-01	
1	1729.43	163	80	2.33	3459.43	3452	15	5.10E-03	28.9	4.60E-01	
1	1764.41	496	93	2.29	3529.35	3520	16	1.55E-02	13.2	4.54E-01	
1	1847.63	107	55	3.04	3695.70	3689	15	3.34E-03	36.2	4.42E-01	
Fla	.gs: "T" =	Tentativ	vely ass	ociate	ed						
Sum	mary of Nu	uclide Ad	ctivity								
	1		4								
To	tal number	r of line	es in sp	pectrum	n		28				
Nu	umber of u	nidentit	ied line	25 	ified by		44	01	128		
NU	imber of 1	ines ten	catively	/ ident	LILIED DY	NID	0	21	.45%		
Nuc	clide Type	: natur	al			7					
				Vtd Mea	an Wt	d Mea	n		0 7070) Ciama	
			Ur	ncorrec	cted Dec	ay Co	rr	Decay C	orr	∠-s⊥gilla	

		Uncorrected	Decay Corr	Decay Corr	2-Sigma	
Hlife	Decay	pCi/L	pCi/L	2-Sigma Error	%Error	Flags
1.28E+09Y	1.00	7.383E+01	7.383E+01	3.497E+01	47.36	
1600.00Y	1.00	5.379E+01	5.379E+01	5.513E+01	102.50	
1.91Y	1.01	2.115E+01	2.128E+01	0.307E+01	14.41	
Total Acti	vity :	1.488E+02	1.489E+02			
l Total Acti [.]	vity :	1.488E+02	1.489E+02			
	o not f	Found	"M" – Manua	llv accented		
'E" = Manual	ly edit	ed.	"A" = Nucli	de specific ab	n. limit	
cence Report						
	Hlife 1.28E+09Y 1600.00Y 1.91Y Total Acti I Total Acti K" = Keylin E" = Manual	Hlife Decay 1.28E+09Y 1.00 1600.00Y 1.00 1.91Y 1.01 Total Activity : I Total Activity : K" = Keyline not f E" = Manually edit rence Report	Uncorrected Hlife Decay pCi/L 1.28E+09Y 1.00 7.383E+01 1600.00Y 1.00 5.379E+01 1.91Y 1.01 2.115E+01 Total Activity : 1.488E+02 K" = Keyline not found E" = Manually edited Tence Report	Uncorrected Decay Corr Hlife Decay pCi/L pCi/L 1.28E+09Y 1.00 7.383E+01 7.383E+01 1600.00Y 1.00 5.379E+01 5.379E+01 1.91Y 1.01 2.115E+01 2.128E+01 Total Activity : 1.488E+02 1.489E+02 K" = Keyline not found "M" = Manua E" = Manually edited "A" = Nucli Tence Report	Uncorrected Decay Corr Decay Corr Hlife Decay pCi/L pCi/L 2-Sigma Error 1.28E+09Y 1.00 7.383E+01 7.383E+01 3.497E+01 1600.00Y 1.00 5.379E+01 5.379E+01 5.513E+01 1.91Y 1.01 2.115E+01 2.128E+01 0.307E+01 Total Activity : 1.488E+02 1.489E+02 K" = Keyline not found "M" = Manually accepted E" = Manually edited "A" = Nuclide specific abn rence Report	Uncorrected Decay Corr Decay Corr 2-Sigma PCi/L pCi/L 2-Sigma Error %Error 1.28E+09Y 1.00 7.383E+01 7.383E+01 3.497E+01 47.36 1600.00Y 1.00 5.379E+01 5.379E+01 5.513E+01 102.50 1.91Y 1.01 2.115E+01 2.128E+01 0.307E+01 14.41 Total Activity : 1.488E+02 1.489E+02 K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit rence Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	7.383E+01	3.497E+01	3.159E+01	0.000E+00	2.337
RA-226	5.379E+01	5.513E+01	6.840E+01	0.000E+00	0.786
TH-228	2.128E+01	3.067E+00	5.222E+00	0.000E+00	4.076

---- Non-Identified Nuclides ----

	Key-Line					
	Activity	K.L.	Act error	MDA	MDA error	Act/MDA
Nuclide	(pCi/L)	Ided		(pCi/L)		
BE-7	4.961E+00		1.553E+01	2.605E+01	0.000E+00	0.190
NA-24	1.404E+03		2.001E+03	2.895E+03	0.000E+00	0.485
CR-51	-2.751E+01		1.727E+01	2.688E+01	0.000E+00	-1.023
MN-54	3.045E-01		1.865E+00	3.112E+00	0.000E+00	0.098
CO-57	-1.570E+00		1.596E+00	2.630E+00	0.000E+00	-0.597
CO-58	5.529E-01		1.971E+00	3.235E+00	0.000E+00	0.171
FE-59	2.057E+00		3.817E+00	6.433E+00	0.000E+00	0.320
CO-60	-1.457E-01		2.042E+00	3.366E+00	0.000E+00	-0.043
ZN-65	4.650E+01		5.874E+00	1.075E+01	0.000E+00	4.326
SE-75	-2.189E+00		2.360E+00	3.801E+00	0.000E+00	-0.576
SR-85	2.046E+01		2.195E+00	4.269E+00	0.000E+00	4.792
Y-88	3.550E-01		2.382E+00	3.279E+00	0.000E+00	0.108
NB-94	-1.745E-01		1.778E+00	2.921E+00	0.000E+00	-0.060
NB-95	8.659E+00		2.517E+00	3.964E+00	0.000E+00	2.184
ZR-95	4.295E-01		3.626E+00	5.518E+00	0.000E+00	0.078
MO-99	7.069E+00		6.195E+01	1.020E+02	0.000E+00	0.069
RU-103	-1.519E-01		1.953E+00	3.230E+00	0.000E+00	-0.047
RU-106	-2.637E+00		1.664E+01	2.648E+01	0.000E+00	-0.100
AG-110m	-1.575E+00		1.758E+00	2.835E+00	0.000E+00	-0.556
SN-113	-5.188E-01		2.403E+00	3.929E+00	0.000E+00	-0.132
SB-124	-1.436E+00		4.547E+00	3.171E+00	0.000E+00	-0.453
SB-125	-1.288E+00		5.335E+00	8.646E+00	0.000E+00	-0.149
TE-129M	-1.603E+01		2.347E+01	3.733E+01	0.000E+00	-0.429
I-131	-2.795E+00		2.939E+00	4.750E+00	0.000E+00	-0.589
BA-133	2.689E+01		3.233E+00	5.570E+00	0.000E+00	4.827
CS-134	4.386E+01		4.087E+00	5.729E+00	0.000E+00	7.655
CS-136	-4.158E-01		2.490E+00	4.020E+00	0.000E+00	-0.103
CS-137	2.387E+00		1.952E+00	3.352E+00	0.000E+00	0.712
CE-139	-1.052E+00		1.735E+00	2.813E+00	0.000E+00	-0.374
BA-140	6.469E+00		8.398E+00	1.413E+01	0.000E+00	0.458
LA-140	3.597E-02		3.107E+00	5.140E+00	0.000E+00	0.007
CE-141	3.874E-01		3.692E+00	5.267E+00	0.000E+00	0.074
CE-144	-7.781E+00		1.446E+01	2.133E+01	0.000E+00	-0.365
EU-152	-1.172E+01		6.431E+00	8.874E+00	0.000E+00	-1.321
EU-154	-1.115E+00		3.358E+00	5.591E+00	0.000E+00	-0.199
AC-228	5.060E+00		7.469E+00	1.250E+01	0.000E+00	0.405
TH-232	5.050E+00		7.453E+00	1.247E+01	0.000E+00	0.405
U-235	-1.586E+01		1.544E+01	2.111E+01	0.000E+00	-0.751
U-238	-5.540E+01		2.164E+02	3.432E+02	0.000E+00	-0.161
AM-241	-1.528E+01		1.492E+01	2.389E+01	0.000E+00	-0.640

A,07L28609	-16	,05/17/2006	00:11,05/10/2	2006 17:25,	3.544E+00,WG	L28609-16	В
B,07L28609	-16	,LIBD	,06,	/23/2005 07:2	6,0735L090904		
C,K-40	,YES,	7.383E+01,	3.497E+01,	3.159E+01,,	2.337		
C,RA-226	,YES,	5.379E+01,	5.513E+01,	6.840E+01,,	0.786		
C,TH-228	,YES,	2.128E+01,	3.067E+00,	5.222E+00,,	4.076		
C,BE-7	,NO,	4.961E+00,	1.553E+01,	2.605E+01,,	0.190		
C, NA-24	, NO ,	1.404E+03,	2.001E+03,	2.895E+03,,	0.485		
C,CR-51	, NO	-2.751E+01,	1.727E+01,	2.688E+01,,	-1.023		
C.MN-54	, NO ,	3.045E-01,	1.865E+00,	3.112E+00,,	0.098		
C, CO-57	, NO ,	-1.570E+00,	1.596E+00,	2.630E+00,,	-0.597		
C, CO-58	.NO	5.529E-01,	1.971E+00,	3.235E+00,,	0.171		
C.FE-59	NO .	2.057E+00,	3.817E+00,	6.433E+00,,	0.320		
C, CO - 60	, NO ,	-1.457E-01,	2.042E+00,	3.366E+00,,	-0.043		
C. ZN-65	NO .	4.650E+01,	5.874E+00,	1.075E+01,,	4.326		
C. SE-75	NO .	-2.189E+00,	2.360E+00,	3.801E+00,,	-0.576		
C. SR-85	NO .	2.046E+01.	2.195E+00,	4.269E+00,,	4.792		
C.Y-88	.NO .	3.550E-01,	2.382E+00,	3.279E+00,,	0.108		
C. NB-94	.NO .	-1.745E-01,	1.778E+00,	2.921E+00,,	-0.060		
C. NB-95	NO .	8.659E+00,	2.517E+00,	3.964E+00,,	2.184		
C_{1} $ZR - 95$.NO .	4.295E-01,	3.626E+00,	5.518E+00,,	0.078		
C MO - 99	NO .	7.069E+00.	6.195E+01,	1.020E+02,,	0.069		
C. RU-103	NO .	-1.519E-01.	1.953E+00,	3.230E+00,,	-0.047		
C. RU-106	NO .	-2.637E+00.	1.664E+01,	2.648E+01,,	-0.100		
C. AG-110m	NO .	-1.575E+00.	1.758E+00,	2.835E+00,,	-0.556		
C. SN-113	NO .	-5.188E-01.	2.403E+00,	3.929E+00,,	-0.132		
C.SB-124	NO .	-1.436E+00,	4.547E+00,	3.171E+00,,	-0.453		
C.SB-125	NO .	-1.288E+00,	5.335E+00,	8.646E+00,,	-0.149		
C. TE-129M	NO .	-1.603E+01.	2.347E+01,	3.733E+01,	-0.429		
C. T-131	NO .	-2.795E+00,	2.939E+00,	4.750E+00,,	-0.589		
C.BA-133	.NO .	2.689E+01,	3.233E+00,	5.570E+00,,	4.827		
C.CS-134	, NO ,	4.386E+01,	4.087E+00,	5.729E+00,,	7.655		
C.CS-136	NO .	-4.158E-01,	2.490E+00,	4.020E+00,,	-0.103		
C.CS-137	, NO ,	2.387E+00,	1.952E+00,	3.352E+00,,	0.712		
C.CE-139	, NO ,	-1.052E+00,	1.735E+00,	2.813E+00,,	-0.374		
C.BA-140	, NO ,	6.469E+00,	8.398E+00,	1.413E+01,,	0.458		
C.LA-140	.NO .	3.597E-02,	3.107E+00,	5.140E+00,,	0.007		
C.CE-141	.NO .	3.874E-01,	3.692E+00,	5.267E+00,,	0.074		
C, CE-144	.NO .	-7.781E+00,	1.446E+01,	2.133E+01,	-0.365		
C.EU-152	.NO .	-1.172E+01.	6.431E+00,	8.874E+00,	-1.321		
C.EU-154	.NO .	-1.115E+00,	3.358E+00,	5.591E+00,	-0.199		
C.AC-228	.NO .	5.060E+00,	7.469E+00,	1.250E+01,	0.405		
C, TH-232	, NO .	5.050E+00.	7.453E+00.	1.247E+01,	0.405		
C,U-235	, NO	-1.586E+01.	1.544E+01.	2.111E+01,	-0.751		
C,U-238	, NO .	-5.540E+01.	2.164E+02,	3.432E+02,	-0.161		
C,AM-241	, NO ,	-1.528E+01,	1.492E+01,	2.389E+01,	-0.640		

Sec.	Rev	view: Ana	lyst:	LIMS:	$\underline{\checkmark}$				
==== VAX/ TBEC	'VMS)4 P·	=====≠ Teledyne B -40312B HpG	======================================	======= . Labor; **** Aq	atory uisiti	Gamma Re .on Date,	======================================	4AY-2006 18:34:57.67 AY-2006 15:23:32.27	
LIMS	S No	., Customer	Name, C	lient I	D: WG	L28609-1	17 BRAIDWOO	DD	
Samp Samp Quar Star End MDA	ole i ole i ntity Chan Con	ID : 04 Fype : WG y : 3. hannel : 90 nnel : 40 stant : 0.	L28609-1 48000E+0 En 90 Pk 00 Li	7 0 L ergy To Srch S brary U	l : 1 ens: 5 sed: 1	L.70000 5.00000 JIBD	Smple Date Geometry BKGFILE Real Time Live time	<pre>e: 11-MAY-2006 09:25: : 0435L090804 : 04BG050506MT : 0 03:11:22.44 : 0 03:11:20.46</pre>	00.
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err Fit	
1 2 3 4 5	1 1 1 1	66.33* 139.62* 198.17* 238.30* 295.69*	34 73 69 5 73	383 253 250 189 175	1.61 1.69 1.59 1.53 2.02	133.23 279.83 396.94 477.21 592.00	6.48E-01 1.82E+00 1.68E+00 1.52E+00 1.32E+00	3.00E-03102.6 2.27E+ 6.39E-03 40.5 3.19E+ 6.02E-03 43.7 2.39E+ 4.45E-04533.8 3.52E+ 6.35E-03 39.9 2.87E+	00 00 00 00 00
6 7 8	1 1 1	351.91* 597.23 609.34*	97 67 72	126 83 72	1.09 0.94 1.10	704.45 1195.07 1219.30	1.17E+00 7.85E-01 7.73E-01	8.49E-03 25.0 6.92E- 5.86E-03 29.1 4.12E+ 6.28E-03 26.8 1.96E+	01 01 00
9 10 11	1 1 1	910.94* 1120.32* 1172.85*	9 27 7	52 20 15	2.28 2.37 1.64	1822.41 2241.07 2346.09	5.66E-01 4.81E-01 4.64E-01	7.51E-04188.3 1.63E+ 2.37E-03 40.2 5.63E- 6.50E-04130.1 3.62E-	00 01 01
12 13	1 1	1460.88* 1764.31*	20 15	35	3.38	2921.96 3528.53	3.92E-01 3.43E-01	1.74E-03 83.9 4.11E+ 1.29E-03 59.9 1.09E+	00

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural Uncorrected Decay Corr 2-Sigma %Eff pCi/L Nuclide Area %Abn pCi/L %Error Energy K-40 1460.81 10.67* 3.920E-01 3.236E+01 3.236E+01 167.72 20 AC-228 ----- Line Not Found 835.50 1.75 6.054E-01 _ _ _ _ _ _ 911.07 9 27.70* 5.658E-01 3.720E+00 3.726E+00 376.60 44.60* 5.115E-01 TH-228 238.63 5 1.521E+00 5.089E-01 1067.67 3.95 1.511E+00 _ _ _ _ _ _ _ Line Not Found 240.98 _ _ _ _ _ _

Nuclide Type: activation Uncorrected Decay Corr 2-Sigma Nuclide %Abn %Eff pCi/L pCi/L %Error Energy Area 1.090E+00 CO-60 1173.22 7 100.00 4.639E-01 1.088E+00 260.22 1332.49 100.00* 4.202E-01 ----- Line Not Found _____ _____

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Page : 2 Summary of Nuclide Activity Acquisition date : 16-MAY-2006 15:23:32 Sample ID : 04L28609-17 13 Total number of lines in spectrum 9 Number of unidentified lines Number of lines tentatively identified by NID 4 30.77% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags Decay pCi/L pCi/L Nuclide Hlife K-40 1.28E+09Y AC-228 5.75Y TH-228 _____ ------Total Activity : 3.659E+01 3.660E+01 Nuclide Type : activation Uncorrected Decay Corr Decay Corr 2-Sigma pCi/L pCi/L 2-Sigma Error %Error Flags Nuclide Hlife Decay 1.088E+00 1.090E+00 2.835E+00 260.22 K CO-60 5.27Y 1.00 _____ Total Activity : 1.088E+00 1.090E+00 3.769E+01 Grand Total Activity : 3.768E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

L28609 141 of 158 Page : 3 Unidentified Energy Lines Acquisition date : 16-MAY-2006 15:23:32 Sample ID : 04L28609-17 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM It Energy Area 130 8 3.00E-03 **** 6.48E-01 133.23 34 383 1.61 66.33 1 277 8 6.39E-03 80.9 1.82E+00279.83 1.69 139.62 73 253 1 9 6.02E-03 87.3 1.68E+00 250 1.59 396.94 393 1 198.17 69 587 12 6.35E-03 79.7 1.32E+00 592.00 73 175 2.02 1 295.69 700 10 8.49E-03 50.0 1.17E+00 97 126 1.09 704.45 1 351.91 1195.07 1189 12 5.86E-03 58.2 7.85E-01 67 83 0.94 1 597.23 1219.30 1214 10 6.28E-03 53.6 7.73E-01 72 1.10 72 1 609.34 2241.07 2236 11 2.37E-03 80.5 4.81E-01 20 2.37 27 1 1120.32 9 2.11 3528.53 3519 15 1.29E-03 **** 3.43E-01 15 1 1764.31 Flags: "T" = Tentatively associated Summary of Nuclide Activity 13 Total number of lines in spectrum 9 Number of unidentified lines Number of lines tentatively identified by NID 4 30.77% Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Uncorrected Decay Corr Decay Corr pCi/L 2-Sigma Error %Error Flags pCi/L Nuclide Hlife Decay 167.72 5.428E+01 1.00 3.236E+01 3.236E+01 1.28E+09Y K-40 376.60 3.726E+00 14.03E+00 3.720E+00 AC-228 5.75Y 1.00 54.62E-01 1067.67 5.089E-01 1.91Y 1.01 5.115E-01 TH-228 _____ _____ 3.660E+01 3.659E+01 Total Activity : Nuclide Type : activation Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pCi/L pCi/L Nuclide Hlife Decay 260.22 2.835E+00 1.088E+00 1.090E+00 CO-60 5.27Y 1.00 _____ ____ 1.090E+00 Total Activity : 1.088E+00 Grand Total Activity : 3.768E+01 3.769E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----

ActivityAct errorMDAMDA errorAct/MDANuclide(pCi/L)(pCi/L)

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K-40	3.236E+01	5.428E+01	5.334E+01	0.000E+00	0.607
CO-60	1.090E+00	2.835E+00	6.492E+00	0.000E+00	0.168
AC-228	3.726E+00	1.403E+01	1.637E+01	0.000E+00	0.228
TH-228	5.115E-01	5.462E+00	8.211E+00	0.000E+00	0.062

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-7.348E+00		2.630E+01	4.227E+01	0.000E+00	-0.174
NA-24	-1.135E+02		1.183E+03	1.944E+03	0.000E+00	-0.058
CR-51	-6.822E+00		2.772E+01	4.457E+01	0.000E+00	-0.153
MN-54	5.803E-01		2.939E+00	4.932E+00	0.000E+00	0.118
CO-57	6.871E-01		2.566E+00	4.296E+00	0.000E+00	0.160
CO-58	-2.582E+00		2.875E+00	4.421E+00	0.000E+00	-0.584
FE-59	3.872E+00		6.248E+00	1.086E+01	0.000E+00	0.356
ZN-65	-9.827E-03		8.424E+00	1.172E+01	0.000E+00	-0.001
SE-75	-2.277E-01		3.925E+00	6.450E+00	0.000E+00	-0.035
SR-85	1.254E+01		3.697E+00	6.890E+00	0.000E+00	1.820
Y-88	4.621E-01		3.745E+00	6.256E+00	0.000E+00	0.074
NB-94	-2.410E+00		2.802E+00	4.287E+00	0.000E+00	-0.562
NB-95	2.452E+00		3.198E+00	5.471E+00	0.000E+00	0.448
ZR-95	-1.133E+00		5.464E+00	8.731E+00	0.000E+00	-0.130
MO-99	8.171E+00		8.066E+01	1.323E+02	0.000E+00	0.062
RU-103	1.957E+00		3.110E+00	5.261E+00	0.000E+00	0.372
RU-106	2.136E+01		2.563E+01	4.471E+01	0.000E+00	0.478
AG-110m	1.571E-01		2.959E+00	4.878E+00	0.000E+00	0.032
SN-113	2.678E+00		3.731E+00	6.411E+00	0.000E+00	0.418
SB-124	-2.344E+00		7.150E+00	4.893E+00	0.000E+00	-0.479
SB-125	-1.029E+00		8.211E+00	1.344E+01	0.000E+00	-0.077
TE-129M	-7.480E+00		3.512E+01	5.683E+01	0.000E+00	-0.132
I-131	-4.245E-02		4.353E+00	7.250E+00	0.000E+00	-0.006
BA-133	8.009E+00		4.559E+00	7.253E+00	0.000E+00	1.104
CS-134	7.337E+00		5.505E+00	5.430E+00	0.000E+00	1.351
CS-136	2.031E+00		3.702E+00	6.386E+00	0.000E+00	0.318
CS-137	1.295E+00		3.292E+00	5.545E+00	0.000E+00	0.234
CE-139	-6.470E-01		2.724E+00	4.405E+00	0.000E+00	-0.147
BA-140	-4.935E+00		1.331E+01	2.102E+01	0.000E+00	-0.235
LA-140	-4.509E+00		4.972E+00	7.318E+00	0.000E+00	-0.616
CE-141	2.143E+00		5.751E+00	8.268E+00	0.000E+00	0.259
CE-144	-1.400E+00		2.326E+01	3.429E+01	0.000E+00	-0.041
EU-152	-5.750E-01		1.020E+01	1.449E+01	0.000E+00	-0.040
EU-154	1.123E+00		5.437E+00	9.080E+00	0.000E+00	0.124
RA-226	-6.391E+01		7.068E+01	1.124E+02	0.000E+00	-0.569
TH-232	3.720E+00	+	1.401E+01	2.195E+01	0.000E+00	0.169
U-235	2.513E+01		2.317E+01	3.452E+01	0.000E+00	0.728
U-238	9.509E+01		3.482E+02	5.799E+02	0.000E+00	0.164
AM-241	-8.858E+00		2.563E+01	4.039E+01	0.000E+00	-0.219

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A,04L28609	-17	,05/16/2006	18:34,05/11/	2006 09:25,	3.480E+00,WG	L28609-17	В
B,04L28609	-17	,LIBD	,03	/14/2005 09:0	4,0435L090804		
C,K-40	,YES,	3.236E+01,	5.428E+01,	5.334E+01,,	0.607		
C,CO-60	,YES,	1.090E+00,	2.835E+00,	6.492E+00,,	0.168		
C,AC-228	,YES,	3.726E+00,	1.403E+01,	1.637E+01,,	0.228		
C,TH-228	,YES,	5.115E-01,	5.462E+00,	8.211E+00,,	0.062		
C, BE-7	,NO,	-7.348E+00,	2.630E+01,	4.227E+01,,	-0.174		
C,NA-24	,NO,	-1.135E+02,	1.183E+03,	1.944E+03,,	-0.058		
C, CR-51	,NO,	-6.822E+00,	2.772E+01,	4.457E+01,,	-0.153		
C,MN-54	,NO,	5.803E-01,	2.939E+00,	4.932E+00,,	0.118		
C,CO-57	,NO,	6.871E-01,	2.566E+00,	4.296E+00,,	0.160		
C, CO-58	, NO ,	-2.582E+00,	2.875E+00,	4.421E+00,,	-0.584		
C.FE-59	NO ,	3.872E+00,	6.248E+00,	1.086E+01,,	0.356		
C.ZN-65	.NO .	-9.827E-03,	8.424E+00,	1.172E+01,,	-0.001		
C.SE-75	NO .	-2.277E-01,	3.925E+00,	6.450E+00,,	-0.035		
C. SR-85	NO .	1.254E+01,	3.697E+00,	6.890E+00,,	1.820		
C.Y-88	NO .	4.621E-01,	3.745E+00,	6.256E+00,,	0.074		
$C_{\rm NB} = 94$	NO .	-2.410E+00.	2.802E+00,	4.287E+00,,	-0.562		
C NB - 95	NO	2.452E+00.	3.198E+00.	5.471E+00,,	0.448		
C $ZR = 95$	NO ,	-1 133E+00.	5.464E+00.	8.731E+00.	-0.130		
C MO - 99	NO ,	8.171E+00.	8.066E+01.	1.323E+02,,	0.062		
C $RII = 1.03$	NO,	1.957E+00	3.110E+00.	5.261E+00.	0.372		
C RII-106	NO	2.136E+01	2.563E+01.	4.471E+01	0.478		
$C \Delta G = 110 m$	NO ,	1 571E - 01	2.959E+00.	4.878E+00.	0.032		
C SN-113	NO ,	2.678E+00	3.731E+00.	6.411E+00	0.418		
$C_{SB} = 124$, NO ,	-2.344E+00	7.150E+00	4.893E+00	-0.479		
$C_{SB} = 125$	NO	-1.029E+00	8 211E+00.	1.344E+01.	-0.077		
C, SB=120	, NO ,	-7.480E+00	3.512E+01	5 683E+01	-0.132		
$C_{T_{-121}}$	NO	-4 245E-02	4.353E+00	7 250E+00	-0.006		
C, I = I J I	, INO ,	$8 009F \pm 00$	4.559E+00,	7 253E+00	1 104		
C, DA=133	, NO ,	$7 337 E \pm 00$	5 505F+00	5 430E+00	1 351		
C, CB = 134	, NO ,	$7.337 \pm 00,$ 2.031 ± 00	$3.702E\pm00$	6 386E+00	0 318		
C, CS = 130	, INO ,	2.031E+00, 1 295F+00	3.292E+00	5.545E+00	0.234		
C, CS = 137	, NO ,	-6.470E-01	2.724E+00	4 405E+00	-0 147		
C, CE-139	, INO ,	-0.470 ± 01	2.7240+00, 1 231F+01	2 102E+01	-0.235		
C, BA-140	, NO ,	-4.509E+00	1.331E+01, / 972E+00	7 318E+00	-0.616		
C, LA-140	, NO ,	-4.509E+00,	4.9720+00, 5.751E+00	8 268E±00,	0.010		
C, CE = 141	, NO ,	2.143E+00,	2.7310+00,	2 /29E±01	-0.041		
C, CE-144	, NO ,	-1.4000+00,	2.520E+01,	1 449E+01,			
C,EU-152	, NO ,	-5.750E-01,	1.020E+01,	1.4496401,	0 124		
C,EU-154	, NO ,	1.123E+00,	5.43/E+00,	9.000E+00,,	0.124		
C, RA-226	, NO ,	-6.391E+U1,	/.UOO世+UL,	1.124B+VZ,, 2.10EE.01	0 1 6 0		
C,TH-232	, NO ,	3.720E+00,	1.401E+01,	$\angle . \bot \forall \Box \Box + \cup \bot$			
C,U-235	, NO ,	2.513E+01,	$\angle . \exists \bot / \amalg + \cup \bot$	3.4526+UL,,	0.120		
C,U-238	,NO,	9.509E+01,	3.4828+02,	5./99E+02,,	0.104		
C,AM-241	,NO,	-8.858E+00,	2.563E+01,	4.039E+01,,	-0.219		

Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 18:36:12.26 TBE23 03017322 HpGe ******** Aquisition Date/Time: 16-MAY-2006 15:23:34.78 LIMS No., Customer Name, Client ID: WG L28609-18 BRAIDWOOD

Sample ID Sample Type Quantity Start Channel End Channel	:::::::::::::::::::::::::::::::::::::::	23L28609-18 WG 3.63050E+00 L 50 Energy Tol : 4090 Pk Srch Sens:	1.50000	Smple Date: Geometry : BKGFILE : Real Time : Live time :	11-MAY-2006 10:00:00. 2335L090704 23BG050506MT 0 03:12:28.74 0 03:12:20.43
End Channel	:	4090 PK SICH Bens.	5.00000	HIVE CIME .	5 50 m = 1 = 1 = 1
MDA Constant	:	0.00 Library Used:	LIBD		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	33.80*	0	25	1.09	67.77	9.40E-02	5.67E-06*	****	3.76E+00
2	Ô	66.16*	106	320	1.46	132.41	1.03E+00	9.18E-03	30.7	
3	Õ	92.33*	60	540	1.27	184.70	1.69E+00	5.22E-03	80.0	
4	Õ	198.60*	60	437	1.50	397.06	1.90E+00	5.22E-03	71.7	
5	0	238.54*	34	201	0.76	476.88	1.72E+00	2.94E-03	79.1	
6	Õ	295.33*	121	213	1.38	590.37	1.50E+00	1.05E-02	26.7	
7	Õ	351.58*	199	223	1.18	702.80	1.32E+00	1.73E-02	17.9	
, 8	Ô	609.00*	129	93	1.52	1217.42	8.59E-01	1.12E-02	18.5	
g	0 0	1120.21*	46	36	1.62	2239.92	5.52E-01	4.03E-03	35.0	
10	Õ	1238.17	37	26	2.82	2475.97	5.16E-01	3.21E-03	32.8	
11	0 0	1371.76	22	22	0.76	2743.33	4.80E-01	1.90E-03	51.7	
12	ñ	1460 66*	32	30	1.55	2921.28	4.59E-01	2.76E-03	55.8	
13	0	1763.94*	29	9	3.14	3528.48	4.01E-01	2.56E-03	33.1	

Flag: "*" = Peak area was modified by background subtraction

LIMS:

Nuclide Line Activity Report

Nuclide	Type: natura	al					
nuorruo	-7201				Uncorrecte	d Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K = 40	1460.81	32	10.67*	4.595E-01	4.185E+01	4.185E+01	111.53
TH-228	238.63	34	44.60*	1.725E+00	2.844E+00	2.859E+00	158.14
	240.98		3.95	1.714E+00	L	ine Not Found	

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Summary of Nuclide Activity	Page : 2
Sample ID : 23L28609-18	Acquisition date : 16-MAY-2006 15:23:34
Total number of lines in spectrum	13
Number of unidentified lines	11
Number of lines tentatively identifi	ed by NID 2 15.38%
Nuclide Type : natural	
Uncorrected	Decay Corr Decay Corr 2-Sigma
Nuclide Hlife Decay pCi/L	pCi/L 2-Sigma Error %Error Flags
K-40 1.28E+09Y 1.00 4.185E+01	4.185E+01 4.668E+01 111.53
TH-228 1.91Y 1.01 2.844E+00	2.859E+00 4.522E+00 158.14
Total Activity : 4.470E+01	4.471E+01
Grand Total Activity : 4.470E+01	4.471E+01
Flags: "K" = Keyline not found	"M" = Manually accepted
"E" = Manually edited	"A" = Nuclide specific abn. limit

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Unidentified Energy Lines Sample ID : 23L28609-18 Page : 3 Acquisition date : 16-MAY-2006 15:23:34

Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM It Energy Area 65 11 5.67E-06 **** 9.40E-02 33.80 0 25 1.09 67.77 4 1.03E+00 66.16 106 320 1.46 132.41 130 7 9.18E-03 61.3 0 184.70 179 11 5.22E-03 **** 1.27 1.69E+00 92.33 60 540 0 390 12 5.22E-03 **** 1.90E+00 437 1.50 397.06 60 0 198.60 1.50E+00 586 12 1.05E-02 53.5 213 1.38 590.37 0 295.33 121

0	220.00	and the second second								
0	351.58	199	223	1.18	702.80	696	14	1.73E-02	35.7	1.32E+00
0	609.00	129	93	1.52	1217.42	1211	12	1.12E-02	37.0	8.59E-01
ñ	1120.21	46	36	1.62	2239.92	2231	18	4.03E-03	70.0	5.52E-01
ñ	1238 17	37	26	2.82	2475.97	2468	13	3.21E-03	65.6	5.16E-01
0	1371 76	22	22	0.76	2743.33	2735	15	1.90E-03	* * * *	4.80E-01
0	1763 94	29	9	3.14	3528.48	3522	13	2.56E-03	66.2	4.01E-01
0	エィッシュノエ									

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total	numk	ber of	lines	in	spe	ectrum			13	
Number	of	unide	ntified	1 1	ines	3			11	
Number	of	lines	tentat	zive	ely	identified	by	NID	2	15.38%

Nuclide Type : natural

NUCLIUE	Type . Hacu	LAL					
	4 L		Wtd Mean Uncorrected	Wtd Mean Decay Corr	Decay Corr	2-Sigma	
Nuclide K-40 TH-228	Hlife 1.28E+09Y 1.91Y	Decay 1.00 1.01	pCi/L 4.185E+01 2.844E+00	pĈi/L 4.185E+01 2.859E+00	2-Sigma Error 4.668E+01 4.522E+00	%Error 111.53 158.14	Flags
	Total Acti	vity :	4.470E+01	4.471E+01			
Gran	d Total Acti	lvity :	4.470E+01	4.471E+01			

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Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit
```

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	4.185E+01	4.668E+01	4.714E+01	0.000E+00	0.888
TH-228	2.859E+00	4.522E+00	8.166E+00	0.000E+00	0.350

---- Non-Identified Nuclides ----

Key-Line							
Activity	K.L.	Act e	error	MDA	MDA	error	Act/MDA

Nuclide	(pCi/L) Id	led	(pCi/L)		
BE-7	1.515E-01	2.460E+01	4.184E+01	0.000E+00	0.004
NA-24	3.928E+02	1.191E+03	1.852E+03	0.000E+00	0.212
CR-51	-7.165E+00	2.491E+01	4.244E+01	0.000E+00	-0.169
MN-54	2.273E-01	2.752E+00	4.863E+00	0.000E+00	0.047
CO-57	8.567E-01	2.875E+00	4.796E+00	0.000E+00	0.179
CO-58	-1.718E-01	2.455E+00	4.230E+00	0.000E+00	-0.041
FE-59	2.306E+00	5.032E+00	9.150E+00	0.000E+00	0.252
CO-60	-1.054E+00	2.764E+00	4.747E+00	0.000E+00	-0.222
ZN-65	5.869E+00	6.726E+00	1.084E+01	0.000E+00	0.541
SE-75	-1.763E+00	3.784E+00	6.232E+00	0.000E+00	-0.283
SR-85	1.104E+01	3.313E+00	6.313E+00	0.000E+00	1.749
Y-88	2.063E+00	2.629E+00	5.217E+00	0.000E+00	0.395
NB-94	-1.442E+00	2.663E+00	4.439E+00	0.000E+00	-0.325
NB-95	4.246E-01	2.906E+00	5.040E+00	0.000E+00	0.084
ZR-95	-1.031E+00	4.925E+00	8.373E+00	0.000E+00	-0.123
MO-99	-6.337E+01	7.998E+01	1.306E+02	0.000E+00	-0.485
RU-103	1.987E+00	3.021E+00	5.299E+00	0.000E+00	0.375
RU-106	-6.561E+00	2.357E+01	4.035E+01	0.000E+00	-0.163
AG-110m	2.074E+00	2.703E+00	4.890E+00	0.000E+00	0.424
SN-113	-1.192E+00	3.480E+00	5.868E+00	0.000E+00	-0.203
SB-124	-2.440E+00	3.635E+00	5.039E+00	0.000E+00	-0.484
SB-125	3.284E+00	7.762E+00	1.353E+01	0.000E+00	0.243
TE-129M	-1.011E+01	3.209E+01	5.384E+01	0.000E+00	-0.188
I-131	2.228E-01	4.288E+00	7.375E+00	0.000E+00	0.030
BA-133	1.749E+00	4.467E+00	6.669E+00	0.000E+00	0.262
CS-134	6.223E+00	3.681E+00	5.970E+00	0.000E+00	1.042
CS-136	-1.377E+00	3.134E+00	5.232E+00	0.000E+00	-0.263
CS-137	6.598E-01	2.910E+00	5.112E+00	0.000E+00	0.129
CE-139	-9.369E-01	2.717E+00	4.581E+00	0.000E+00	-0.205
BA-140	8.734E+00	1.223E+01	2.217E+01	0.000E+00	0.394
LA-140	2.604E+00	3.597E+00	6.907E+00	0.000E+00	0.377
CE-141	-1.264E+00	5.363E+00	9.102E+00	0.000E+00	-0.139
CE-144	-6.726E+00	2.265E+01	3.703E+01	0.000E+00	-0.182
EU-152	-1.561E+01	9.984E+00	1.314E+01	0.000E+00	-1.188
EU-154	2.269E+00	5.992E+00	1.001E+01	0.000E+00	0.227
RA-226	1.866E+01	7.082E+01	1.240E+02	0.000E+00	0.150
AC-228	3.704E+00	9.930E+00	1.828E+01	0.000E+00	0.203
TH-232	3.698E+00	9.913E+00	1.825E+01	0.000E+00	0.203
U-235	-7.716E+00	2.233E+01	3.762E+01	0.000E+00	-0.205
U-238	-1.267E+02	3.031E+02	5.231E+02	0.000E+00	-0.242
AM-241	-1.066E+01	1.589E+01	2.518E+01	0.000E+00	-0.423

A,23L28609	-18	,05/16/2006	18:36,05/11/2	2006 10:00,	3.631E+00,WG	L28609-18	В
B,23L28609	9-18	,LIBD	,06,	/24/2005 07:5	9,23351090704		
C,K-40	,YES,	4.185E+01,	4.668E+01,	4.714E+01,,	0.888		
C,TH-228	,YES,	2.859E+00,	4.522E+00,	8.166E+00,,	0.350		
C,BE-7	,NO,	1.515E-01,	2.460E+01,	4.184E+01,,	0.004		
C,NA-24	,NO,	3.928E+02,	1.191E+03,	1.852E+03,,	0.212		
C,CR-51	,NO,	-7.165E+00,	2.491E+01,	4.244E+01,,	-0.169		
C, MN-54	,NO,	2.273E-01,	2.752E+00,	4.863E+00,,	0.047		
C, CO-57	,NO,	8.567E-01,	2.875E+00,	4.796E+00,,	0.179		
C, CO-58	, NO	-1.718E-01,	2.455E+00,	4.230E+00,,	-0.041		
C, FE-59	NO .	2.306E+00,	5.032E+00,	9.150E+00,,	0.252		
C, CO - 60	NO .	-1.054E+00.	2.764E+00,	4.747E+00,,	-0.222		
$C_{\rm N} = 65$	NO .	5.869E+00.	6.726E+00.	1.084E+01.,	0.541		
C SE - 75	NO ,	-1 763E+00.	3.784E+00.	6.232E+00.	-0.283		
C $SR = 85$	NO	1.104E+01	3.313E+00.	6.313E+00.	1.749		
C_{V-88}	NO	2.063E+00	2.629E+00	5 217E+00.	0.395		
C, I = 00	, NO , NO	-1 $442E+00$	2.62JH+00, 2.663F+00	4 439E+00	-0.325		
C, ND OE	, NO ,	-1.4420+00,	2.005H+00, 2.906F+00	5.040E+00	0.023		
C, ND - 95	, NO ,	4.240E-01,	$2.900 \pm 00,$	8 373E±00	-0 123		
$C, \Delta R = 95$, NO ,	-1.031E+00,	4.9250+00,	$1 206 \overline{U} \cdot 00,$	-0.485		
C,MO-99	, NO ,	-6.33/E+UI,	7.990E+UL,	I.300E+02,,	0.405		
C, RU-103	, NO ,	1.98/E+00,	3.021E+00,	5.299E+00,,	0.375		
C, RU-106	,NO ,	-6.561E+00,	2.35/E+UL,	4.035E+01,,	-0.163		
C,AG-110m	,NO,	2.074E+00,	2.703E+00,	4.890E+00,,	0.424		
C,SN-113	,NO,	-1.192E+00,	3.480E+00,	5.868E+00,,	-0.203		
C,SB-124	,NO,	-2.440E+00,	3.635E+00,	5.039E+00,,	-0.484		
C,SB-125	,NO ,	3.284E+00,	7.762E+00,	1.353E+01,,	0.243		
C,TE-129M	,NO ,	-1.011E+01,	3.209E+01,	5.384E+01,,	-0.188		
C,I-131	,NO,	2.228E-01,	4.288E+00,	7.375E+00,,	0.030		
C,BA-133	,NO,	1.749E+00,	4.467E+00,	6.669E+00,,	0.262		
C,CS-134	,NO,	6.223E+00,	3.681E+00,	5.970E+00,,	1.042		
C,CS-136	,NO,	-1.377E+00,	3.134E+00,	5.232E+00,,	-0.263		
C,CS-137	,NO,	6.598E-01,	2.910E+00,	5.112E+00,,	0.129		
C,CE-139	,NO,	-9.369E-01,	2.717E+00,	4.581E+00,,	-0.205		
C,BA-140	,NO,	8.734E+00,	1.223E+01,	2.217E+01,,	0.394		
C,LA-140	,NO,	2.604E+00,	3.597E+00,	6.907E+00,,	0.377		
C,CE-141	,NO,	-1.264E+00,	5.363E+00,	9.102E+00,,	-0.139		
C.CE-144	, NO ,	-6.726E+00,	2.265E+01,	3.703E+01,,	-0.182		
C, EU-152	.NO .	-1.561E+01,	9.984E+00,	1.314E+01,,	-1.188		
C.EU-154	NO .	2.269E+00.	5.992E+00.	1.001E+01.,	0.227		
$C_{RA} = 226$	NO .	1.866E+01.	7.082E+01,	1.240E+02.,	0.150		
$C \Delta C - 228$	NO ,	3.704E+00	9.930E+00.	1.828E+01.	0.203		
$C TH_{220}$	NO	3 6988+00	9.913E+00	1.825E+01	0.203		
$C_{11} 252$, NO ,	-7 716E+00	2 233E+01	3762E+01	-0.205		
C II_228	NO,	$-1 267E \pm 02$	3.031E+02	5.231E+02	-0.242		
$C_{\rm AM} = 2/1$	NO	-1 066F±01	1 589EL01	$2.518E\pm01$	-0 423		
	110 1	T.0000010T/					

Analyst: Sec. Review:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 16-MAY-2006 18:45:35.72 TBE14 P-10933A HpGe ******** Aquisition Date/Time: 16-MAY-2006 15:39:08.65

LIMS No., Customer Name, Client ID: WG L28609-19 BRAIDWOOD

LIMS:

Sample ID	:	14L2860	9-19		Smple Date	:	11-MAY-2006 10:05:00.
Sample Type	:	WG			Geometry	:	1435L091304
Ouantity	:	3.66100	E+00 L		BKGFILE	:	14BG050506MT
Start Channel	:	90	Energy Tol :	1.30000	Real Time	:	0 03:06:15.65
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 03:06:13.73
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5	1 1 1 1	66.04* 198.75* 238.34* 295.44* 352.04*	109 103 67 110 114	448 317 302 247 142	1.55 1.70 2.08 2.26 1.91	133.20 399.53 478.92 593.38 706.78	4.45E-01 1.60E+00 1.47E+00 1.29E+00 1.14E+00	9.73E-03 9.18E-03 5.99E-03 9.85E-03 1.02E-02	37.0 34.7 53.3 32.9 23.9	1.78E+00 1.70E+00 1.25E+00 2.14E+00 1.27E+00
6	1	609.27*	117	84	1.64	1221.50	7.66E-01	1.04E-02	T8.0	2.228+00
7	1	1120.38*	35	55	3.63	2240.92	4.81E-01	3.13E-03	56.8	2.39E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

nucriac	- <i>J</i> po. 1100002				Uncorrecte	d Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
TH-228	238.63	67	44.60*	1.470E+00	6.751E+00	6.787E+00	106.61
	240.98		3.95	1.461E+00	L	ine Not Found	
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Page : 2 Summary of Nuclide Activity Acquisition date : 16-MAY-2006 15:39:08 Sample ID : 14L28609-19 7 Total number of lines in spectrum Number of unidentified lines 6 Number of lines tentatively identified by NID 1 14.29% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr pĊi/L 2-Sigma Error %Error Flags pCi/L Nuclide Hlife Decay 7.235E+00 106.61 TH-228 1.91Y 1.01 6.751E+00 6.787E+00 -----_ _ _ _ _ _ _ _ _ _ Total Activity : 6.751E+00 6.787E+00 6.787E+00 Grand Total Activity : 6.751E+00 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

Unidentifie Sample ID :	d Energy Li 14L28609-1	nes 9		Acc	quisit	ion	date :	16-MAY	Page -2006 15	e : 3 5:39:08
It Energy	Area	Bkgnd	FWHM	Channel	Left :	Pw	Cts/Sec	%Err	%Eff	Flags
1 66.04 1 198.75 1 295.44 1 352.04 1 609.27 1 1120.38	109 103 110 114 117 35	448 317 247 142 84 55	1.55 1.70 2.26 1.91 1.64 3.63	133.20 399.53 593.38 706.78 1221.50 2240.92	129 394 586 702 1217 2233	9 10 14 11 9 21	9.73E-03 9.18E-03 9.85E-03 1.02E-02 1.04E-02 3.13E-03	74.1 69.4 65.8 47.7 37.3 ****	4.45E-0 1.60E+0 1.29E+0 1.14E+0 7.66E-0 4.81E-0)1)0)0)1)1
Flags: "T"	= Tentative	ly asso	ciated							
Summary of	Nuclide Act	ivity								
Total numb Number of Number of	er of lines unidentifie lines tenta	s in spe ed lines atively	ctrum identi	fied by	NID	7 6 1	14	.29%		
Nuclide Typ Nuclide TH-228	e : natural Hlife De 1.91Y 2	Wt Unc ecay 1.01 6.	d Mean correct pCi/L 751E+C	Wt ed Dec	d Mean ay Cor pCi/L 787E+0	r 0	Decay C 2-Sigma 7.235E	Corr Error 2+00	2-Sigma %Error 106.61	Flags
Тс	tal Activit	су: б.	751E+C	6.	787E+0	0				
Grand To	tal Activi	су: б.	751E+0	6.	787E+0	0				
Flags: "K" "E"	= Keyline n = Manually	not four edited	nd	"M" "A"	= Man = Nuc	ual lid	ly accep e specif	oted Tic abr	n. limit	
Interferenc	e Report									
No interfer	cence corre	ction pe	erforme	ed						
Combined Ac	ctivity-MDA	Report								
Identi	fied Nucli	des	-							
Nuclide	Activit (pCi/L	Y)	Act e	error	(F	MDA Ci/	́Ъ)	MDA	error	Act/MDA
TH-228	6.787E+	00	7.23	5E+00	9.6	546E	2+00	0.00	0E+00	0.704
Non-Ic	dentified N	uclides								
Nuclide	Key-Lin Activit (pCi/L	e y K.L.) Ided	Act e	error	(1	MDA pCi/	Ϋ́L)	MDA	error	Act/MDA
BE-7 NA-24 K-40 CR-51 MN-54	-8.089E+ -5.467E+ 5.116E+ -2.178E+ 9.838E-	00 02 01 01 01	2.93 1.36 4.82 3.23 3.42	7E+01 5E+03 8E+01 0E+01 1E+00	4.8 2.7 9.7 5.7	806E 148E 761E 179E 737E	E+01 E+03 E+01 E+01 E+00	0.00 0.00 0.00 0.00 0.00	0E+00 0E+00 0E+00 0E+00 0E+00	-0.168 -0.255 0.524 -0.421 0.171

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CO-57	-6.908E-01	3.571E+00	5.896E+00	0.000E+00	-0.117
CO-58	3.258E+00	3.516E+00	6.132E+00	0.000E+00	0.531
FE-59	9.833E-01	6.494E+00	1.087E+01	0.000E+00	0.090
CO-60	-1.578E+00	3.574E+00	5.601E+00	0.000E+00	-0.282
ZN-65	1.183E+01	8.851E+00	1.400E+01	0.000E+00	0.845
SE-75	4.520E-01	4.712E+00	7.849E+00	0.000E+00	0.058
SR-85	2.122E+01	3.976E+00	7.847E+00	0.000E+00	2.704
Y-88	-4.478E-01	3.423E+00	5.488E+00	0.000E+00	-0.082
NB-94	2.596E-01	3.452E+00	5.630E+00	0.000E+00	0.046
NB-95	1.376E+00	3.547E+00	6.006E+00	0.000E+00	0.229
ZR-95	-2.883E+00	6.115E+00	9.828E+00	0.000E+00	-0.293
MO-99	1.070E+02	9.551E+01	1.687E+02	0.000E+00	0.634
RU-103	2.295E+00	3.677E+00	6.267E+00	0.000E+00	0.366
RU-106	-1.747E+01	3.215E+01	5.091E+01	0.000E+00	-0.343
AG-110m	1.438E+00	3.240E+00	5.427E+00	0.000E+00	0.265
SN-113	-3.282E+00	4.470E+00	7.043E+00	0.000E+00	-0.466
SB-124	-5.712E+00	4.590E+00	5.709E+00	0.000E+00	-1.000
SB-125	2.236E+00	9.706E+00	1.594E+01	0.000E+00	0.140
TE-129M	-4.413E+01	4.268E+01	6.750E+01	0.000E+00	-0.654
I-131	-2.931E-02	5.472E+00	8.956E+00	0.000E+00	-0.003
BA-133	1.010E+01	5.937E+00	9.011E+00	0.000E+00	1.121
CS-134	6.387E+00	4.887E+00	7.299E+00	0.000E+00	0.875
CS-136	-4.188E+00	4.281E+00	6.586E+00	0.000E+00	-0.636
CS-137	-4.297E-01	3.612E+00	5.843E+00	0.000E+00	-0.074
CE-139	7.926E-01	3.505E+00	5.794E+00	0.000E+00	0.137
BA-140	-1.721E+00	1.545E+01	2.532E+01	0.000E+00	-0.068
LA-140	5.160E+00	4.646E+00	8.511E+00	0.000E+00	0.606
CE-141	-9.368E+00	6.646E+00	1.054E+01	0.000E+00	-0.889
CE-144	-1.529E+01	2.809E+01	4.581E+01	0.000E+00	-0.334
EU-152	7.142E+00	1.229E+01	1.766E+01	0.000E+00	0.404
EU-154	-1.576E+00	7.420E+00	1.224E+01	0.000E+00	-0.129
RA-226	-8.450E+00	8.566E+01	1.405E+02	0.000E+00	-0.060
AC-228	4.889E+00	1.257E+01	2.165E+01	0.000E+00	0.226
TH-232	4.880E+00	1.255E+01	2.161E+01	0.000E+00	0.226
U-235	8.768E+00	2.711E+01	4.514E+01	0.000E+00	0.194
U-238	-9.068E+01	3.602E+02	5.748E+02	0.000E+00	-0.158
AM-241	2.765E+01	5.565E+01	7.929E+01	0.000E+00	0.349

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A,14L28609	-19	,05/16/2006	18:45,05/11/2	2006 10:05, /22/2005 08:57	3.661E+00,WG	L28609-19	В
B,14L28609	-19 VDQ		7 2257.00	22/2003 00.37	0 704		
C, TH-228	, IES,	6.787E+00,	7.235E+00,	9.040E+00,,	-0 168		
C,BE-/	, NO ,	-8.089E+00,	2.93/E+01,	4.0000+01,,	-0.255		
C,NA-24	,NO ,	-5.467E+U2,	1.365E+U3,	2.140E+03,,	-0.255		
C,K-40	,NO,	5.116E+01,	4.828E+01,	9.761E+01,,	0.524		
C,CR-51	,NO,	-2.178E+01,	3.230E+01,	5.1/9E+U1,,	-0.421		
C,MN-54	,NO,	9.838E-01,	3.421E+00,	5./3/E+00,,	0.171		
C,CO-57	,NO,	-6.908E-01,	3.571E+00,	5.896E+00,,	-0.117		
C,CO-58	,NO,	3.258E+00,	3.516E+00,	6.132E+00,,	0.531		
C,FE-59	,NO,	9.833E-01,	6.494E+00,	1.087E+01,,	0.090		
C,CO-60	,NO,	-1.578E+00,	3.574E+00,	5.601E+00,,	-0.282		
C,ZN-65	,NO,	1.183E+01,	8.851E+00,	1.400E+01,,	0.845		
C,SE-75	,NO,	4.520E-01,	4.712E+00,	7.849E+00,,	0.058		
C,SR-85	,NO,	2.122E+01,	3.976E+00,	7.847E+00,,	2.704		
C,Y-88	,NO,	-4.478E-01,	3.423E+00,	5.488E+00,,	-0.082		
C,NB-94	,NO,	2.596E-01,	3.452E+00,	5.630E+00,,	0.046		
C,NB-95	,NO,	1.376E+00,	3.547E+00,	6.006E+00,,	0.229		
C,ZR-95	,NO,	-2.883E+00,	6.115E+00,	9.828E+00,,	-0.293		
C,MO-99	,NO,	1.070E+02,	9.551E+01,	1.687E+02,,	0.634		
C,RU-103	,NO,	2.295E+00,	3.677E+00,	6.267E+00,,	0.366		
C,RU-106	,NO,	-1.747E+01,	3.215E+01,	5.091E+01,,	-0.343		
C,AG-110m	,NO,	1.438E+00,	3.240E+00,	5.427E+00,,	0.265		
C, SN-113	,NO,	-3.282E+00,	4.470E+00,	7.043E+00,,	-0.466		
C,SB-124	, NO ,	-5.712E+00,	4.590E+00,	5.709E+00,,	-1.000		
C,SB-125	,NO,	, 2.236E+00,	9.706E+00,	1.594E+01,,	0.140		
C, TE-129M	, NO	-4.413E+01,	4.268E+01,	6.750E+01,,	-0.654		
C,I-131	, NO	, -2.931E-02,	5.472E+00,	8.956E+00,,	-0.003		
C, BA-133	, NO	, 1.010E+01,	5.937E+00,	9.011E+00,,	1.121		
C,CS-134	, NO	, 6.387E+00,	4.887E+00,	7.299E+00,,	0.875		
C,CS-136	, NO	, -4.188E+00,	4.281E+00,	6.586E+00,,	-0.636		
C,CS-137	, NO	, -4.297E-01,	3.612E+00,	5.843E+00,,	-0.074		
C,CE-139	, NO	, 7.926E-01,	3.505E+00,	5.794E+00,,	0.137		
C,BA-140	, NO	, -1.721E+00,	1.545E+01,	2.532E+01,,	-0.068		
C,LA-140	, NO	, 5.160E+00,	4.646E+00,	8.511E+00,,	0.606		
C,CE-141	, NO	, -9.368E+00,	6.646E+00,	1.054E+01,,	-0.889		
C,CE-144	, NO	, -1.529E+01,	2.809E+01,	4.581E+01,,	-0.334		
C,EU-152	, NO	, 7.142E+00,	1.229E+01,	1.766E+01,,	0.404		
C,EU-154	, NO	, -1.576E+00,	7.420E+00,	1.224E+01,,	-0.129		
C,RA-226	, NO	, -8.450E+00,	8.566E+01,	1.405E+02,,	-0.060		
C,AC-228	, NO	, 4.889E+00,	1.257E+01,	2.165E+01,,	0.226		
C,TH-232	, NO	, 4.880E+00,	1.255E+01,	2.161E+01,,	0.226		
C,U-235	, NO	, 8.768E+00,	2.711E+01,	4.514E+01,,	0.194		
C,U-238	, NO	, -9.068E+01,	3.602E+02,	5.748E+02,,	-0.158		
C,AM-241	, NO	, 2.765E+01,	5.565E+01,	7.929E+01,,	0.349		

Sec. Review:

Analyst:

LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 17-MAY-2006 03:20:09.87 TBE15 P-10635B HpGe ******** Aquisition Date/Time: 16-MAY-2006 18:26:36.80 LIMS No., Customer Name, Client ID: WG L28609-20 BRAIDWOOD

Sample ID	:	15L28609	9-20		Smple Date:	:	11-MAY-2006 12:05:00.
Sample Type	:	WG			Geometry :	:	1535L090104
Quantity	:	3.604001	E+00 L		BKGFILE	: :	15BG050506MT
Start Channel	:	40	Energy Tol :	1.70000	Real Time :	: '	0 08:53:23.43
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time :	: '	0 08:53:20.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	54.07	144	995	1.78	93.98	1.63E-01	4.51E-03	40.1	4.22E-01
2	1	67.01	199	994	1.18	120.02	4.52E-01	6.21E-03	28.4	3.15E-01
3	1	140.43	298	911	1.74	267.73	1.48E+00	9.31E-03	19.1	1.88E+00
4	1	198.87*	151	685	1.10	385.30	1.36E+00	4.71E-03	34.5	2.02E+00
5	1	238.78*	94	504	1.45	465.58	1.22E+00	2.95E-03	46.0	1.58E+00
6	1	242.70	143	510	2.24	473.45	1.21E+00	4.45E-03	28.9	1.20E+00
7	1	295.73*	196	507	1.76	580.11	1.05E+00	6.11E-03	24.5	1.17E+00
8	1	352.26*	278	439	1.77	693.80	9.15E-01	8.69E-03	17.9	2.64E+00
. 9	1	595.56	130	314	3.36	1182.95	5.97E-01	4.08E-03	31.4	3.19E+00
10	1	609.00*	294	150	1.65	1209.98	5.87E-01	9.20E-03	11.0	1.04E+00
11	1	1119.65*	99	82	1.90	2235.88	3.58E-01	3.08E-03	24.2	1.74E+00
12	1	1764.70*	39	54	1.95	3530.37	2.54E-01	1.23E-03	53.3	1.10E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
TH-228	238.63	94	44.60*	1.224E+00	4.047E+00	4.068E+00	91.92
	240.98		3.95	1.217E+00	Li	ne Not Found	

Flag: "*" = Keyline

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Summary of Nuclide Activity	Page : 2
Sample ID : 15L28609-20	Acquisition date : 16-MAY-2006 18:26:36
Total number of lines in spectrum	12
Number of unidentified lines	11
Number of lines tentatively identified	by NID 1 8.33%
Nuclide Type : natural	
Uncorrected	Decay Corr Decay Corr 2-Sigma
Nuclide Hlife Decay pCi/L	pCi/L 2-Sigma Error %Error Flags
TH-228 1.91Y 1.01 4.047E+00	4.068E+00 3.740E+00 91.92
Total Activity : 4.047E+00	4.068E+00
Grand Total Activity : 4.047E+00	4.068E+00
Flags: "K" = Keyline not found	"M" = Manually accepted
"E" = Manually edited	"A" = Nuclide specific abn. limit

L28609 156 of 158

Unidentified Energy Lines Sample ID : 15L28609-20

Page : 3 Acquisition date : 16-MAY-2006 18:26:36

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Ρw	Cts/Sec	%Err	%Eff	Flags
1 1 1 1 1 1 1	54.07 67.01 140.43 198.87 242.70 295.73 352.26 595.56 609.00 1119.65	144 199 298 151 143 196 278 130 294 99	995 994 911 685 510 507 439 314 150 82	1.78 1.18 1.74 1.10 2.24 1.76 1.77 3.36 1.65 1.90	93.98 120.02 267.73 385.30 473.45 580.11 693.80 1182.95 1209.98 2235.88	90 116 264 381 470 576 688 1176 1205 2229	9 8 9 8 11 13 16 11 14	$\begin{array}{c} 4.51E-03\\ 6.21E-03\\ 9.31E-03\\ 4.71E-03\\ 4.45E-03\\ 6.11E-03\\ 8.69E-03\\ 4.08E-03\\ 9.20E-03\\ 3.08E-03\\ 1.08E-03\\ \end{array}$	80.2 56.7 38.2 69.0 57.8 49.0 35.8 62.9 22.1 48.5	1.63E-01 4.52E-01 1.48E+00 1.36E+00 1.21E+00 1.05E+00 9.15E-01 5.97E-01 5.87E-01 3.58E-01	L L D D D D L L L L
Fla Sum To	<pre>I 1764.70 39 54 1.95 3530.37 3523 18 1.23E-03 **** 2.54E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity</pre>										
Nu Nu	mber of un mber of li	identifi nes tent	ed line atively	s ident	ified by	NID	11 1	8	.33%		

Nuclide Type : natural

nucriae	Type : nacu	Lat					
			Wtd Mean Uncorrected	Wtd Mean Decay Corr	Decay Corr	2-Sigma	
Nuclide TH-228	Hlife 1.91Y	Decay 1.01	pCi/L 4.047E+00	pĈi/L 4.068E+00	2-Sigma Error 3.740E+00	%Error 91.92	Flags
	Total Activ	vity :	4.047E+00	4.068E+00			

Gra	nd Total Activity : 4.047E+00	4.068E+00	
Flags:	"K" = Keyline not found "E" = Manually edited	"M" = Manually accepted "A" = Nuclide specific abn. li	mit

Interference Report

Nuclide

No interference correction performed

(pCi/L) Ided

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
TH-228	4.068E+00	3.740E+00	6.763E+00	0.000E+00	0.602
Non-Ider	tified Nuclides				
	Key-Line Activity K.L.	Act error	MDA	MDA error	Act/MDA

(pCi/L)

				L28609	157 of 158
BE-7	-6.937E-01	1.993E+01	3.224E+01	0.000E+00	-0.022
NA-24	-1.316E+03	1.032E+03	1.554E+03	0.000E+00	-0.847
K-40	-1.423E+01	3.320E+01	6.012E+01	0.000E+00	-0.237
CR-51	-8.705E+00	2.103E+01	3.442E+01	0.000E+00	-0.253
MN-54	2.229E+00	2.310E+00	3.989E+00	0.000E+00	0.559
CO-57	3.817E-01	2.201E+00	3.598E+00	0.000E+00	0.106
CO-58	1.627E+00	2.272E+00	3.894E+00	0.000E+00	0.418
FE-59	1.322E+00	4.845E+00	8.005E+00	0.000E+00	0.165
CO-60	-8.165E-01	2.346E+00	3.776E+00	0.000E+00	-0.216
ZN-65	1.562E+01	6.014E+00	9.818E+00	0.000E+00	1.591
SE-75	-6.062E-01	2.925E+00	4.858E+00	0.000E+00	-0.125
SR-85	1.510E+01	2.619E+00	4.988E+00	0.000E+00	3.027
Y-88	-4.076E-01	2.640E+00	4.288E+00	0.000E+00	-0.095
NB-94	-2.076E-01	2.307E+00	3.753E+00	0.000E+00	-0.055
NB-95	-2.539E-01	2.405E+00	3.886E+00	0.000E+00	-0.065
ZR-95	8.829E-01	4.099E+00	6.728E+00	0.000E+00	0.131
MO-99	-1.679E+01	6.496E+01	1.044E+02	0.000E+00	-0.161
RU-103	1.642E+00	2.395E+00	4.078E+00	0.000E+00	0.403
RU-106	6.235E+00	2.159E+01	3.590E+01	0.000E+00	0.174
AG-110m	-6.797E-01	2.233E+00	3.614E+00	0.000E+00	-0.188
SN-113	-5.206E+00	2.973E+00	4.602E+00	0.000E+00	-1.131
SB-124	2.187E+00	4.414E+00	3.527E+00	0.000E+00	0.620
SB-125	-9.819E-01	6.437E+00	1.044E+01	0.000E+00	-0.094
TE-129M	1.744E+01	2.770E+01	4.595E+01	0.000E+00	0.380
I-131	-3.763E+00	3.598E+00	5.733E+00	0.000E+00	-0.656
BA-133	1.107E+01	3.700E+00	5.769E+00	0.000E+00	1.918
CS-134	9.947E+00	4.274E+00	4.225E+00	0.000E+00	2.354
CS-136	-1.143E+00	2.857E+00	4.656E+00	0.000E+00	-0.245
CS-137	1.488E+00	2.438E+00	4.095E+00	0.000E+00	0.363
CE-139	4.206E-01	2.123E+00	3.508E+00	0.000E+00	0.120
BA-140	3.133E-01	1.013E+01	1.681E+01	0.000E+00	0.019
LA-140	2.463E+00	3.639E+00	6.299E+00	0.000E+00	0.391
CE-141	4.231E+00	4.681E+00	6.668E+00	0.000E+00	0.635
CE-144	-1.599E+00	1.838E+01	2.698E+01	0.000E+00	-0.059
EU-152	-1.147E+01	8.117E+00	1.068E+01	0.000E+00	-1.074
EU-154	2.069E-02	4.585E+00	7.469E+00	0.000E+00	0.003
RA-226	1.577E+01	5.623E+01	9.031E+01	0.000E+00	0.175
AC-228	1.111E+00	9.221E+00	1.467E+01	0.000E+00	0.076
TH-232	1.109E+00	9.205E+00	1.465E+01	0.000E+00	0.076

1.983E+01

2.588E+02

3.520E+01

U-235

U-238

AM-241

1.755E+01

1.097E+01

-1.936E+01

2.825E+01

4.251E+02

4.333E+01

0.000E+00

0.000E+00

0.000E+00

0.621

0.026

-0.447

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A,15L28609-20	,05/17/2006	03:20,05/11/	2006 12:05,	3.604E+00,WG	L28609-20 B
B,15L28609-20	,LIBD	,03	/09/2005 13:29	9,1535L090104	
C,TH-228 ,YES,	4.068E+00,	3.740E+00,	6.763E+00,,	0.602	
C,BE-7 ,NO ,	-6.937E-01,	1.993E+01,	3.224E+01,,	-0.022	
C,NA-24 ,NO ,	-1.316E+03,	1.032E+03,	1.554E+03,,	-0.847	
C,K-40 ,NO ,	-1.423E+01,	3.320E+01,	6.012E+01,,	-0.237	
C, CR-51 , NO ,	-8.705E+00,	2.103E+01,	3.442E+01,,	-0.253	
C,MN-54 ,NO ,	2.229E+00,	2.310E+00,	3.989E+00,,	0.559	
C.CO-57 ,NO ,	3.817E-01,	2.201E+00,	3.598E+00,,	0.106	
C.CO-58 .NO .	1.627E+00,	2.272E+00,	3.894E+00,,	0.418	
C.FE-59 NO	1.322E+00,	4.845E+00,	8.005E+00,,	0.165	
$C_1C_0 = 60$, NO ,	-8.165E-01,	2.346E+00,	3.776E+00,,	-0.216	
C = 2N - 65 NO	1.562E+01	6.014E+00,	9.818E+00,,	1.591	
C SE = 75 NO	-6.062E-01.	2.925E+00.	4.858E+00.	-0.125	
C = 85 NO	1.510E+01	2.619E+00	4.988E+00.	3.027	
C = 28 NO	-4.076E-01	2.640E+00	4.288E+00.	-0.095	
C NP $Q4$ NO	-2.076E-01	2.0100+000, 2.307E+00	3.753E+00	-0.055	
C, NB - 94, NO ,	-2.070 ± 01	2.3075 ± 00	3 886E+00	-0.065	
C,NB-95,NO,	-2.539E-01,	2.405E+00, 1 099E+00	5.000H+00,,	0.000	
C, ZR-95 , NO ,	$\begin{array}{c} 0.029E-01, \\ 1.070E+01 \end{array}$	4.0990+00,	$1 0 1 4 E \pm 02$	-0 161	
C,MO-99 ,NO ,	-1.679E+01,	0.490E+01,	1.0440+02,,	0.403	
C,RU-103 ,NO ,	1.642E+00,	2.395E+00,	4.070E+00,,	0.403	
C,RU-106 ,NO ,	6.235E+00,	2.159E+01,	3.590E+01,	0.174	
C,AG-110m ,NO ,	-6./9/E-01,	2.233E+00,	3.614E+00,,	-U.100	
C,SN-113 ,NO ,	-5.206E+00,	2.9/3E+00,	4.602E+00,,	-1.131	
C,SB-124 ,NO ,	2.187E+00,	4.414E+00,	3.52/E+00,,	0.620	
C,SB-125 ,NO ,	-9.819E-01,	6.437E+00,	1.044E+01,,	-0.094	
C,TE-129M ,NO ,	1.744E+01,	2.770E+01,	4.595E+01,,	0.380	
C,I-131 ,NO ,	-3.763E+00,	3.598E+00,	5.733E+00,,	-0.656	
C,BA-133 ,NO ,	1.107E+01,	3.700E+00,	5.769E+00,,	1.918	
C,CS-134 ,NO ,	9.947E+00,	4.274E+00,	4.225E+00,,	2.354	
C,CS-136 ,NO ,	-1.143E+00,	2.857E+00,	4.656E+00,,	-0.245	
C,CS-137 ,NO ,	, 1.488E+00,	2.438E+00,	4.095E+00,,	0.363	
C,CE-139 ,NO ,	, 4.206E-01,	2.123E+00,	3.508E+00,,	0.120	
C,BA-140 ,NO ,	, 3.133E-01,	1.013E+01,	1.681E+01,,	0.019	
C,LA-140 ,NO ,	, 2.463E+00,	3.639E+00,	6.299E+00,,	0.391	
C,CE-141 ,NO ,	, 4.231E+00,	4.681E+00,	6.668E+00,,	0.635	
C,CE-144 ,NO	, -1.599E+00,	1.838E+01,	2.698E+01,,	-0.059	
C,EU-152 ,NO	, -1.147E+01,	8.117E+00,	1.068E+01,,	-1.074	
C,EU-154 ,NO	, 2.069E-02,	4.585E+00,	7.469E+00,,	0.003	
C,RA-226 ,NO	, 1.577E+01,	5.623E+01,	9.031E+01,,	0.175	
C,AC-228 ,NO	, 1.111E+00,	9.221E+00,	1.467E+01,,	0.076	
C,TH-232 ,NO	, 1.109E+00,	9.205E+00,	1.465E+01,,	0.076	
C.U-235 .NO	, 1.755E+01,	1.983E+01,	2.825E+01,,	0.621	
C,U-238 ,NO	, 1.097E+01.	2.588E+02,	4.251E+02,,	0.026	
C,AM-241 ,NO	, -1.936E+01,	3.520E+01,	4.333E+01,,	-0.447	
,		•			

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TELEDYNE BROWN ENGINEERING

A Teledyne Technologies Company

2508 Quality Lane Knoxville, TN 37931 865-690-6819 (Phone)

Work Order #: L28671

Exelon

May 24, 2006

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville CT 06062

Case Narrative - L28671 EX001-3ESPBRAID-06

05/24/2006 17:26

Sample Receipt

The following samples were received on May 17, 2006 in good condition, unless otherwise noted.

Sample WG-BW-051206-MS-044 was pH 6 at receipt. Nitric acid was added at the laboratory to a pH < 2. Sample L28671-13 did not meet client required MDC on the first analysis and was recounted. The rerun data is being reported.

	Cross Reference Ta	ıble
Client ID	Laboratory ID	Station ID(if applicable)
WG-BW-051106-MS-032	L28671-1	
WG-BW-051106-MS-034	L28671-2	
WG-BW-051106-MS-036	L28671-3	
WG-BW-051106-MS-038	L28671-4	
WG-BW-051106-MS-040	L28671-5	
WG-BW-051106-MS-042	L28671-6	
WG-BW-051106-JL-033	L28671-7	
WG-BW-051106-JL-037	L28671-8	
WG-BW-051106-MS-039	L28671-9	
WG-BW-051206-JL-041	L28671-10	
WG-BW-051206-JL-043	L28671-11	
WG-BW-051206-MS-044	L28671-12	
WG-BW-051206-MS-046	L28671-13	
WG-BW-051206-MS-048	L28671-14	

	Analytical Method Cross Reference Table			
Radiological Parameter	TBE Knoxville Method	Reference Method		
Gamma Spectrometry	TBE-2007	EPA 901.1		
H-3	TBE-2010	EPA 906.0		
TOTAL SR	TBE-2018	EPA 905.0		
TOTAL BR				

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

Case Narrative - L28671 EX001-3ESPBRAID-06

05/24/2006 17:26

<u>QC Sample #</u> WG3997-1

Gamma Spectroscopy

Did not meet MDC requirement Quality Control

Quality control samples were analyzed as WG3997.

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

<u>Client ID</u> WG-BW-051106-MS-032

<u>H-3</u>

Quality Control

Quality control samples were analyzed as WG3995.

Method Blank

All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

Laboratory ID

L28671-1

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	QC Sample #
GW-45136-050906-	L28614-5	WG3995-3
BW-005		

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

Case Narrative - L28671 EX001-3ESPBRAID-06

05/24/2006 17:26

TOTAL SR

Quality Control

Quality control samples were analyzed as WG4011.

Method Blank

All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	<u>QC Sample #</u>
GW-OYS-050406-JAS-	L28618-1	WG4011-3
048		

Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby ceptify that the above statements are true and correct.

Mus For KETTH JETER

Keith Jeter Operations Manager

L28671 5 of 123

Sample Receipt Summary

L28671 6 of 123

SR #: lient:	SR08439 Exelon	Proje	ect #: EX001-3E	SPBRAID-06	LIMS #: L28671
Initia Ini	ted By: PMARSH t Date: 05/17/	ALL 06 Receive Date:	05/17/06		
Person No Noti Notif	Notified: Ko Dify Date: 5 fy Method: C Ty Comment: C	Notifi Ally Shew /17/06 mail Hached	Contact	riance ed By: R.(Than US
		Client	Response		
Person Re Resp Resp	n Responding: esponse Date: ponse Method: onse Comment				
Cr	riteria		Yes No NA	Comment	
1	Shipping conta and intact.	ainer custody seals p:	resent NA		
2	Sample contain and intact.	ner custody seals pre	sent NA		
3	Sample contain condition	ners received in good	Y		
4	Chain of cust	ody received with sam	ples Y		
5	All samples l received	isted on chain of cus	tody Y		
6	Sample contai legible.	ner labels present an	d Y	11-1-1-11-11-11-11-11-11-11-11-11-11-11	
7	Information o correspond wi	n container labels th chain of custody	Y		
8	Sample(s) pro appropriate c	perly preserved and i ontainer(s)	n N		
	WG-BW-0512	06-MS-044		Ph read at adjustment	6 or above before
9	Other (Descri	be)	N		
				All Gamma s Liters or l	amples contained 3 .ess

05/17/06 15:56

Teledyne Brown Engineering Sample Receipt Verification/Variance Report

Charles, Rebecca

From:	Charles, Rebecca
Sent:	Wednesday, May 17, 2006 5:12 PM
To:	'Shaw, Kathy'; Julie Czech (jczech@craworld.com)
Cc:	'Larry.Walton@exeloncorp.com'
Subject:	Sample receipt variance

Kathy,

Sample WG-BW-051206-MS-044 was at pH 6 at receipt. We have acidified to pH 2.

The cubitainers contained 3 liters or less sample. Please ask the sampling crews to fill the cubitainers. The reduced volume impacts our ability to reach the required detection level and greatly extends our count times. If the wells do not produce enough to fill the container, please have them note it on the COC.

Thanks

Rebecca Charles Teledyne Brown Engineering Project Manager (865) 934-0379 (865) 934-0396 (fax)

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			1298671	Γ
CONESTOGA-R(8615 W. E Chicago,	OVERS & ASSOCIATES 3ryn Mawr Avenue Illinois 60631	SHIPPED TO (Laboratory Name): 「ビウEL	YNE BROWN ZOFZ	
(773)380-	9933 phone 6421 fax	REFERENCE NUMBER:	PROJECT NAME: BRAIDWODD EXELON	
CHAIN-OF-	CUSTODY RECORD	n7-acich		
SAMPLER'S SIGNATURE:	PRINTED NAME:		PARAMELERS ON A CARACTER REMARKS	
SEQ. DATE TIME	SAMPLE IDENTIFIC.	ATION No. SAMPLE 25	ALL CARD STORES	
1 Elistry X45	N.C R.W D51206-MS-	646 044 + WATER 3	X X X X	
2 11400 935		-046 - 2		
3 1035	2 M TO FLAD THE JIL	- 048 - 0		
1220	NU DIA VILLON IN			
	TOTAL NUMBER OF CONTA	INERS	DATE	
RELINQUISHED BY:		DATE: RECEIVE	ED BY:	
DEI INOI IISHED RY.		DATE:	ED BY:	
2		TIME: (3)	DATE:	
RELINQUISHED BY: (3)		DATE: RECEIVE TIME: 4	ED BY:	
METHOD OF SHIP	MENT:	AIR	BILL No.	
White -Fully	Executed Copy	SAMPLE TEAM:	RECEIVED FOR LABORATORY BY:	
Pink -Shipt Coldenrod -Sam	erving Laboratory Copy per Copy bler Copy		DATE: 5/17/06 TIME: 1/00	
1001-00(SOURCE)GN	1-C0004			

L28671 8 of 123

	Lable	120
CONESTOGA-ROVERS & ASSOCIATES 8615 W. Bryn Mawr Avenue CEAC	SHIPPED TO (Laboratory Name): Teledyne Brown	
(773)380-9933 phone (773)380-6421 fax	REFERENCE NUMBER:	
CHAIN-OF-CUSTODY RECORD	45136-30 (Statalawa) and averal	
SAMPLER'S AULLO ALAULO A NAME:	TULL LUZUDE BERMETERS WW CAN	MARKS
SEQ. DATE TIME SAMPLE IDENTIFIC	ATION NO. SAMPLE 25 CONTRINE 0	
S/11/66/1440 NUG-BNN- OSIICLE	-JL-033-W 2 XXX - 037-W 2 XXX	
V 1635	- D39 W D XXX	
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Goldenrod -Sampler Copy		
1001-00(SOURCE)GN-CO004		

L28671 9 of 123

CONESTOGA-ROVERS & ASSOCIATES 8615 W. Bryn Mawr Avenue	SHIPPED TO (Laboratory Name): てんりしく	NE BROWN	10f Z
(773)380-9933 phone (773)380-6421 fax	REFERENCE NUMBER:	PROJECT NAME:	128671
CHAIN-OF-CUSTODY RECORD	N7-ACICL		
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L28671 10 of 123

TELEDYNE BROWN ENGINEERING 2508 Quality Lane Knoxville, TN 37931-3133

ACKNOWLEDGEMENT

This is not an invoice

May 17, 2006

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville, CT 06062

The following sample(s) were received at Teledyne Brown Engineering Knoxville laboratory on May 17, 2006. The sample(s) have been scheduled for the analyses listed below and the report is scheduled for completion by May 24, 2006. Please review the following login information and pricing. Contact me if anything is incorrect or you have questions about the status of your sample(s).

Thank you for choosing Teledyne Brown Engineering for your analytical needs.

Sincerely, Rebecca Charles Project Manager (865)934-0379

Project ID: EX001-3ESPBRAID-06
 P.O. #: 00411203
Release #:
Contract#: 00411203
Kathy Shaw, FAX#:860-747-1900, larry.walton@exeloncorp.com

Client ID/ Laboratory ID Vol/Units Start Collect End Collect Station Analysis Price Date/Time Date/Time

WG-BW-051106-MS-032	L28671-1	C)5/11/06:0950
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-MS-034	L28671-2	ı	05/11/06:1035
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-MS-036	L28671-3		05/11/06:1135
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-MS-038	L28671-4		05/11/06:1400
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00	
WG-BW-051106-MS-040	L28671-5 Page 1		05/11/06:1500

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WG	GELI		108.00
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WG	GELI		108.00
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WG	5K-90	(FASI)	140.00
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WG	GELI		108.00
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WG	SR-90	(FAST)	140.00
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WG	SR-90	(FAST)	140.00
WG-BW-051206-JL-043	L28671	-11	05/12/06:0945
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L28671 13 of 123

Internal Chain of Custody

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05/17/2006 15:33	030854	Donna Webb	099999	Sample Custodian
05/17/2006 15:42	099999	Sample Custodian	030854	Donna Webb
05/17/2006 15:44	030854	Donna Webb	029965	Kelly Wright
05/22/2006 09:45	029965	Kelly Wright	030854	Donna Webb
05/22/2006 09:45	030854	Donna Webb	099999	Sample Custodian
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05/17/2006 15:33	099999	Sample Custodian	000004	Sample Custodian
05/17/2006 15:33	030854	Jonna Webb	030051	Donna Webb
05/17/2006 15:42	099999	Sample Custodian	020065	Kolly Wright
05/17/2006 15:44	030854	Donna Webb	029900	Verth urtduc

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05/17/2006 15:42	099999	Sample Custodian	030854	Donna Webb	
05/17/2006 15:44	030854	Donna Webb	029965	Kelly Wright	
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Teledyne Brown Engineering

Internal Chain of Custody Containernum 2 Sample # L28671-6 EJ н-3 SR-90 (FAST) GK Received By Relinquish Date Relinquish By Sample Custodian 099999 05/17/2006 00:00 030854 Donna Webb Sample Custodian 05/17/2006 15:33 099999 Sample Custodian 099999 Donna Webb 030854 05/17/2006 15:33 030854 Donna Webb Sample Custodian 05/17/2006 15:42 099999 029965 Kelly Wright Donna Webb 030854 05/17/2006 15:44 030854 Donna Webb Kelly Wright 05/22/2006 09:45 029965 Sample Custodian 099999 Donna Webb 030854 05/22/2006 09:45 Containernum 1 Sample # L28671-7 Analyst Prod DW GELI EJ н-3 GK SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/17/2006 00:00 Donna Webb 030854 Sample Custodian 05/17/2006 15:33 099999 Sample Custodian 099999 Donna Webb 05/17/2006 15:33 030854 Containernum 2 Sample # L28671-7 Analyst Prod DW GELI EJ н-з GK SR-90 (FAST) Received By Relinquish Date Relinquish By 099999 Sample Custodian 05/17/2006 00:00 Donna Webb Sample Custodian 030854 099999 05/17/2006 15:33 Sample Custodian Donna Webb 099999 05/17/2006 15:33 030854 Sample Custodian 030854 Donna Webb 099999 05/17/2006 15:42 Kelly Wright 029965 Donna Webb 030854 05/17/2006 15:44 030854 Donna Webb Kelly Wright 029965 05/22/2006 09:45 Sample Custodian 099999 Donna Webb 030854 05/22/2006 09:45 Sample # L28671-8 Containernum 1 Analyst Prod DW GELI EJ Н-З GK SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/17/2006 00:00 Donna Webb 030854 Sample Custodian 099999

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L28671 19 of 123

Donna Webb

Sample Custodian

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05/17/2006 15:33	030854	Donna Webb	099999	Sample Custodian
**************************************	*************** C	**************************************	************	* * * * * *
Prod	Analy	st		
GELI	DW			
н-З	DW			
SR-90 (FAST)	GK			
Relinquish Date Rel	inquish By		Received By	
05/17/2006 00:00			099999	Sample Custodian
05/17/2006 15:33	099999	Sample Custodian	030854	Donna Webb
05/17/2006 15:33	030854	Donna Webb	099999	Sample Custodian
05/17/2006 15:42	099999	Sample Custodian	030854	Donna Webb
05/17/2006 15:44	030854	Donna Webb	029965	Kelly Wright
05/22/2006 09:45	029965	Kelly Wright	030854	Donna Webb
05/22/2006 09:45	030854	Donna Webb	099999	Sample Custodian

Page 1 of 3

Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

		L28671		
*********	*****	****	*****	*******
L28671-1	WG	WG-BW-051106-MS-032	n 1	Data
Process step	Prod		Analyst	Dale 05/17/06
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/17/08
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/18/06
Count Room	SR-90	(FAST)	MVW	
************	******	*****	*************	*****
L28671-2	WG	WG-BW-051106-MS-034	n)	Data
Process step	Prod		Analyst	<u>Date</u> 05 (17 (06
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/08
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
********	******	****	****	* * * * * * * * * * * * * * * * * * * *
L28671-3	WG	WG-BW-051106-MS-036		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/1//06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
*****	*****	*****	****	*********
L28671-4	WG	WG-BW-051106-MS-038		Dete
Process step	Prod		Analyst	
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/1//06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
*********	*****	*****	****	**************
L28671-5	WG	WG-BW-051106-MS-040)	
Process step	Prod		Analyst	
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/1//06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	SR-90	(FAST)	MVW	05/24/06
*********	******	*****	*************	*****
L28671-6	WG	WG-BW-051106-MS-042	2	Dete
Process step	Prod		Analyst	<u>Date</u>
Login			PMARSHALL	U5/1//U6

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28671

L28671-6	WG	WG-BW-051106-MS-042		
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/18/06
Count Room	SR-90	(FAST)	MVW	05/24/06
******	*****	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	******
L28671-7	WG	WG-BW-051106-JL-033		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06

L28671-8	WG	WG-BW-051106-JL-037		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/17/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
* * * * * * * * * * * * * * *	*****	****	*****	*****
L28671-9	WG	WG-BW-051106-MS-039		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/17/06
Aliguot	Н-З		EJ	05/17/06
Aliquot	GELI		DW	05/18/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
****	******	****	*****	* * * * * * * * * * * * * * * * * * * *
T.28671-10	WG	WG-BW-051206-JL-041		
Process step	Prod		Analyst	Date
Login	<u>1100</u>		PMARSHALL	05/17/06
Aliquot	н-3		ЕJ	05/17/06
Aliquot	GFLT		DW	05/18/06
Aliquot	SB-90	(ፑ	GK	05/20/06
Court Room	GELT		TT.T.	05/19/06
Count Room	GD-00	(FX ST)	MVW	05/24/06
		(FAOI) *****************	****	****
		MC_DW_051206TT_042		
	WG Drod	WG-DW-001200-01-040	Analyst	Date
rrocess step	FLOU		PMARSHAT.T.	05/17/06
LOGIN	C 11		F.T	05/17/06
ATIQUOL	n-3			00/1/00

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Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

L28671

L28671-11	WG	WG-BW-051206-JL-043		
Aliquot	GELI		DW	05/18/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
******	******	*****	*****	******
L28671-12	WG	WG-BW-051206-MS-044		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/17/06
Aliquot	Н-З		EJ	05/17/06
Aliquot	GELI		DW	05/18/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Count Room	GELI		KPW	05/19/06
Count Room	SR-90	(FAST)	MVW	05/24/06
****	* * * * * * *	****	*****	* * * * * * * * * * * * * * * * * * * *
L28671-13	WG	WG-BW-051206-MS-046		
Process step	Prod		Analyst	Date
Login			RCHARLES	05/17/06
Aliquot	GELI		DW	05/18/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Aliquot	H-3		DW	05/23/06
Count Room	H-3		KPW	05/23/06
Count Room	SR-90	(FAST)	MVW	05/24/06
*****	* * * * * * *	*****	****	* * * * * * * * * * * * * * * * * * * *
L28671- 1381	WG	WG-BW-051206-MS-046		
Process step	Prod		Analyst	Date
Login			RCHARLES	05/17/06
Aliquot	GELI		DW	05/22/06
Count Room	GELI		ILL	05/22/06
*****	*****	* * * * * * * * * * * * * * * * * * * *	*****	*****
L28671-14	WG	WG-BW-051206-MS-048		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/17/06
Aliquot	GELI		DW	05/18/06
Aliquot	SR-90	(FAST)	GK	05/20/06
Aliquot	Н-З		DW	05/23/06
Count Room	GELI		KPW	05/18/06
Count Room	Н-З		KPW	05/23/06
Count Room	SR-90	(FAST)	MVW	05/24/06

L28671 25 of 123

Analytical Results Summary

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f Ani	6 17:22
ort of	05/24/0
Repo	•

L28671

Conestoga-Rovers & Associates

FX001-3ESPBRAID-06

hy Shaw						TTYO							A REAL PROPERTY AND A REAL PROPERTY OF		NO THE
ample ID: Station:	WG-BW-0:	51106-F	MS-032			Collec Collec	t Start: 0 t Stop:)5/11/2006 09	:50		Matrix: Gr /olume: oieture:	ound Wat	5	_	(MG)
scription:						Receiv	e Date: C	05/17/2006			·> micio				
Number:	L28671-1										11100	Count	Count		
uclide		0P#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Keterence Date	Date	Time	Units	Flag Valu	cs
					1 205-102	۳0:/ا		10	ml		05/22/06	60	M	+	
	- 2	010	2.14E+U2	1.01E+02	1.395702	pur				05/11/06 00-50	05/24/06	400	M	Ŋ	
SR	2	018	-8.62E-01	8.56E-01	1.47E+00	pCi/L		450	1111	02.00.00/11/00		10000	Coo	11	No
~~~~	6	2004	7.54E-02	3.33E+00	5.29E+00	pCi/L		3390.28	ml	05/11/06 09:50	00/81/C0	10000	220		NIC
		2004	-1 94F+00	3 28E+00	5.20E+00	pCi/L		3390.28	m	05/11/06 09:50	02/18/06	10800	Sec		
5 1000	4 0	2007	-3 07E+00	6 56F+00	1.04E+01	pCi/L		3390.28	m	05/11/06 09:50	05/18/06	10800	Sec		00
	7	1002		2 475-00	C ATELON	ا/!ت ت		3390.28	m	05/11/06 09:50	05/18/06	10800	Sec		No
	7	2007	6.90E-01	3./3E+UU	0.4/12-100	hour bour	_	000000		05/11/06 09-50	05/18/06	10800	Sec	N	No
	7	2007	2.96E+00	7.56E+00	1.29E+01	pCi/L		3390.20		02-00 00/11/00	20/01/20	10800	Cor		No
	-1	2007	2.16E+00	3.25E+00	5.54E+00	pCi/L		3390.28	m	02:60:00/11/C0	00/01/00	00001	200		No
	ſ	2007	-9 02E-01	5.71E+00	9.16E+00	pCi/L		3390.28	m	02/11/06 09:50	100/81/00	10000	200		140
	-  -	1007	2 68F+00	A 13F+00	5.45E+00	pCi/L		3390.28	m	05/11/06 09:50	05/18/06	10800	Sec		00
		1002	1 105 100	3 186+00	5 35R+00	nCi/I.		3390.28	m	05/11/06 09:50	05/18/06	10800	Sec		No
and a state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the		1002	7 65F100	1 60F±01	2.62.E+01	pCi/L	-	3390.28	ml	05/11/06 09:50	05/18/06	10800	Sec	n	No
	-	7007				1/:04	-	3390.28	[m	05/11/06 09:50	05/18/06	10800	Sec	n	No
	. <b>ч</b>	2007	1.07E-UI	0.1252-100	8.01ETUU	hun		~~~~			-				
Contraction of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second seco															

Flag Values U = + =

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery 11 11

U* High L H

11 11

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Bolded text indicates reportable value. 11

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum



<b>Report of A</b> 05/24/06 17
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## L28671

Conestoga-Rovers & Associates

## EX001-3ESPBRAID-06

Kathy Shaw					EXU	01-3531	PBKAID-00							
Sample ID: V	WG-BW-05110	6-MS-034			Collec	t Start: 0 t Ston:	5/11/2006 10:	35		Matrix: Gro olume:	und Water			(MG)
Description:					Receive	: Date: 0	12/17/2006		% M(	oisture:				
LIMS Number: I	.28671-2											Count		
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	<b>Reference</b> Date	Date	Time	Units	Flag Val	nes
			0.575.01	1 206-102	<u>سر:/ا</u>		01	ml		05/22/06	60	W	+	
H-3	2010	2.11E+02	10+305.4		hCur		450	l lu	05/11/06 10:35	05/24/06	400	W	n	
TOTAL SR	2018	-2.96E-01	3.75E-01	6.3/E-UI	brit		2001002	1	05/11/06 10:35	05/19/06	12316	Sec	n	No
MN-54	2007	-2.51E+00	2.61E+00	4.07E+00	pui/L		201000	1111	0011100 10:25	05/10/06	12316	Sec	11	No
CO-58	2007	-1.19E+00	2.77E+00	4.37E+00	pCi/L		3081.02	E.	201 00/11/00	00/01/20	17216	Ser	)	No
EE 50	2002	4 36E+00	5.28E+00	9.25E+00	pCi/L		3081.02	m	CE:U1 00/11/CD	00/61/00	01071	200		No
CL-72	2000	-0 40F-01	2 74E+00	4.41E+00	pCi/L		3081.02	Ш	05/11/06 10:35	02/19/06	12316	Sec		INO
CU-60	1002	7 00E_01	5 30F+00	8 85E+00	pCi/L		3081.02	m	05/11/06 10:35	05/19/06	12316	Sec		No
ZN-65	/007	10-362-01	7 KOFLON	A 56F+00	nCi/I.	-	3081.02	m	05/11/06 10:35	05/19/06	12316	Sec	n	No
NB-95	1002	1.7257-00	1011100	L SCETOO	l/i/u		3081.02	m	05/11/06 10:35	05/19/06	12316	Sec	U	No
ZR-95	/007	-3.02E+00	4.01ETUU	00-00-010		-	3081.07	ml	05/11/06 10:35	05/19/06	12316	Sec	D	No
CS-134	2007	7.35E+00	5.33E+00	4.95E+UU	bCI/T		201000	144	05/11/06 10:35	05/19/06	12316	Sec	<u>U</u>	No
CS-137	2007	5.24E-01	2.85E+00	4.77E+00	pCi/L		3081.02	111	20101 20/11/20	02/10/02	17316	Sec	11	No
RA-140	2007	7.09E-01	1.38E+01	2.28E+01	pCi/L		3081.02	m	CC.01 00/11/C0	00/61/00	71001	Soo Coo	- 11	No
I A-140	2007	5.93E-01	4.48E+00	7.50E+00	pCi/L		3081.02	m	05/11/06 10:33	90/61/20	01071	000 800		Vec
RA-226	2007	1.37E+02	8.91E+01	8.81E+01	pCi/L		3081.02	lm	05/11/06 10:33	100/61/00	01671	200		31

Compound/Analyte not detected or less than 3 sigma. Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery Flag Values U = + U* = U* = High = Spec = H =

Bolded text indicates reportable value.

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company
f Analysis	6 17:22
Report c	05/24/

BROWN ENGINEERING, INC.

A Teledyne Technologies Company



Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

(MG) °N N γ No N Nο No ů ž å γ ů °N N Flag Values D D  $\supset$ D D  $\supset$ D Count Units Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Σ Σ Ground Water 14400 14400 14400 14400 14400 14400 14400 14400 14400 Count 14400 14400 Time 400 60 05/19/06 05/19/06 05/19/06 05/19/06 05/19/06 05/19/06 05/19/06 05/24/06 05/19/06 05/19/06 05/19/06 05/19/06 05/22/06 Count Date Matrix: Volume: % Moisture: 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 05/11/06 11:35 Reference Date Aliquot Units E E EE E E Ē Ē E EE E Ē Collect Start: 05/11/2006 11:35 Volume 2428.12 2428.12 2428.12 2428.12 2428.12 2428.12 2428.12 2428.12 Aliquot 2428.12 2428.12 2428.12 Receive Date: 05/17/2006 450 10 Run Collect Stop: # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 7.93E+00 5.41E+00 7.42E+00 4.09E+00 8.90E+00 4.33E+00 9.95E+00 4.49E+00 4.62E+00 2.33E+01 1.30E+02 1.16E+00 4.80E+00 MDC 6.98E+00 3.96E+00 2.51E+00 5.48E+00 4.67E+00 3.48E+00 2.76E+00 8.68E+01 2.60E+00 2.37E+00 2.58E+00 1.33E+01 Uncertainty 7.09E-01 2 Sigma 1.36E+00 -1.87E+00 -4.64E+00 -1.07E+00 3.99E+00 -1.48E+00 2.40E+00 2.54E+00 8.37E-01 5.96E-01 9.85E+01 -7.82E-01 1.46E-01 Activity Conc Sample ID: WG-BW-051106-MS-036 2007 2018 2007 2007 2007 2007 2007 2007 2010 2007 2007 2007 2007 SOP# L28671-3 LIMS Number: Station: Description: Radionuclide Kathy Shaw TOTAL SR LA-140 **MN-54** CS-134 **BA-140** CS-137 CO-60 ZN-65 ZR-95 CO-58 NB-95 FE-59 H-3

Compound/Analyte not detected or less than 3 sigma

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery Flag Values U = + = U* = High = Spec = L = H =

High recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

 Peak identified in gamma spectrum
 Results are reported on an as received basis unless otherwise noted Yes = ****]

TELEDYNE	<b>BROWN ENGINEERING, INC.</b>	A Teledyne Technologies Company
	Z	

## L28671

# Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESI	PBRAID-06							
Sample ID: V	WG-BW-05110	6-MS-038			Collec	t Start: 0	5/11/2006 14:	00:		Matrix: Gr Volume:	ound Wate	ĸ		(MG)
Description:					Receive	e Date: 0	5/17/2006		N %	foisture:				
LIMS Number: 1	.28671-4													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag V:	alues
H-3	2010	1.39E+02	9.46E+01	1.37E+02	pCi/L		10	lm		05/22/06	60	Z	U	
TOTAL SR	2018	4.75E-02	7.93E-01	1.30E+00	pCi/L		450	ш	05/11/06 14:00	05/24/06	400	Z	U	
MN-54	2007	1.00E+00	2.58E+00	4.65E+00	pCi/L	1	3176.63	m	05/11/06 14:00	05/19/06	12600	Sec	U	No
CO-58	2007	-1.12E+00	2.60E+00	4.33E+00	pCi/L		3176.63	ml	05/11/06 14:00	05/19/06	12600	Sec	U	No
FE-59	2007	5.70E+00	5.18E+00	9.80E+00	pCi/L		3176.63	ml	05/11/06 14:00	05/19/06	12600	Sec	U	No
CO-60	2007	-2.52E+00	2.55E+00	4.12E+00	pCi/L		3176.63	m	05/11/06 14:00	05/19/06	12600	Sec	U	No
ZN-65	2007	7.33E+00	5.98E+00	1.01E+01	pCi/L		3176.63	m	05/11/06 14:00	05/19/06	12600	Sec	N	No
NB-95	2007	1.76E+00	2.86E+00	5.10E+00	pCi/L		3176.63	m	05/11/06 14:00	02/19/06	12600	Sec	U	No
ZR-95	2007	-8.94E-02	5.25E+00	9.01E+00	pCi/L		3176.63	ml	05/11/06 14:00	05/19/06	12600	Sec	U	No
CS-134	2007	8.49E+00	3.58E+00	5.29E+00	pCi/L		3176.63	ш	05/11/06 14:00	05/19/06	12600	Sec	U*	No
CS-137	2007	-2.79E-01	2.87E+00	4.93E+00	pCi/L		3176.63	ш	05/11/06 14:00	05/19/06	12600	Sec	n	No
BA-140	2007	-8.39E+00	1.36E+01	2.30E+01	pCi/L		3176.63	ш	05/11/06 14:00	05/19/06	12600	Sec	n	No
LA-140	2007	-1.79E+00	3.89E+00	6.58E+00	pCi/L		3176.63	m	05/11/06 14:00	05/19/06	12600	Sec	n	No
	And a second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec													

Compound/Analyte not detected or less than 3 sigma Flag Values U =

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Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

U* High Spec

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Low recovery High recovery 11 11

Bolded text indicates reportable value.

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L28671 29 of 123

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

<b>TELEDYNE</b> BROWN ENGINEERING, INC.	A Teledyne Technologies Company

## Report of Analysis 05/24/06 17:22

### L28671

Conestoga-Rovers & Associates

## FX001-3ESPBRAID-06

	(DM)		Flag Values			NIA		No	NO	No	No	No	NO	140		INO	NO	- 22
		hunt	Juits	+ W	<u>11</u> M		Sec O	Sec U	Sec U	Sec U	Soo II	0 0 000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		20C	Sec	Sec	Sec	Sec
	nd Water	, ount	Time	60	UUV	1001	11081	11681	11681	11681	11201	11001	11001	1001	11681	11681	11681	1681
	atrix: Grou ume: ture:	Count	Date	)5/22/06	2011012	101/14/00	)5/18/06	5/18/06	05/18/06	02/18/06	2010110	00/81/00	00/81/00	19/18/1/50	05/18/06	05/18/06	05/18/06	02/1 X/06
	Mt Vol		kererence Date	)	00111011E.00	0 00:CT 00/11/CO	05/11/06 15:00 (	05/11/06 15:00 (	05/11/06 15:00 (	02/11/06 15:00 (		05/11/06 15:00	05/11/06 15:00 0	05/11/06 15:00 0	05/11/06 15:00	05/11/06 15:00 0	05/11/06 15:00	05/11/06 15:00
	0		Aliquot Units	l m		E	ш	m	lm	1	IIII	m	m	ml	Ē	ml	Ш	1
MALIAND	5/11/2006 15:0 5/17/2006		Aliquot Volume	10	71	450	3473.9	3473.9	3473.9	0 6476	34/3.7	3473.9	3473.9	3473.9	3473.9	3473.9	3473.9	0 644 6
reac-IU	t Start: 0: t Stop: e Date: 0:		Run #															
EAU	Collec Collec Receiv		Units	1/:01	pulle	pCi/L	pCi/L	nCi/L	1/!	hCur	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	1.0
			MDC	1 201.00	1.38E+UZ	4.74E-01	4.54E+00	5 18E+00	0010120	00177C7.6	4.68E+00	1.17E+01	5.33E+00	8.00E+00	5.40E+00	4.92E+00	2.40E+01	
			Jncertainty 2 Sigma		1.04E+02	2.94E-01	2 69F.+00	2.072-00 7 86E+00	0010012	0.78E+UU	2.63E+00	6.99E+00	2.93E+00	4.89E+00	4.18E+00	2.92E+00	1.34E+01	
	MS-040		Activity 1 Conc		2.61E+02	1.57E-01	-1 66F+00		00 107.7	-3.52E-U2	-1.52E-01	8.95E+00	2.58E+00	-3.61E+00	2 18E+00	-1 35E+00	5.90E+00	
	-BW-051106-	571-5	SOP#		2010	2018	2002	1007	1002	2007	2007	2007	2007	2007	2002	2007	2007	
Kathy Shaw	Sample ID: WG. Station: Description:	LIMS Number: L28t	Radionuclide		H-3	TOTAL SR	NO TWO ISA	MIN-34	CU-38	FE-59	CD-60	ZN-65	NR-95	7D 05	LICE 124	CO-134	CJ-CJ-CJ-CJ-CJ-CJ-CJ-CJ-CJ-CJ-CJ-CJ-CJ-C	

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Flag Values U = + U* = High = Spec =

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Low recovery High recovery 11

Bolded text indicates reportable value.

14 of Page 5

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

<b>TELEDYNE</b> BROWN ENGINEERING, INC.	A Teledyne Technologies Company
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## Report of Analysis 05/24/06 17:22

### L28671

# Conestoga-Rovers & Associates

### 0 4

Kathy Shaw					EXO	01-3ESF	BRAID-06							
					Collor	+ Start. 0	2/11/2006 15-1	5	6	Matrix: Gr	ound Wate	ц	5	MG)
Sample ID: WG-B	W-051106-	-MS-042						)	>	olume:				
Station:						.done n			2M %	isture:				
Description:					Kecelv	e Date: U	9007//1/2							
LIMS Number: L28671	<b>-</b> -0							-	-		1000	Count		
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Keterence Date	Date	Time	Units	Flag Value	S
			0.000	0010001	<u>۱/:</u> /۳		10	m		05/22/06	60	M		
H-3	2010	1.82E+02	9./JE+UI	1.3/E+U2	р <b>С</b> ИЪ		A1	-	0 1 1 1 1 0 1 1 E 1 E	JUINCIZO	100	M		
TOTAL SR	2018	-1.56E-01	6.73E-01	1.12E+00	pCi/L		450	ш	C1:C1 00/11/C0	00/42/00	400	M		I
NOTAL SIN	2002	-1 22E+00	2.89F+00	4.67E+00	pCi/L		3309.54	m	05/11/06 15:15	05/18/06	10800	Sec		0,
101N-34	2007	-3 00F+00	3 15E+00	4.78E+00	pCi/L		3309.54	ш	05/11/06 15:15	05/18/06	10800	Sec		
CU-38	1007	751ET00	6 22E+00	1 12 E+01	nCi/I.		3309.54	ml	05/11/06 15:15	05/18/06	10800	Sec		9
re-39	1002		0.177.00	TO TATE			3309.54	lm	05/11/06 15:15	05/18/06	10800	Sec		40
CO-60	7002	9.0212-02	3.24E+UU	3.30ET00	роли 1.0		120000	1	05/11/06 15-15	05/18/06	10800	Sec	N N	10
ZN-65	2007	9.15E+00	7.47E+00	1.17E+01	pCi/L		+C.6066		31-31 20/11/20	00/01/20	10000	Cor	11	No.
NR-95	2007	1.02E+00	2.91E+00	4.87E+00	pCi/L		3309.54	H	c1:c1 90/11/c0	00/01/00	10000	200		
78-05	2007	-4.44E-01	5.37E+00	8.75E+00	pCi/L		3309.54	Ē	05/11/06 15:13	190/81/00	100001	220		1
121 ST	2002	3 65E+00	4.97E+00	5.75E+00	pCi/L		3309.54	Ē	05/11/06 15:15	05/18/06	10800	Sec		07
C0-104	2002	1 37F+00	2 99E+00	4 81 F+00	pCi/L		3309.54	Ē	05/11/06 15:15	05/18/06	10800	Sec		0
C3-13/ BA 140	1002	2 A6F+00	141E+01	2.34E+01	pCi/L		3309.54	Ē	05/11/06 15:15	05/18/06	10800	Sec		
BA-140	1007	1 001-100	1 02ETUU	7 601-100	nCi/I		3309.54	lm	05/11/06 15:15	05/18/06	10800	Sec		40
LA-140	7007	-1.07ETUV	4.0.11.00		r r	-	· · · ·							

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Flag Values U = + = H U* High L H

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High recovery Low recovery IĮ IJ

Bolded text indicates reportable value.

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L28671 31 of 123

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration



# Conestoga-Rovers & Associates

Kathy Shaw					EAU	7636-10	DV-UIAID-00							
Sample ID: Station:	WG-BW-051106	-JL-033			Collect Collect	t Start: 05 t Stop:	5/11/2006 14:	:40		Matrix: Gro Volume:	ound Wat	L.		VG)
Description:					Receive	e Date: 05	5/17/2006		W %	loisture:				
LIMS Number:	L28671-7													
Radionuclide	SOP#	Activity Cone	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values	
C 11	0100	1 358+07	9 46F+01	1.38E+02	nCi/L		10	m		05/22/06	60	M	U	I
TOTAL SD	20102	-1 67E-01	2.96E-01	4-99E-01	pCi/L		450	ml	05/11/06 14:40	05/24/06	400	M		
MN 54	2002	-4 18E-01	2.96E+00	4.84E+00	pCi/L		2822.94	Im	05/11/06 14:40	05/19/06	12834	Sec	N	_
	2002	-1 38E+00	3 12E+00	5.00E+00	pCi/L		2822.94	m	05/11/06 14:40	05/19/06	12834	Sec		0
CU-70 EF 50	2002	1 10E+00	6 48F+00	1.09E+01	pCi/L		2822.94	m	05/11/06 14:40	05/19/06	12834	Sec	N N	0
CD 60	2002	7 57F+00	3 14E+00	6.03E+00	pCi/L		2822.94	lm	05/11/06 14:40	05/19/06	12834	Sec	U   V	S
ZNI 65	2002	-2 27E+00	6.52E+00	1.05E+01	pCi/L		2822.94	lm	05/11/06 14:40	05/19/06	12834	Sec		0
NR-05	2007	3.00E+00	3.18E+00	5.52E+00	pCi/L		2822.94	Ē	05/11/06 14:40	02/19/06	12834	Sec	N N	0
7P.05	2002	-2 80F+00	5.53E+00	8.62E+00	pCi/L		2822.94	m	05/11/06 14:40	05/19/06	12834	Sec		0
CC-134	2002	8 43F-01	5 75F+00	5.24E+00	pCi/L		2822.94	m	05/11/06 14:40	05/19/06	12834	Sec		0
CS-137	2007	2.56E+00	3.33E+00	5.74E+00	pCi/L		2822.94	ш	05/11/06 14:40	05/19/06	12834	Sec	л П	0
RA-140	2007	6.41E+00	1.60E+01	2.67E+01	pCi/L		2822.94	m	05/11/06 14:40	05/19/06	12834	Sec		0
T A.140	2007	4.80E-01	5.55E+00	9.16E+00	pCi/L		2822.94	m	05/11/06 14:40	05/19/06	12834	Sec		0

Flag Valucs U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery Page 7 of 14 || ||

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Bolded text indicates reportable value. High recovery

Page 7

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum





Conestoga-Rovers & Associates

## 3FSPRRAID-06

Kathy Shaw					EXO	01-3ESP	BKAID-00							
Comple ID.	WC BW-0511	06-11_037			Collect	t Start: 0;	5/11/2006 14:	15		Matrix: Gro	und Wate	r	M)	6
Station:	TTC0-110-01				Collec	t Stop:				olume:				
Description:					Receive	e Date: 0:	5/17/2006		% W0	Disture:				
LIMS Number:	L28671-8									-				
Radionuclide	SOP#	t Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values	an an an an an an an an an an an an an a
<u>u</u> 3	2010	1 56E+02	9.36E+01	1.33E+02	pCi/L		10	ml		05/22/06	60	Z		
TOTAL SR	2018	1.79F-02	4.43E-01	7.29E-01	pCi/L		450	Ш	05/11/06 14:15	05/24/06	400	X	0 	
MN-54	2007	4.33E-01	2.52E+00	4.19E+00	pCi/L		3246.8	m	05/11/06 14:15	05/19/06	13681	Sec	N No	
CO-58	2007	-3.19E-02	2.76E+00	4.56E+00	pCi/L		3246.8	ш	05/11/06 14:15	05/19/06	13681	Sec	N :	
EF_59	2007	-5.01E-01	5.80E+00	9.49E+00	pCi/L		3246.8	ш	05/11/06 14:15	05/19/06	13681	Sec	N :	
CO-60	2007	7 1.10E+00	2.70E+00	4.60E+00	pCi/L		3246.8	lm	05/11/06 14:15	05/19/06	13681	Sec	N N	
ZN-65	2007	7 4.11E+00	7.23E+00	1.05E+01	pCi/L		3246.8	'n	05/11/06 14:15	05/19/06	13681	Sec	N I	
NB-95	2007	7 6.65E-01	2.85E+00	4.78E+00	pCi/L		3246.8	la	05/11/06 14:15	05/19/06	13681	Sec		
ZR-95	2007	7 3.06E+00	4.89E+00	8.40E+00	pCi/L		3246.8	ml	05/11/06 14:15	05/19/06	13681	Sec		
CS-134	2007	7 3.06E+00	3.44E+00	5.06E+00	pCi/L		3246.8	m	05/11/06 14:15	05/19/06	13681	Sec		
CS-137	2007	7 2.29E+00	2.80E+00	4.78E+00	pCi/L		3246.8	m	05/11/06 14:15	05/19/06	13681	Sec		
BA-140	2007	7 1.23E+01	1.31E+01	2.28E+01	pCi/L		3246.8	ml	05/11/06 14:15	05/19/06	13681	Sec		
LA-140	2005	7 2.66E+00	4.61E+00	8.01E+00	pCi/L		3246.8	ml	05/11/06 14:15	05/19/06	13681	Sec		

Flag Values [] С

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11 11

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Low recovery U* High L H

High recovery 11 11

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company

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## L28671

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESI	PBRAID-06								
Sample ID: Station:	WG-BW-051106-	-MS-039			Collec Collec	t Start: 0 t Stop:	5/11/2006 15:	:25	-	Matrix: Gro /olume:	ound Wate	X		(MG)	
Description:					Receive	e Date: 0	5/17/2006		W %	oisture:					
LIMS Number:	L28671-9														
		Activity	Uncertainty			Run	Aliquot	Aliquot	Reference	Count	Count	Count	C		
Radionuclide	SOP#	Conc	2 Sigma	MDC	Units	#	Volume	Units	Date	Date	Time	Units	L L	g values	
H-3	2010	2.44E+02	1.00E+02	1.34E+02	pCi/L		10	m		05/22/06	60	Μ	+		-
TOTAL SR	2018	-7.56E-02	5.07E-01	8.39E-01	pCi/L		450	Ш	05/11/06 15:25	05/24/06	400	Σ	n		
MN-54	2007	-8.48E-01	3.05E+00	4.94E+00	pCi/L		2976.4	m	05/11/06 15:15	05/19/06	14400	Sec	n	No	
CO-58	2007	-2.35E+00	3.22E+00	5.09E+00	pCi/L		2976.4	m	05/11/06 15:15	05/19/06	14400	Sec	n	No	
FE-59	2007	2.09E+00	6.34E+00	1.07E+01	pCi/L		2976.4	ml	05/11/06 15:15	05/19/06	14400	Sec	D	No	and the second second
CO-60	2007	8.28E-01	2.84E+00	4.81E+00	pCi/L		2976.4	ml	05/11/06 15:15	05/19/06	14400	Sec	D	No	-
ZN-65	2007	1.08E+00	6.88E+00	1.14E+01	pCi/L		2976.4	m	05/11/06 15:15	05/19/06	14400	Sec	n	No	
NB-95	2007	2.83E-01	3.23E+00	5.38E+00	pCi/L		2976.4	ml	05/11/06 15:15	05/19/06	14400	Sec	n	No	
ZR-95	2007	-9.54E-01	5.69E+00	9.36E+00	pCi/L		2976.4	ml	05/11/06 15:15	05/19/06	14400	Sec	n	No	
CS-134	2007	4.34E+00	4.90E+00	5.42E+00	pCi/L		2976.4	ml	05/11/06 15:15	05/19/06	14400	Sec	D	No	
CS-137	2007	-6.46E-02	3.25E+00	5.31E+00	pCi/L		2976.4	ml	05/11/06 15:15	05/19/06	14400	Sec	n	No	
BA-140	2007	8.22E+00	1.61E+01	2.75E+01	pCi/L		2976.4	Ē	05/11/06 15:15	05/19/06	14400	Sec		No	-
LA-140	2007	3.88E-01	5.33E+00	8.89E+00	pCi/L		2976.4	ш	05/11/06 15:15	05/19/06	14400	Sec	- n	NO	people inter-
And a second second second second second second second second second second second second second second second															

Compound/Analyte not detected or less than 3 sigma Flag Values U == + = = U* == High = L == H ==

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

Low recovery High recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company

## L28671

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06							
Sample ID: WG-	BW-051206	-JL-041			Collect	t Start: 05	5/12/2006 09:	00		Matrix: Grov	ound Wate	5		(MG)
bescription:					Collec Receive	t Stop: 5 Date: 05	5/17/2006		W %	loisture:				
LIMS Number: L286	71-10													
Radionuclide	#dOS	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Va	lues
H-3	2010	1.94E+02	9.91E+01	1.38E+02	pCi/L		10	m		05/23/06	60	M	+	
TOTALSR	2018	9.84E-01	7.94E-01	1.25E+00	pCi/L		450	ml	05/12/06 09:00	05/24/06	400	W	n	
MN-54	2007	-2.17E-01	1.81E+00	2.93E+00	pCi/L		3093.73	ml	05/12/06 09:00	05/19/06	40000	Sec	n	No
CO-58	2007	-1.88E+00	1.90E+00	2.98E+00	pCi/L		3093.73	m	05/12/06 09:00	05/19/06	40000	Sec	U	No
FE-59	2007	3.09E+00	3.91E+00	6.64E+00	pCi/L		3093.73	m	05/12/06 09:00	05/19/06	40000	Sec	U	No
CO-60	2007	1.02E+00	1.93E+00	<b>3.27E+00</b>	pCi/L		3093.73	ml	05/12/06 09:00	05/19/06	40000	Sec	n	No
ZN-65	2007	2.98E+00	4.69E+00	6.72E+00	pCi/L		3093.73	ml	05/12/06 09:00	05/19/06	40000	Sec	U	No No
NB-95	2007	1.50E+00	1.83E+00	3.10E+00	pCi/L		3093.73	ml	05/12/06 09:00	05/19/06	40000	Sec	U	No
ZR-95	2007	-1.80E+00	3.37E+00	5.41E+00	pCi/L		3093.73	m	05/12/06 09:00	05/19/06	40000	Sec	n	No
CS-134	2007	3.78E+00	3.18E+00	3.37E+00	pCi/L		3093.73	m	05/12/06 09:00	05/19/06	40000	Sec	n	No
CS-137	2007	1.45E+00	1.91E+00	3.25E+00	pCi/L		3093.73	m	05/12/06 09:00	05/19/06	40000	Sec	n	No
BA-140	2007	4.62E+00	9.33E+00	1.55E+01	pCi/L		3093.73	lm	05/12/06 09:00	05/19/06	40000	Sec	n	No
LA-140	2007	-7.08E-01	3.19E+00	5.13E+00	pCi/L		3093.73	ml	05/12/06 09:00	05/19/06	40000	Sec	n	No

Compound/Analyte not detected or less than 3 sigma Flag Values U =

11

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification lí

11

11 + U* High L H

Low recovery High recovery 11 11

Bolded text indicates reportable value.

14 Page 10 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

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Ret	(



Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

(DM) °Z Yes No 2° å οN å °Z 2°N ů å Flag Values D D 5  $\supset$ D Π  $\supset$ + D D D Units Sec Sec Sec Sec Sec Sec Sec Sec Count Sec Sec Sec Σ Σ Ground Water 12601 12601 12601 12601 12601 12601 12601 12601 Count 2601 12601 12601 Time 400 60 05/12/06 09:45 05/19/06 05/19/06 05/19/06 05/12/06 09:45 05/19/06 05/19/06 02/19/06 05/19/06 05/19/06 05/19/06 05/19/06 05/23/06 05/24/06 05/19/06 Count Date Matrix: Volume: % Moisture: 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 05/12/06 09:45 Reference Date Aliquot Units Ē Ē Ξ Ш E Ы Ш E E Ы Ē E E Collect Start: 05/12/2006 09:45 Volume Aliquot 3088.41 3088.41 3088.41 3088.41 3088.41 3088.41 3088.41 3088.41 3088.41 3088.41 3088.41 Receive Date: 05/17/2006 10 450 Collect Stop: Run # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 5.28E+00 6.01E+00 5.34E+00 9.60E+00 4.64E+00 9.51E+00 1.17E+01 8.39E+00 2.47E+01 1.32E+00 4.83E+00 4.59E+00 1.40E+02MDC 3.13E+00 3.16E+00 2.79E+00 6.14E+00 7.82E+00 5.07E+00 4.91E+00 3.14E+00 1.46E+01 5.25E+00 Uncertainty 1.02E+02 2.84E+00 8.03E-01 2 Sigma -4.62E+00 5.09E+00 1.76E+00 6.41E+00 1.16E+00 2.46E+00 1.30E+00 1.19E+00 5.11E+00 1.08E+01 2.21E+02 .00E+00 1.35E-01 Conc Activity Sample ID: WG-BW-051206-JL-043 2010 2007 2007 2007 2007 2018 2007 2007 2007 2007 2007 SOP# 2007 2007 L28671-11 LIMS Number: Station: Description: Radionuclide Kathy Shaw **FOTAL SR** CS-134 **CS-137 BA-140** LA-140 **MN-54** CO-58 CO-60 ZN-65 NB-95 ZR-95 FE-59 H-3

Flag Values 11 

+

Compound/Analyte not detected or less than 3 sigma Ш

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma 1

U* High

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

Spec

Low recovery

High recovery 1

Bolded text indicates reportable value.

14 Page 11 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

TELEDYNE	<b>BROWN ENGINEERING, INC.</b>	A Teledyne Technologies Company
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### L28671

# Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESF	BRAID-06							
Sample ID: WG-B Station:	W-051206	-MS-044			Collect	t Start: 0.	5/12/2006 08:	45		Matrix: Gro Volume:	ound Wate	er		(MG)
Description:					Receive	e Date: 0	5/17/2006		W %	oisture:				
LIMS Number: L2867	1-12													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Val	ICS
H-3	2010	1.92E+02	9.97E+01	1.39E+02	pCi/L		10	ш		05/23/06	60	Μ	+	
TOTAL SR	2018	-1.11E+00	7.27E-01	1.28E+00	pCi/L		450	ml	05/12/06 08:45	05/24/06	400	Μ	U	
MN-54	2007	-1.32E+00	3.42E+00	5.51E+00	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec	U	No
CO-58	2007	-2.73E+00	3.71E+00	5.68E+00	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec	U	No
FE-59	2007	1.96E+00	7.33E+00	1.24E+01	pCi/L		3283.48	ш	05/12/06 08:45	05/19/06	7981	Sec	n	No
CO-60	2007	4.28E+00	3.50E+00	6.48E+00	pCi/L		3283.48	m	05/12/06 08:45	05/19/06	7981	Sec	n	No
ZN-65	2007	1.43E+01	8.53E+00	1.58E+01	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec	U	No
NB-95	2007	-1.91E+00	3.32E+00	5.17E+00	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	1861	Sec		No
ZR-95	2007	1.09E+00	5.77E+00	9.59E+00	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec		No
CS-134	2007	6.28E+00	4.95E+00	7.46E+00	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec	D	No
CS-137	2007	-2.00E+00	3.78E+00	6.04E+00	pCi/L		3283.48	ш	05/12/06 08:45	05/19/06	7981	Sec	U	No
BA-140	2007	1.17E+00	1.69E+01	2.79E+01	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec	U	No
LA-140	2007	3.97E+00	5.39E+00	9.66E+00	pCi/L		3283.48	ml	05/12/06 08:45	05/19/06	7981	Sec	n	No
			A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR OF A CONTRACTOR O											

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Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma

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Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 

High Spec

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Low recovery

High recovery

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14 Page 12 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

Bolded text indicates reportable value.

TELEDYNE BROWN ENGINEERING, INC.	A Teledyne Technologies Company
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### L28671

Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Kathy Shaw

	CONTRACTOR OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIP				1	0	2/17/2006 00:	25		Matrix. Gr	ound Wat	ST.	
Sample ID: V	/G-BW-051206	-MS-046			Collec		. 12/20/00/21/C	<i></i>	r	Volume:		1	
Station:					Collec	t Stop:				v oluitic.			
Description:					Receive	5 Date: 0	5/17/2006		V0 IV1	ousture.			
LIMS Number: L	28671-13												
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values
					1.0		10	1		90/22/06	140	M	
1-3	2010	1.35E+01	1.04E+02	1.70E+02	pull	_	10	1111					
TOTAL CD	2018	-1 49E+00	1.05E+00	1.83E+00	pCi/L		450	ml	05/12/06 09:35	05/24/06	400	Σ	
IN SA	2002	2 76E-01	2 44E+00	4.38E+00	pCi/L	R1	3240.48	ml	05/12/06 09:35	05/22/06	10800	Sec	U No
40-VIN-04	2002	1 59F+00	2.78E+00	5.02E+00	pCi/L	R1	3240.48	m	05/12/06 09:35	05/22/06	10800	Sec	No
-00-10 2E 40	2002	3 67F+00	5 63E+00	1.04E+01	pCi/L	R1	3240.48	ml	05/12/06 09:35	05/22/06	10800	Sec	U No
rE-39	1007	E CER 01	2 61 ETUV	A TOFAAA	<u>ال ال</u>	DI	3240.48	m	05/12/06 09:35	05/22/06	10800	Sec	U No
.0-60	7007	0.000-01	2.0111-00	1010101			2740.48	E	25-00 20/01/20	05/22/06	10800	Sec	U No
ZN-65	2007	2.91E+00	5.66E+UU	1.0415+01	brite	KI	01.01.20	1111	30.00 20121100	20/00/20	10000	Con	11 No
VB-95	2007	8.07E-02	2.92E+00	5.06E+00	pCi/L	RI	3240.48	m	CC:60 00/71/C0	00/77/00	10000	300	II No
ZR-95	2007	3.96E+00	4.94E+00	9.09E+00	pCi/L	R1	3240.48	m	05/12/06 09:35	00/22/00	10800	Sec	
	2007	2.67E+00	3.20E+00	5.05E+00	pCi/L	RI	3240.48	m	05/12/06 09:35	05/22/06	10800	Sec	N0
	2002	-2 11E+00	2 94F.+00	4.88E+00	pCi/L	RI	3240.48	le l	05/12/06 09:35	05/22/06	10800	Sec	No No
0.1.1.1.1	1007	7 51E+00	1 67F+01	2 76E.+01	nCi/I.	R1	3240.48	lm	05/12/06 09:35	05/22/06	10800	Sec	U No
BA-140	1007	0017101-	A ADELON	1 37F-100		D1	3240.48	m	05/12/06 09:35	05/22/06	10800	Sec	U No
LA-140	7007	-2.83E+UU	4.42E+UU	UUT44C.1	pern	N	01-01-70						

Flag Values 11 

Compound/Analyte not detected or less than 3 sigma 11 +

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma ll

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery 1 U* High L H

ll

High recovery ll 11

Bolded text indicates reportable value.

14 Page 13 of

L28671 38 of 123

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

<b>TELEDYNE</b> BROWN ENGINEERING, INC.	A Teledyne Technologies Company

### L28671

Conestoga-Rovers & Associates

## EX001-3ESPBRAID-06

Kathy Shaw					EX0	01-3ESI	BKAID-06							
Comple ID: W	C_RW_05120	06-MS-048			Collect	t Start: 0	5/12/2006 10:3	35		Matrix: Gro	ound Wate	I		(MG)
Station:					Collec	t Stop:				olume:				
Description:					Receive	e Date: 0	5/17/2006		% MIC	orsture:				
LIMS Number: L2	28671-14													
Radionuclide	SOP#	i Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Time	Count Units	Flag Valu	es
	0100	0 000-01	1 06E±07	1 7017-102	nCi/I.		10	ml		05/23/06	140	Σ	<u>u</u>	
H-3	2010	1 9.00ETUI	0.000.01	1 576-100	hoi/l		450	m	05/12/06 10:35	05/24/06	400	M	U	
IUIAL SK	2002	10-3/C-4-	2 0112-01	1.74E-100	1/:04	-	3320.02	le	05/12/06 10:35	05/18/06	10800	Sec	U	No
MN-54	7007	1.295+00	3.01ET00	2.40E-00	1104		2320.02		05/12/06 10-35	05/18/06	10800	Sec	n N	No
CO-58	2007	-1.03E+00	3.14E+00	5.28E+UU	built b		20.0200		30.01 20/01/00	001100	00001	Can	11	No
FE-59	2007	7 2.61E+00	5.81E+00	1.06E+01	pCi/L		3320.02	Ē	CE:01 00/21/C0	IgU/81/CU	10000	200		110
CO-60	2007	1.57E+00	3.03E+00	5.67E+00	pCi/L		3320.02	m	05/12/06 10:35	05/18/06	10800	Sec		NO .
7N-65	2007	7 5.90E+00	6.62E+00	1.23E+01	pCi/L		3320.02	ш	05/12/06 10:35	05/18/06	10800	Sec	D	No
NID 05	2007	5 98E-01	3.01E+00	5.29E+00	pCi/L		3320.02	m	05/12/06 10:35	05/18/06	10800	Sec	D	No
70 05	2002	7 211E+00	5 39E+00	9.59E+00	pCi/L		3320.02	Ш	05/12/06 10:35	05/18/06	10800	Sec	n	No
CC-121	2007	7 3 56F+00	4 13E+00	6.40E+00	pCi/L		3320.02	la	05/12/06 10:35	05/18/06	10800	Sec	- N	No
C3-134	2007	71 37F+00	3 13E+00	5.29E+00	pCi/L		3320.02	lm	05/12/06 10:35	05/18/06	10800	Sec	U	No
BA-140	2007	7 -1 10F+01	1.34E+01	2.23E+01	pCi/L		3320.02	E	05/12/06 10:35	05/18/06	10800	Sec	U	No
1 A-140	2007	7 6.80E-01	4.18E+00	7.62E+00	pCi/L		3320.02	ml	05/12/06 10:35	05/18/06	10800	Sec	n	No

Flag Values 

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11 11

H U* High Spec L H

High recovery Low recovery 11 11 11

Bolded text indicates reportable value.

14 Page 14 of

MDC - Minimum Detectable Concentration

L28671 40 of 123

### **QC Results Summary**

			P/F		P/F P			<u>P/F</u> NE	П700/I ,	AT OT
NEERING INEERING Ies Company			<u>Qualifier</u> ] U		RangeQualifier70-130+			<u>Range</u> <u>Qualifier</u> <30 **	Page: 1	
A TELEDY BROWN ENG A Teledyne Technolog					<u>Spike Recovery</u> 102.6			RPD		
K			<u>Units</u> pCi/Total		<u>Units</u> pCi/Total			<u>Units</u> pCi/L		
		ary	Blank Result < 6.330E+00	ury	LCS Result 5.180E+02		у	DUP Result < 5.990E+01		
	3	hod Blank Summ		S Sample Summa	레이		uplicate Summar	Original Result < 1.670E+02	above MDC	
	H	Met		IC	Spike Valu 5.05E+002		D		ot detected a	
or L28671			Count Date/Time 05/21/2006 21:53		Count Date/Time 05/21/2006 22:04			Count Date/Time 05/19/2006 5:10	t identified and/or no	
f			<u>Matrix</u> WO		<u>Matrix</u> WO			<u>Matrix</u> WG	ed, peak no aluated	~
1122006 5:21:57PM			D Radionuclide H-3		<u>D</u> Radionuclide H-3	041706-1 )5E+002 0E+000		<u>ID</u> <u>Radionuclide</u> H-3	itive Result mpound/analyte was analyz times the MDC are not eva clide not detected	iking level < 5 times activit. ss it evaluated
QC Sum			<u>TBE Sample II</u> WG3995-1		<u>TBE Sample I</u> WG3995-2	Spike ID: 3H- Spike conc: 5.0 Spike Vol: 1.0		<u>TBE Sample I</u> WG3995-3 L28614-5	+ Pos U Coi ** <5	*** Spi P Par F Fai NE No

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for L28671

5:21:57PM 5/24/2006



H-3

Associated Samples for

WG3995

SAMPLENUM	CLIEN
L28671-1	WG-B1
L28671-2	WG-B/
L28671-3	WG-B/
L28671-4	WG-B/
L28671-5	WG-B ¹
L28671-6	WG-B1
L28671-7	WG-B1
L28671-8	WG-B
L28671-9	WG-B
L28671-10	WG-B1
L28671-11	WG-B'
L28671-12	WG-B

CLIENTID
WG-BW-051106-MS-032
WG-BW-051106-MS-034
WG-BW-051106-MS-036
WG-BW-051106-MS-038
WG-BW-051106-MS-040
WG-BW-051106-MS-042
WG-BW-051106-JL-033
WG-BW-051106-JL-037
WG-BW-051106-MS-039
WG-BW-051206-JL-041
WG-BW-051206-JL-043
WG-BW-051206-MS-044

Positive Result Compound/analyte was analyzed, peal < 5 times the MDC are not evaluated Nuclide not detected
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Page:

2

s/24/2006 5:21:57PM		for L28671	TOTAL SR Method Blank Sur	mmary		A Teledyne Technologi	NEERING es Company
onuclide <u>N</u> L SR V	<u>Matrix</u> WO	Count Date/Time 05/21/2006 4:33		<u>Blank Result</u> < 4.370E-01	<u>Units</u> pCi/Total		Qualifier <u>P/F</u> U P
			LCS Sample Sun	nmary			
onuclide AL SR	<u>Matrix</u> WO	Count Date/Time 05/21/2006 4:33	Spike Value 5.84E+001	LCS Result 5.710E+01	<u>Units</u> <u>Sp</u> pCi/Total	<u>oike Recovery</u> 97.8	Range Qualifier P/F 70-130 + P
			Duplicate Sumr	mary			
lionuclide AL SR	<u>Matrix</u> WG	Count Date/Time 05/21/2006 4:33	<u>Original Res</u> < 8.350E-01	ult DUP Result        	<u>Units</u> pCi/L	RPD	Range Qualifier P/F <30 ** NE
It nalyte was analyzeo MDC are not evalu letected < 5 times activity	d, peak	not identified and/or n	tot detected above MDC				Page: 3
German collin c <							

L28671 43 of 123

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Repor	
nmary	
QC Sur	

5:21:57PM 5/24/2006

L28671 for



WG4011

Associated Samples for

<b>SAMPLENUM</b>	CLIENTID
L28671-1	WG-BW-051106-MS-032
L28671-2	WG-BW-051106-MS-034
L28671-3	WG-BW-051106-MS-036
L28671-4	WG-BW-051106-MS-038
L28671-5	WG-BW-051106-MS-040
L28671-6	WG-BW-051106-MS-042
L28671-7	WG-BW-051106-JL-033
L28671-8	WG-BW-051106-JL-037
L28671-9	WG-BW-051106-MS-039
L28671-10	WG-BW-051206-JL-041
L28671-11	WG-BW-051206-JL-043
L28671-12	WG-BW-051206-MS-044
L28671-13	WG-BW-051206-MS-046
L28671-14	WG-BW-051206-MS-048

Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated Nuclide not detected Spiking level < 5 times activity + 🗅 * *



Page:

4

L28671 45 of 123

### **Raw Data**

Raw Data Sheet (rawdata) May 24 2006, 05:36 pm

Customer: Exelon Work Order: L28671

EX001-3ESPBRAID-06

Page: 1

tord tot	שומדלפר	ВJ			ЕJ			БJ			R.T	1		ВЛ	2		R.T	1		FB	24		1	C ST			ря			ГЯ		6	2		E.T.	2		No.	MA			MC		I	<u>2</u> 2
Decay & Treest	EII. INGTOWLU Factor	.205			.219			.22			208	004.		200	. 200		a0 c				.207		0.14	.213			.212			.207			.204		200	CD7.		•	7.		1 1	.201			
Ĩ	Bkg (min)	60			60			60			2	2			00		0.0	0			60		-	60			60			60			60		09	00			140			140			
ī	Bkg wuts dt	1.1			1.1			1.1			F			,	T • T					1	1.1			1.1			1.1			1.1		1	1.1		r	7 • 7			3.68			3.68			
•	Sample dt (min) co	60			60			60				00			60			00			60			60			60			60			60			60			140			140			
	Total counts	124	1		127			9 F	2			104			137			911			103			110			135			119			126		011	BII			524			577			
	tounter	LS7			LS7			1.97	Ì			LSJ			LS7			LS7			LS7			LS7			LS7			LS7			LS7			LS7			LS5			LS5			
	Count C	22-mav-06	14.47	ł • •	22-mav-06	15:45			20-40	70:4Q		22-may-06	17:51		22-may-06	18:54		22-may-06	19:57		22-may-06	21:00		22-may-06	22:04		22-may-06	23:07		23-тау-06	00:10		23-тау-06	01:14		23-may-06	02:17		23-тау-0б	21:26		23-may-06	23:50		
	Teroverv D																																												
	Mount	1115124	5		0	,		4	5			0			0			0			0			0			0			0			0			0			0			0			
I	Milking Pate/time	חמרה/ רדוום																																											
ESPBRAID-06	Scavenge	nare/ rille																																										*	
roject : <u>EX001-3</u>	Volume/	TOUPLIE		IO MI	MUC: 1.37E+U2	,	10 ml	MDC: 1.3E+02		10 ml	MDC: 1.3E+02 *		10 ml	MDC: 1.37E+02 *		10 ml	MDC: 1.38E+02		10 ml	MDC: 1.37E+02		10 ml	MDC: 1.38E+02 *		10 ml	MDC: 1.33E+02		10 m1	MDC 1 34 R+02		10 mT	MDC: 1.38E+02		10 ml	MDC: 1.4E+02		10 ml	MDC: 1.39E+02		10 ml	MDC: 1.7E+02		10 ml	MDC: 1.7E+02	
G.	Reference	Date/time			1.01E+02			9.56E+01			8.68E+01			9.46E+01			1.04E+02			9.75E+01			9.46R+01			0 36R±01			18-103	201ET		9.91E+01			: 1.02E+02			. 9.97E+01			1 048402	101710.1		1.06E+02	
	ılysis		H-3		* Error:	Н-3		* Error:	H-3		Error:	н-3		Error:	н-З		* Error:	H-3	,	* Error:	н		RTTOT.			*		n - 4	*****	50779 v	1	* Error:	н-3		* Error:	н-3		* Error	H.3	1				Error:	
	Run Ans	#		-MS-032	14E+02		-MS-034	11E+02		-MS-036	85E+01		-MS-038	398+02		-MS-040	61E+02		-MS-042	82E+02		77.033	254400 254400		1		204400		PEU-2M-0	445402	5	94 H + 02		5-JL-043	21E+02		5-MS-044	92E+02		5-MS-046	0-F10-0101 3 E F1-01	TO+GCC.	5-MS-048	.88E+01	
:lide: <u>H-3</u>	le ID	rt 10	1671-1	1-051106	ity: 2.	671-2	-051106	ity: 2.	571-3	021106	tv: 9.	571-4	-051106	itv: 1.	671-5	-051106	itv: 2.	671-6	-051106		X	1-710			051106		T : A	0.11-9 0.12-100	-07T50-	21 10	100120	1	671-11	-051204	itv: 2	671-12	-051200	+ 1	£1111	100130-1		T : / 1		itv: 9	

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Raw Data Sheet (rawdata) May 24 2006, 05:36 pm

GR GR GΚ GK Analyst GR GK GK GΚ д¥ В GK GK Ц GK Ingrowth Decay & .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 .999 Factor .356 .345 .349 .35 .343 .344 .345 .343 .335 .346 .354 .344 .343 .354 Eff. 400 400 400 400 400 400 400 400 400 400 400 400 400 400 dt (min) Bkg 315 268 363 321 294 280 289 277 307 308 342 312 264 289 counts Bkg 400 400 400 400 400 400 400 400 400 400 400 400 400 400 dt (min) Sample 355 248 245 counts 278 309 294 212 251 387 260 302 315 289 Total 299 Counter ¥2C X3A X3B X3C Y2A Y2B XIA X2C X2D XID X2B X1B XIC X2A 8 24-may-06 01:34 24-may-06 01:34 24-may-06 00:53 24-may-06 01:34 24-may-06 24-may-06 01:34 24-may-06 24-may-06 24-may-06 24-may-06 24-may-06 24-may-06 24-may-06 24-may-06 Weight Recovery Date/time 00:53 01:34 00:53 01:34 01:34 01:34 01:34 01:34 Count 01:34 112.90 113.17 31.72 36.02 79.03 48.92 43.82 43.82 45.97 51.34 98.66 48.39 81.72 40.32 Mount 0 0 0 0 0 0 0 0 0 0 0 0 0 Milking Date/time 23-may-06 14:00 23-may-06 14:00 23-may-06 14:00 23-may-06 14:00 23-may-06 14:00 23-may-06 14:00 23-may-06 23-may-06 23-may-06 23-may-06 23-may-06 14:00 14:00 14:00 23-may-06 23-may-06 23-may-06 14:00 14:00 14:00 14:00 14:00 Scavenge Date/time Project : EX001-3ESPBRAID-06 MDC: 1.83E+00 MDC: 1.28E+00 Customer: Exelon MDC: 7.29E-01 MDC: 1.25E+00 MDC: 1.32E+00 MDC: 1.16E+00 MDC: 4.74E-01 MDC: 1.12E+00 MDC: 4.99E-01 MDC: 8.39E-01 MDC: 1.47E+00 MDC: 6.37E-01 MDC: 1.3E+00 Aliquot Volume/ 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 450 ml 12-may-06 11-may-06 11-may-06 11-may-06 Activity: -1.678-01 Error: 2.96E-01 1 L28671-8 TOTAL SR 11-may-06 11-may-06 12-may-06 12-may-06 12-may-06 12-may-06 11-may-06 11-may-06 11-may-06 11-may-06 Date/time Reference 1.05E+00 15:00 Activity: 9.84E-01 Error: 7.94E-01 09:45 08:45 Activity: -1.11E+00 Error: 7.27E-01 09:35 11:35 14:40 14:15 15:25 00:60 Error: 8.03E-01 15:15 Activity: -1.56E-01 Error: 6.73E-01 Activity: 1.79E-02 Error: 4.43E-01 Activity: -7.56E-02 Error: 5.07E-01 09:50 -8.62E-01 Error: 8.56E-01 10:35 Activity: -2.96E-01 Error: 3.75E-01 Error: 7.09E-01 14:00 Activity: 4.75E-02 Error: 7.93E-01 Activity: 1.57E-01 Error: 2.94E-01 TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR TOTAL SR SR TOTAL SR Activity: -1.49E+00 Error: TOTAL Analysis Nuclide: SR-90 (FAST, WG-BW-051206-MS-046 WG-BW-051106-MS-040 WG-BW-051106-JL-033 WG-BW-051206-JL-043 WG-BW-051106-MS-039 WG-BW-051206-JL-041 WG-BW-051206-MS-044 WG-BW-051106-MS-036 WG-BW-051106-MS-038 WG-BW-051106-MS-042 WG-BW-051106-JL-037 WG-BW-051106-MS-032 WG-BW-051106-MS-034 Activity: 1.46E-01 Work Order: <u>L28671</u> Activity: 0E+00 L28671-12 Run L28671-14 L28671-10 L28671-13 L28671-11 L28671-6 L28671-9 Activity: L28671-2 L28671-5 L28671-1 L28671-3 L28671-4 L28671-7 Sample ID Client ID

Page: 2

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MDC: 1.52E+00

450 ml

10:35

Activity: -4.57E-01 Error: 9E-01

WG-BW-051206-MS-048

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1 ---

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 18-MAY-2006 15:50:20.39 TBE07 P-10768B HpGe ******** Aquisition Date/Time: 18-MAY-2006 13:20:12.28 LIMS No., Customer Name, Client ID: WG WG3997-1 DUP BRAIDWOOD

 Sample ID
 : 07WG3997-1
 Smple Date: 11-MAY-2006 09:50:00.

 Sample Type
 : WG
 Geometry
 : 0735L090904

 Quantity
 : 3.39030E+00 L
 BKGFILE
 : 07BG050506MT

 Start Channel
 : 40
 Energy Tol
 : 1.30000
 Real Time : 0 02:30:01.80

 End Channel
 : 4090
 Pk Srch Sens: 5.00000
 Live time : 0 02:30:00.00

 MDA Constant
 : 0.00
 Library Used: LIBD

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	FIL
1 2 3 4 5 6	1 1 1 1 1	66.12* 139.84* 198.61* 969.39* 1096.47 1120.57*	108 86 52 16 22 20	222 318 193 5 10 18	1.30 1.30 1.35 2.09 1.96 2.53	133.08 280.58 398.15 1939.85 2193.97 2242.16	7.17E-01 2.09E+00 1.97E+00 6.97E-01 6.36E-01 6.26E-01	1.21E-02 9.52E-03 5.75E-03 1.73E-03 2.45E-03 2.24E-03	25.2 44.1 50.3 49.1 35.1 54.4	2.02E+00 1.30E+00 3.93E+00 1.48E+00 8.95E-01 1.43E+00
•										

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

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Summary of Nuclide Activity Sample ID : 07WG3997-1 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 1 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

3 Page : Unidentified Energy Lines Acquisition date : 18-MAY-2006 13:20:12 Sample ID : 07WG3997-1 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM Area Ιt Energy 7.17E-01 133.08 130 7 1.21E-02 50.4 108 222 1.30 66.12 1 274 12 9.52E-03 88.1 2.09E+00 318 1.30 280.58 86 139.84 1 398.15 394 8 5.75E-03 **** 1.97E+00 193 1.35 52 5 2.09 1939.85 1936 9 1.73E-03 98.1 6.97E-01 198.61 1 Т 16 1 969.39 10 1.96 2193.97 2188 10 2.45E-03 70.2 6.36E-01 22 1096.47 1 2242.16 2234 14 2.24E-03 **** 6.26E-01 18 2.53 1 1120.57 20 Flags: "T" = Tentatively associated Summary of Nuclide Activity 6 Total number of lines in spectrum 5 Number of unidentified lines Number of lines tentatively identified by NID 1 16.67% **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report

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No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (pCi/L) Ideo	Act error l	MDA (pCi/L)	MDA error	Act/MDA
BE-7 NA-24 K-40 CR-51 MN-54 CO-57 CO-58 FE-59 CO-60 ZN-65 SE-75 SR-85 Y-88 NB-94 NB-95 ZR-95 MO-99 RU-103 RU-106 AG-110m SN-113 SB-124	-1.284E+01 -1.966E+03 8.395E+00 -2.277E+01 1.335E+00 -5.491E-01 -5.402E-02 2.164E+00 1.562E+00 -1.140E+00 -1.378E+00 2.255E+01 2.288E-01 -2.724E-02 1.541E+00 -9.661E-01 2.919E+01 4.574E-01 -1.360E+01 7.815E-01 1.386E+00 -8.688E+00	2.677E+01 9.423E+03 4.252E+01 2.993E+01 3.173E+00 2.649E+00 3.270E+00 6.488E+00 3.205E+00 8.357E+00 4.060E+00 4.013E+00 3.794E+00 2.919E+00 3.507E+00 5.885E+00 1.322E+02 3.596E+00 3.054E+01 2.865E+00 3.855E+00 3.894E+00	4.327E+01 1.521E+04 8.252E+01 4.648E+01 5.420E+00 4.403E+00 5.309E+00 1.101E+01 5.547E+00 1.137E+01 6.567E+00 8.062E+00 6.227E+00 4.808E+00 5.900E+00 9.519E+00 2.205E+02 6.000E+00 4.812E+01 4.840E+00 6.460E+00 5.539E+00	0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00	-0.297 -0.129 0.102 -0.490 0.246 -0.125 -0.010 0.197 0.282 -0.100 -0.210 2.797 0.037 -0.006 0.261 -0.101 0.132 0.076 -0.283 0.161 0.214 -1.568

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1-131 $8.679E-01$ $4.124E+00$ $BA-133$ $8.679E-01$ $4.124E+00$ $CS-134$ $1.212E+00$ $3.532E+00$ $CS-136$ $-6.952E-01$ $4.463E+00$ $CS-137$ $2.180E+00$ $3.204E+00$ $CE-139$ $5.440E-01$ $2.853E+00$ $BA-140$ $-9.075E-01$ $5.292E+01$ $LA-140$ $-9.075E-01$ $5.292E+00$ $CE-141$ $4.189E+00$ $6.257E+00$ $CE-144$ $5.577E+00$ $2.342E+01$ $EU-152$ $-1.110E+01$ $9.564E+00$ $EU-154$ $1.983E+00$ $5.385E+00$ $RA-226$ $-6.880E+01$ $7.262E+01$ $AC-228$ $-4.573E+00$ $1.166E+01$ $TH-232$ $-4.562E+00$ $1.163E+01$ $U-235$ $1.30E+01$ $2.502E+01$ $U-238$ $1.409E+01$ $3.350E+02$ $M-241$ $-1.335E+01$ $2.447E+01$	7.161E+00 5.551E+00 4.710E+00 2.449E+01 8.593E+00 9.221E+00 3.402E+01 1.501E+01 9.138E+00 1.167E+02 1.949E+01 9.871E+00 1.944E+01 3.657E+01 5.520E+02 3.901E+01	0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00	$\begin{array}{c} -0.097\\ 0.393\\ 0.115\\ -0.339\\ -0.106\\ 0.454\\ 0.164\\ -0.739\\ 0.217\\ -0.589\\ -0.235\\ 0.156\\ -0.235\\ 0.309\\ 0.026\\ -0.342\end{array}$
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------

#### L28671 52 of 123

						DODE OD WG	WG3997-1	DU
_	0.007	1	05/18/2006	15:50,05/11/20	06 09:50, 3	.390E+00,WG	W00001 =	
A	,0/WG3997	- <u>-</u> 1	, UTBD	,06/2	23/2005 07:26,	0/350050504		
В	,07WG3997		-1.284E+01,	2.677E+01,	4.327E+01,,	-0.207		
C	, BE- /	, NO , NO	-1.966E+03,	9.423E+03,	1.521E+04,,	-0.122		
C	,NA-24	, NO , NO	8 395E+00,	4.252E+01,	8.252E+01,,	0.102		
C	,K-40	, NO ,	-2.277E+01,	2.993E+01,	4.648E+01,,	-0.490		
C	, CR-51	, NO ,	1 335E+00	3.173E+00,	5.420E+00,,	0.240		
C	C, MN-54	, NO ,	-5 491E-01,	2.649E+00,	4.403E+00,,	-0.125		
C	CO-57	, NO ,	-5.402E-02	3.270E+00,	5.309E+00,,	-0.010		
C	C, CO-58	, NO ,	2164E+00	6.488E+00,	1.101E+01,,	0.197		
C	C,FE-59	,NO ,	1.562E+00.	3.205E+00,	5.547E+00,,	0.282		
C	C, CO-60	, NO ,	$1.302 \pm 100$ , $-1.140 \pm 00$ .	8.357E+00,	1.137E+01,,	-0.100		
(	C, ZN-65	, NO ,	-1.378E+00.	4.060E+00,	6.567E+00,,	-0.210		
(	C,SE-75	, NO ,	2.255E+01	4.013E+00,	8.062E+00,,	2.797		
(	C,SR-85	,NO ,	2.200101/	3.794E+00,	6.227E+00,,	0.037		
(	C,Y-88	,NO ,	2.200 017 2.724 E = 02.	2.919E+00,	4.808E+00,,	-0.006		
(	C,NB-94	,NO,	-2.724002, 1 5/1F+00	3.507E+00,	5.900E+00,,	0.261		
1	C,NB-95	,NO ,	1.5410+00,	5.885E+00,	9.519E+00,,	-0.101		
	C,ZR-95	,NO,	-9.661E-01	1.322E+02,	2.205E+02,,	0.132		
	C,MO-99	,NO,	2.919E+01	3.596E+00,	6.000E+00,,	0.076		
	C,RU-103	,NO,	$4.5/4E^{-01}$	3 054E+01,	4.812E+01,,	-0.283		
	C,RU-106	,NO,	-1.360E+01,	2 865E+00,	4.840E+00,,	0.161		
	C,AG-110m	,NO,	7.815E-01,	3 855E+00,	6.460E+00,,	0.214		
	C,SN-113	,NO,	1.386E+00,	3 894E+00,	5.539E+00,,	-1.568		
	C,SB-124	,NO,	-8.688E+00,	8 759E+00,	1.407E+01,,	-0.161		
	C,SB-125	,NO,	-2.268E+00	3 841E+01,	6.119E+01,,	-0.168		
	C,TE-129M	1,NO,	-1.030E+01	5 309E+00,	8.699E+00,,	-0.102		
	C,I-131	,NO,	-8.854E-01	4 124E+00	6.902E+00,,	0.126		
	C,BA-133	,NO,	8.6/9E-01	3,532E+00,	5.856E+00,,	0.207		
	C,CS-134	,NO,	1.212E+00,	4 463E+00,	7.161E+00,,	-0.097		
	C,CS-136	,NO,	-6.952E-01	3.204E+00	5.551E+00,,	0.393		
	C,CS-137	,NO,	2.180E+00,	2.853E+00	4.710E+00,,	0.115		
	C,CE-139	,NO,	5.440E-01	1.542E+01	2.449E+01,,	-0.339		
	C,BA-140	,NO,	-8.315E+00,	5,292E+00	8.593E+00,,	-0.106		
	C,LA-140	,NO,	-9.075E-01,	5.252E+00	9.221E+00,,	0.454		
	C,CE-141	,NO ,	4.189E+00,	2.342E+01	3.402E+01,,	0.164		
	C,CE-144	,NO,	5.577E+00,	2.5420+017	1.501E+01,,	-0.739		
	C,EU-152	,NO,	-1.110E+01,	9.304 <u>0</u> +007	9.138E+00,,	0.217		
	C,EU-154	,NO,	1.983E+00,	5.3050+00	1.167E+02,,	-0.589		
	C, RA-226	,NO,	-6.880E+01,	7.262E+01	1.949E+01,	-0.235		
	C,AC-228	,NO,	-4.573E+00,	1.1000+01,	9.871E+00,	0.156		
	C, TH-228	, NO,	1.535E+00,	5.710E+00,	1 944E+01,	-0.235		
	C,TH-232	, NO	-4.562E+00,	1.100ETUI	3.657E+01.	0.309		
	C,U-235	, NO	, 1.130E+01,	$2.3020\pm01$	5.520E+02.	0.026		
	C,U-238	, NO	, 1.409E+01,	3.330E+02	3.901E+01,	-0.342		
	C,AM-241	, NO	, -1.335E+01,	2.44/D+VI,	J.JJJ			

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Sec. Review: Analyst: LIMS: ___

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 18-MAY-2006 13:16:57.11 TBE04 P-40312B HpGe ******** Aquisition Date/Time: 18-MAY-2006 10:16:48.35

LIMS No., Customer Name, Client ID: WG L28671-1 BRAIDWOOD

Sample ID : 04120071 1 Sample Type : WG Quantity : 3.39030E+00 L Start Channel : 90 Energy Tol : 1.70000 End Channel : 4090 Pk Srch Sens: 5.00000 MDA Constant : 0.00 Library Used: LIBD	Geometry : 04331090004 BKGFILE : 04BG050506MT Real Time : 0 03:00:01.86 Live time : 0 03:00:00.00
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------

Pk I	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10	1 1 1 1 1 1 1 1 1	66.37* 92.71* 139.79* 198.46* 238.35* 295.12* 352.08* 609.29* 846.78* 1202.71	81 15 80 95 37 50 74 68 11 49	306 293 199 208 222 126 124 42 27 27	1.49 1.98 0.93 1.55 1.90 1.56 1.20 2.37 2.51 9.03	133.31 186.00 280.17 397.53 477.31 590.86 704.77 1219.20 1694.11 2405.80	6.49E-01 1.39E+00 1.82E+00 1.52E+00 1.52E+00 1.32E+00 1.17E+00 7.73E-01 5.99E-01 4.55E-01	7.51E-03 1.39E-032 7.42E-03 8.81E-03 3.44E-03 4.63E-03 6.88E-03 6.28E-03 1.00E-03 4.52E-03	39.8 217.8 32.0 29.8 83.6 44.3 33.5 26.7 115.7 29.7	6.93E-01 1.83E+00 2.27E+00 2.56E+00 1.73E+00 7.29E-01 1.46E+00 1.81E+00 1.53E+00 1.90E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natural	L			Uncorrected	l Decay Corr	2-Sigma
Nuclide TH-228	Energy 238.63 240.98	Area 37	%Abn 44.60* 3.95	%Eff 1.521E+00 1.511E+00	pCi/L 4.045E+00 Li	pCi/L 4.073E+00 ne Not Found.	%Error 167.13 

Flag: "*" = Keyline

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2 Page : Summary of Nuclide Activity Acquisition date : 18-MAY-2006 10:16:48 Sample ID : 04L28671-1 Total number of lines in spectrum 10 Number of unidentified lines 9 Number of lines tentatively identified by NID 1 10.00응 Nuclide Type : natural 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Hlife Nuclide 6.808E+00 167.13 4.073E+00 4.045E+00 1.01 TH-228 1.91Y _____ _____ 4.045E+00 4.073E+00 Total Activity : Grand Total Activity : 4.045E+00 4.073E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

3 Paqe : Unidentified Energy Lines Acquisition date : 18-MAY-2006 10:16:48 Sample ID : 04L28671-1 Flaqs %Eff Cts/Sec %Err Channel Left Pw FWHM Bkgnd Area It Energy 6.49E-01 8 7.51E-03 79.7 130 133.31 1.49 81 306 66.37 1 9 1.39E-03 **** 1.39E+00181 186.00 293 1.98 15 92.71 1 1.82E+00 7 7.42E-03 63.9 278 0.93 280.17 199 139.79 80 1 1.68E+00 9 8.81E-03 59.6 397.53 393 1.55 95 208 1 198.46 1.32E+00 9 4.63E-03 88.6 587 590.86 1.56 50 126 295.12 1 699 11 6.88E-03 66.9 1.17E+00704.77 1.20 74 124 352.08 1 1219.20 1213 15 6.28E-03 53.4 7.73E-01 42 2.37 68 609.29 1 1694.11 1688 11 1.00E-03 **** 5.99E-01 27 2.51 11 1 846.78 2405.80 2397 20 4.52E-03 59.5 4.55E-01 9.03 49 27 1 1202.71 Flags: "T" = Tentatively associated Summary of Nuclide Activity 10 Total number of lines in spectrum 9 Number of unidentified lines Number of lines tentatively identified by NID 10.00% 1 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L Decay pCi/L Hlife Nuclide 167.13 4.073E+00 6.808E+00 4.045E+00 1.91Y 1.01 TH-228 _____ _____ 4.073E+00 4.045E+00 Total Activity : 4.073E+00 Grand Total Activity : 4.045E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----MDA error Act/MDA MDA Act error Activity (pCi/L)(pCi/L)Nuclide 0.464 8.777E+00 0.000E+00 6.808E+00 4.073E+00 TH-228 ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA MDA error Act error Activity K.L. (pCi/L)(pCi/L)Ided Nuclide 0.446 0.000E+00 4.794E+01 2.806E+01 2.136E+01 BE-7 -0.382 0.000E+00 1.396E+04 8.960E+03

NA-24

-5.338E+03

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K-40	-1.458E+01	4.381E+01	8.016E+01	0.000E+00 0.000E+00	-0.182 -0.208
CR-51	-1.021E+01	3.066E+01	4.905世+01	0.000E+00	0.014
MN-54	7.540E-02	3.328E+00	5.289E+00	0.000E+00	0.250
CO-57	1.138E+00	2.707E+00	4.558世+00	0.000E+00	-0.373
CO-58	-1.939E+00	3.284E+00	5.19/E+00	0.000E+00	-0.296
FE-59	-3.072E+00	6.556E+00	1.039E+01	$0.000 \pm 00$	0.107
CO - 60	6.900E-01	3.731E+00	6.4/1E+00	0.000E+00	0.230
ZN-65	2.961E+00	7.558E+00	1.288E+01	$0.000 \pm 00$	-0.377
SE-75	-2.433E+00	4.031E+00	6.461E+00	0.000E+00	2.245
SR-85	1.762E+01	4.075E+00	7.850E+00	$0.000 \pm 00$	-0.183
V-88	-1.163E+00	3.994E+00	6.358E+00	$0.000 \pm 00$	0.204
NB-94	1.071E+00	3.144E+00	5.2576+00	0.000E+00	0.390
NB-95	2.159E+00	3.245E+00	5.538E+00	0.000E+00	-0.098
ZR-95	-9.019E-01	5.714E+00	9.159E+00	0.000E+00	-0.073
MO-99	-1.610E+01	1.367E+02	2.204E+02	0.00000+00	-0.047
RII-103	-2.539E-01	3.365E+00	5.457E+00	0.0005+00	-0.001
RU-106	-5.363E-02	2.943E+01	4.711E+01	$0.000 \pm 00$	0.110
$\Delta G = 110 \text{m}$	5.469E-01	2.994E+00	4.983E+00	0.0005+00	0.188
SN-113	1.228E+00	3.881E+00	6.546E+00	0.00000+00	-1.121
SB-124	-6.003E+00	4.367E+00	5.356E+00	0.000E+00	-0.215
SB-125	-2.924E+00	8.441E+00	1.362E+01	0.00000+00	0.099
TE-129M	6.288E+00	3.851E+01	6.376E+UI	$0.000 \pm 00$	-0.196
T_131	-1.764E+00	5.497E+00	9.011E+00	$0.000 \pm 00$	0.648
ED-133	4.596E+00	4.645E+00	7.090E+00	0.000E+00	-0.491
CS = 134	-2.679E+00	4.125E+00	5.451E+00	$0.000 \pm 00$	-0.129
CS = 136	-9.003E-01	4.300E+00	7.006E+00	0.000E+00	0.206
CS = 137	1.100E+00	3.178E+00	5.352E+00	0.0005+00	0.120
CE = 139	5.659E-01	2.880E+00	4.733E+00	0.000E+00	0.101
BA = 140	2.646E+00	1.597E+01	2.615E+01	0.000E+00	0.012
$L_{\Delta} = 140$	1.065E-01	5.250E+00	8.613E+00	0.000E+00	0.323
CE-141	2.796E+00	5.991E+00	8.670E+00	$0.000\pm00$	0.492
CE - 144	1.777E+01	2.281E+01	3.607E+01	0.000E+00	-1.180
EII-152	-1.707E+01	1.186E+01	1.447E+01	0.0005+00	0.215
EU-154	2.018E+00	5.597E+00	9.403E+00	$0.000 \pm 00$	-0.082
B0 101 BA-226	-9.955E+00	7.424E+01	1.215E+02	0.000000000	-0.291
AC-228	-5.670E+00	1.174E+01	1.9458+01	$0.000 \pm 00$	-0.291
TH-232	-5.657E+00	1.171E+01	1.941E+01	$0.000 \pm 00$	0.025
11-235	8.855E-01	2.474E+01	3.500E+01		0.255
11-238	1.348E+02	3.113E+02	5.290E+02	$0.000\pm00$	0.025
AM-241	1.031E+00	2.566E+01	4.106E+01	0.00000+00	

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						T 20671-1	BR
A 041.28671	-1	.05/18/2006	13:16,05/11/2	006 09:50,	3.390E+00,WG	T70011 1	DIC
P 04L28671	-1	LIBD	,03/	14/2005 09:04	,04351090804		
D, 04D20071	YES	4.073E+00,	6.808E+00,	8.777E+00,,	0.464		
C, In-220	NO	2 136E+01	2.806E+01,	4.794E+01,,	0.446		
C, BE-/	, NO ,	5 338E+03	8,960E+03,	1.396E+04,,	-0.382		
C, NA-24	, NO ,	$-5.350 \pm 05,$	4 381E+01,	8.016E+01,,	-0.182		
C,K-40	, NO ,	-1.430E+01	3.066E+01.	4.905E+01,,	-0.208		
C,CR-51	,NO ,	-1.0210+01,	2 328E+00	5.289E+00,,	0.014		
C,MN-54	,NO,	7.5408-02,	3.3200+00	4 558E+00.	0.250		
C,CO-57	,NO,	1.138E+00,	$2.707 \pm 00$	5.197E+00	-0.373		
C,CO-58	,NO ,	-1.939E+00,	3.284E+00,	1.039E+01	-0.296		
C,FE-59	,NO,	-3.072E+00,	6.556E+00,	(1.05) = 101,	0 107		
C, CO-60	,NO ,	6.900E-01,	3.731E+00,	1 000 E 01	0 230		
C,ZN-65	,NO,	2.961E+00,	7.558E+00,	$1.200 \pm 01,$	-0.377		
C.SE-75	, NO ,	-2.433E+00,	4.031E+00,	6.461E+00,,	-0.377		
C SR - 85	NO ,	1.762E+01,	4.075E+00,	7.850E+00,,	2.240		
$C = \frac{V}{2} = \frac{88}{2}$	NO	-1.163E+00,	3.994E+00,	6.358E+00,,	-0.183		
C NB-94	NO .	1.071E+00,	3.144E+00,	5.257E+00,,	0.204		
C, ND = 95	NO .	2.159E+00,	3.245E+00,	5.538E+00,,	0.390		
C, NB = 95	NO /	-9.019E-01,	5.714E+00,	9.159E+00,,	-0.098		
$C, \Delta R^{-95}$	NO ,	-1 610E+01.	1.367E+02,	2.204E+02,,	-0.073		
C, MO = 33	NO	-2.539E-01	3.365E+00,	5.457E+00,,	-0.047		
C, RU-103	, NO ,	-5 363E-02.	2.943E+01,	4.711E+01,,	-0.001		
C, RU-106	, NO ,	5.469E-01.	2.994E+00,	4.983E+00,,	0.110		
C, AG-110m	, NO , NO	1.228E+00	3.881E+00,	6.546E+00,,	0.188		
C, SN-II3	, NO ,	1.2201100	4.367E+00,	5.356E+00,,	-1.121		
C,SB-124	, NO ,	$-0.005 \pm 00,$	8 441E+00.	1.362E+01,,	-0.215		
C,SB-125	, NO ,	-2.9240+00,	3 851E+01.	6.376E+01,,	0.099		
C,TE-129M	, NO ,	5.200ETUU;	5.497E+00	9.011E+00,,	-0.196		
C,I-131	,NO,	-1.764E+00,	4.645E+00	7.090E+00,,	0.648		
C,BA-133	,NO,	4.596E+00,	4.045E+00,	5 451E+00,	-0.491		
C,CS-134	,NO,	-2.679E+00,	4.1250+00,	7.006E+00	-0.129		
C,CS-136	,NO ,	-9.003E-01,	4.300E+00,	5 352E+00	0.206		
C,CS-137	,NO,	1.100E+00,	3.1/8E+00,	A 722ELOO	0 120		
C, CE-139	,NO,	5.659E-01,	2.880E+00,	$4.7550\pm00,7$	0 101		
C, BA-140	,NO,	2.646E+00,	1.5976+01,	2.613E+01,	0.012		
C.LA-140	,NO,	1.065E-01,	5.250E+00,	8.6136+00,,	, 0.012		
C.CE-141	, NO ,	2.796E+00,	5.991E+00,	8.670E+00,,	, 0.323		
C CE - 144	NO ,	1.777E+01,	2.281E+01,	3.607E+01,	, 0.494		
C = EII - 152	NO .	-1.707E+01,	1.186E+01,	1.447E+01,	, -1.100		
C, EU = 154	NO .	2.018E+00,	5.597E+00,	9.403E+00,	, 0.215		
C, BO = 226	NO .	-9.955E+00,	7.424E+01,	1.215E+02,	, -0.082		
C, RA=220	$, \mathbb{N} \cup ,$	-5.670E+00.	1.174E+01,	1.945E+01,	, -0.291		
$C, AC^{-220}$		-5.657E+00.	1.171E+01,	1.941E+01,	, -0.291		
$C, I \Pi - Z S Z$		8 855E-01	2.474E+01,	3.500E+01,	, 0.025		
C, U-235		$1 348E \pm 02$	3.113E+02.	5.290E+02,	, 0.255		
C, U = 238	, NO ,	, <u>1</u> .5 <u>1</u> 0 <u>1</u> 70 <u>2</u> ,	2.566E+01.	4.106E+01,	, 0.025		
C,AM-241	, NO	, I.USIE+00,	2.0001.017				

LIMS: Analyst: Sec. Review:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-MAY-2006 14:19:52.26 TBE07 P-10768B HpGe ******** Aquisition Date/Time: 19-MAY-2006 10:54:20.35 _____ _____. _____ LIMS No., Customer Name, Client ID: L28671-2 WG BRAIDWOOD

Sample ID Sample Type Quantity Start Channel End Channel MDA Constant	::	07L28671-2 WG 3.08100E+00 L 40 Energy Tol : 1.30000 4090 Pk Srch Sens: 5.00000 0.00 Library Used: LIBD	Smple Date: Geometry : BKGFILE : Real Time : Live time :	11-MAY-2006 10:35:00. 073L082504 07BG050506MT 0 03:25:18.74 0 03:25:16.33
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Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8	3 1 1 1 1 1	66.32* 139.23* 185.57* 198.81* 351.91* 596.18 609.18* 1460.89*	95 100 145 126 94 92 74 47 33	235 394 414 291 111 86 74 26 15	1.05 1.39 4.09 1.41 1.22 2.08 1.93 2.53 3.86	133.48 279.36 372.08 398.55 704.84 1193.46 1219.45 2922.61 3529.17	8.05E-01 2.36E+00 2.30E+00 2.24E+00 1.61E+00 1.10E+00 1.09E+00 5.83E-01 5.12E-01	7.70E-03 8.15E-03 1.17E-02 1.03E-02 7.63E-03 7.46E-03 6.03E-03 3.83E-03 2.71E-03	29.2 40.7 32.6 27.5 25.0 23.6 28.0 39.8 35.2	1.41E+00 3.99E+00 2.88E+00 3.37E+00 8.97E-01 3.30E+00 2.14E+00 2.13E+00 2.34E+00
2		1101.00	00							

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natural				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
K-40	1460.81	47	10.67*	5.827E-01	5.405E+01	5.405E+01	79.50
RA-226	186.21	145	3.28*	2.298E+00	1.366E+02	1.366E+02	65.24

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Flag: "*" = Keyline
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2 Page : Summary of Nuclide Activity Acquisition date : 19-MAY-2006 10:54:20 Sample ID : 07L28671-2 9 Total number of lines in spectrum 7 Number of unidentified lines 2 22.22% Number of lines tentatively identified by NID Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pCi/L pCi/L Decay Nuclide Hlife 5.405E+01 4.297E+01 K-40 1.28E+09Y 1.00 5.405E+01 5.405E+01 RA-226 1600.00Y 1.00 1.366E+02 1.366E+02 79.50 0.891E+02 65.24 _____ 1.906E+02 Total Activity : 1.906E+02 Grand Total Activity : 1.906E+02 1.906E+02 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

										L28671	60 of	123
Unid Samp	entified B le ID : 0'	Energy L 7L28671-	ines 2		A	cquisi	.tior	n date : I	19-MAY-	Page 2006 10	: 3 :54:20	
It	Energy	Area	Bkgnd	FWHM	Channe	l Left	: Pw	Cts/Sec	%Err	%Eff	Flags	
3 1 1 1 1 1	66.32 139.23 198.81 351.91 596.18 609.18 1764.32	95 100 126 94 92 74 33	235 394 291 111 86 74 15	1.05 1.39 1.41 1.22 2.08 1.93 3.86	133.4 279.3 398.5 704.8 1193.4 1219.4 3529.1	8 12: 6 274 5 39: 4 70: 6 118 5 121 7 352	3 15 4 11 3 10 L 9 7 13 5 10 1 15	7.70E-03 8.15E-03 1.03E-02 7.63E-03 7.46E-03 6.03E-03 2.71E-03	58.4 81.5 54.9 50.0 47.1 55.9 70.3	8.05E-0 2.36E+0 2.24E+0 1.61E+0 1.10E+0 1.09E+0 5.12E-0	1 0 0 0 0 0 1	
Flag	gs: "T" =	Tentativ	ely asso	ciate	d							
Sum	mary of Nu	clide Ac	tivity									
To [†] Nui Nui	cal number nber of un nber of li	of line identifi nes tent	es in spe ed lines atively	ectrum ; ident	ified b	y NID	9 7 2	22	.22%			
Nuc	lide Type	: natura	al Wt	d Mea	n V	Itd Me	an					
Nuc K-4 RA-	lide H 0 1.28E 226 1600	Ilife I E+09Y ).00Y	Und Decay 1.00 5 1.00 1	correc pCi/I .405E+	ted De 01 5	ecay C pCi/ 5.405E L.366E	orr L +01 +02	Decay C 2-Sigma 4.297E 0.891E	Corr Error C+01 C+02	2-Sigma %Error 79.50 65.24	Flags	
	Tota	al Activ	ity : 1	.906E+	-02	L.906E	+02					
	Grand Tota	al Activ:	ity : 1	.906E-	-02	1.906E	+02					
Fla	gs: "K" = "E" =	Keyline Manuall	not fou y edited	nd	H ] H	M'' = M A'' = M	lanua lucli	ally accep de specif	oted Eic abr	ı. limit		
Int	erference	Report	-									
No	interfere	nce corr	ection p	erfori	ned							
Com	bined Act	ivitv-MD	A Report									
con			Ľ									
	- Identif	ied Nucl	ides	-							,	
Nuc	clide	Activi (pCi/	ty L)	Act	error		M (pC)	DA i/L)	MDA e	error	Act/M	DA
K-4 RA-	10 -226	5.405E 1.366E	+01 +02	4.2 8.9	97E+01 11E+01		1.15 3.80	5E+01 5E+01	0.000	)E+00 )E+00	1.3 1.5	01 51
	Non-Ide	ntified	Nuclides	5								
Nu	clide	Key-Li Activi (pCi/	ne ty K.L. 'L) Ideo	Act	error		M Dq)	DA i/L)	MDA	error	Act/M	IDA
BE NA	- 7 - 24	-1.506E -7.933E	S+01 S-03	2.3 1.0	69E+01 91E-02		3.82 Half	0E+01 -Life too	0.00 short	0E+00	-0.3	94

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CR-51	6.399E+00	2.572E+01	4.202E+01	0.000E+00	0.152
MN-54	-2.507E+00	2.610E+00	4.069E+00	0.000E+00	-0.010
CO - 57	1.355E+00	2.246E+00	3.832E+00	0.000E+00	0.354
CO = 58	-1.192E+00	2.768E+00	4.369E+00	0.000E+00	-0.273
FE-59	4.363E+00	5.280E+00	9.245E+00	0.000E+00	0.4/2
CO - 60	-9.396E-01	2.744E+00	4.408E+00	0.000E+00	-0.213
ZN-65	-2.991E-01	5.386E+00	8.848E+00	0.000E+00	-0.034
SE-75	-2.501E+00	3.271E+00	5.207E+00	0.000E+00	-0.480
SR-85	1.969E+01	3.405E+00	6.714E+00	0.000E+00	2.933
Y-88	8.074E-01	3.125E+00	5.224E+00	0.000E+00	0.155
NB-94	-9.348E-01	2.494E+00	4.020E+00	0.000E+00	-0.233
NB-95	1.521E+00	2.693E+00	4.558E+00	0.000E+00	0.334
ZR-95	-3.015E+00	4.814E+00	7.556E+00	0.000E+00	-0.399
MO-99	5.760E+01	1.479E+02	2.484E+02	0.000E+00	0.232
RII-103	1.118E-01	2.742E+00	4.553E+00	0.000E+00	0.025
RU 105	4.703E+00	2.465E+01	4.047E+01	0.000E+00	0.116
AG = 110m	-9.990E-01	2.604E+00	4.224E+00	0.000E+00	-0.236
SN-113	1.611E+00	3.280E+00	5.513E+00	0.000E+00	0.292
SN-113 SR-124	1.722E+00	5.609E+00	4.345E+00	0.000E+00	0.396
SB-124 SB-125	7.272E-01	7.081E+00	1.161E+01	0.000E+00	0.063
55-129 ΨF-129M	3.155E+01	3.327E+01	5.650E+01	0.000E+00	0.558
T_131	-2.145E+00	4.948E+00	8.022E+00	0.000E+00	-0.267
	4.554E+00	3.892E+00	5.891E+00	0.000E+00	0.773
$CQ_{-134}$	7.347E+00	5.328E+00	4.947E+00	0.000E+00	1.485
CG = 136	-3 265E+00	3.805E+00	5.805E+00	0.000E+00	-0.563
CS = 137	5.237E-01	2.851E+00	4.773E+00	0.000E+00	0.110
CE = 139	1.181E+00	2.356E+00	3.926E+00	0.000E+00	0.301
CE=139	7 091E - 01	1.382E+01	2.281E+01	0.000E+00	0.031
BA = 140	5 929E - 01	4.482E+00	7.502E+00	0.000E+00	0.079
CE = 1/1	5.238E+00	5.088E+00	7.591E+00	0.000E+00	0.690
CE = 141	3 834E+00	1.956E+01	2.830E+01	0.000E+00	0.135
	-1 475E+00	8.400E+00	1.250E+01	0.000E+00	-0.118
EU-152 EU 154	1 138E+00	4.635E+00	7.818E+00	0.000E+00	0.146
EU-134	-2.163E+00	1.060E+01	1.779E+01	0.000E+00	-0.122
AC - ZZO	-2.1050+00	4.783E+00	8.131E+00	0.000E+00	-0.043
1H-220	$-3.400 \pm 01$	1.057E+01	1.774E+01	0.000E+00	-0.122
1H-232	2.293E+00	2.037E+01	2.914E+01	0.000E+00	0.079
U-235	2.2936+00 7 294 $F$ ±01	2.891E+02	4.808E+02	0.000E+00	0.152
$\cup -238$		2.0522+02 2.164E+01	3.180E+01	0.000E+00	0.101
AM-241	3.2006+00	2.1010101			

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					2 001 H 00 T	20671-2	WG	BR
Δ 07L28671	-2	,05/19/2006	14:19,05/11/2	006 10:35,	3.081E+00,1	1200/1-2	NO	
B 07128671	-2	,LIBD	,06/	23/2005 07:26	1 201	:		
C K = 40	YES.	5.405E+01,	4.297E+01,	4.155E+01,,	1.301			
C R = 226	YES.	1.366E+02,	8.911E+01,	8.805E+01,,	1.551			
C, RA 220	NO NO	-1.506E+01,	2.369E+01,	3.820E+01,,	-0.394			
C, DE = 7	NO	6.399E+00,	2.572E+01,	4.202E+01,,	0.152			
C, CR-SI	NO	-2.507E+00.	2.610E+00,	4.069E+00,,	-0.616			
C, MN = 54	NO ,	1 355E+00.	2.246E+00,	3.832E+00,,	0.354			
C, CO-57	NO	-1 192E+00.	2.768E+00,	4.369E+00,,	-0.273			
0,00-58	, NO ,	1.363E+00.	5,280E+00,	9.245E+00,,	0.472			
C, FE-59	, NO ,	9.396E-01	2.744E+00,	4.408E+00,,	-0.213			
C, CO-60	, NO ,	-9.500001	5.386E+00,	8.848E+00,,	-0.034			
C, ZN-65	, NO ,	-2.9910 017	3 271E+00	5.207E+00,,	-0.480			
C,SE-75	, NO ,	-2.5010+00,	3.405E+00,	6.714E+00,,	2.933			
C,SR-85	,NO ,	1.909E+01	3.125E+00	5.224E+00,,	0.155			
C,Y-88	,NO ,	$8.074E^{-}01$	2.494E+00	4.020E+00,,	-0.233			
C,NB-94	,NO,	-9.340E-01	2.693E+00.	4.558E+00,,	0.334			
C,NB-95	,NO,	1.5210+00,	4.814E+00.	7.556E+00,,	-0.399			
C,ZR-95	,NO,	-3.015E+00	1.479E+02.	2.484E+02,,	0.232			
C,MO-99	, NO ,	5.760E+01,	2.742E+00.	4.553E+00,,	0.025			
C,RU-103	,NO,	1.110E-01,	2.7420+007 2.465E+01.	4.047E+01,,	0.116			
C,RU-106	,NO,	4.703E+00,	$2.400 \pm 102$	4.224E+00,,	-0.236			
C,AG-110m	,NO,	-9.990E-01,	3.280E+00.	5.513E+00,,	0.292			
C,SN-113	,NO,	1.611E+00,	5.2000+00, 5.609E+00.	4.345E+00,,	0.396			
C,SB-124	,NO,	1.722E+00,	7.081E+00.	1.161E+01,,	0.063			
C,SB-125	,NO,	7.272E-01,	2.327E+01	5.650E+01,,	0.558			
C,TE-129M	,NO,	3.155E+01,	3.3271101, 4.948E+00.	8.022E+00,,	-0.267			
C,I-131	,NO,	-2.145E+00,	4.9400100	5.891E+00,,	0.773			
C,BA-133	,NO,	4.554E+00,	5.002E-007	4,947E+00,,	1.485			
C,CS-134	,NO,	7.34/E+00,	2 805F±00	5.805E+00,	, -0.563			
C,CS-136	,NO,	-3.265E+00,	3.8053+00	4.773E+00,,	0.110			
C,CS-137	,NO,	5.23/E-UL,	2.0510100,	3.926E+00,	0.301			
C,CE-139	,NO ,	1.181E+00,	$2.330\pm00,$ 1 202F $\pm01$	2.281E+01,	, 0.031			
C,BA-140	,NO,	7.091E-01,	1.3025+01,	7 502E+00	. 0.079			
C,LA-140	,NO,	5.929E-01,	4.4020+00	7 591E+00.	, 0.690			
C,CE-141	,NO,	5.238E+00,	$5.000 \pm 00,$	2830E+01	, . 0.135			
C,CE-144	,NO,	3.834E+00,	1.950E+01	1 250E+01	, -0.118			
C,EU-152	, NO	, -1.475E+00,	8.400E+00,	7.818E+00	0.146			
C,EU-154	, NO	, 1.138E+00,	4.635E+00,	1.779E+01.	-0.122			
C,AC-228	, NO	, -2.163E+00,	1.060E+01	$2.775 \pm 0.027$	-0.043			
C,TH-228	,NO	, -3.465E-01,	4.7036+00,	1 774E+01	0.122			
C,TH-232	, NO	, -2.157E+00,	1.00/E+01	2 914E+01	0.079			
C,U-235	, NO	, 2.293E+00,	$\angle .03/E+01$	4 808E+02	0.152			
C,U-238	, NO	, 7.294E+01,	$\angle . \forall \forall \bot \Box + \forall \angle,$	3 180E+01	0.101			
C,AM-241	, NO	, 3.208E+00,	⊿.⊥04Ё+∪⊥,	J. TOOLIOT/				

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-MAY-2006 16:19:59.80 TBE23 03017322 HpGe ******** Aquisition Date/Time: 19-MAY-2006 12:19:40.27

LIMS No., Customer Name, Client ID: L28671-3 WG BRAIDWOOD

Sample ID Sample Type Quantity	::	23L2867 WG 3.08100	1-3 E+00 L		Smple Date: Geometry : BKGFILE :	11-MAY-2006 11:35:00. 233L082404 23BG050506MT
Start Channel End Channel MDA Constant	::	50 4090 0.00	Energy Tol : Pk Srch Sens: Library Used:	1.50000 5.00000 LIBD	Real Time : Live time :	0 04:00:10.04 0 04:00:00.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	Fit
1	9	33.67*	17	7	1.00	67.50	8.08E-02	1.16E-03 81.0	4.66E+00
2	9	34.93*	2	58	1.47	70.01	1.00E-01	1.73E-04*****	
3	9	37.50*	61	151	2.04	75.15	1.48E-01	4.21E-03 56.6	
4	9	39.89*	81	245	2.18	79.92	2.03E-01	5.60E-03 44.8	
5	9	42.68*	37	244	2.19	85.51	2.78E-01	2.60E-03 71.8	
6	0	92.61*	24	510	1.70	185.26	1.94E+00	1.65E-03188.3	
7	0	139.80*	73	414	1.10	279.57	2.32E+00	5.10E-03 50.8	
8	0	185.65*	15	382	1.46	371.19	2.17E+00	1.03E-03261.5	
9	0	198.73*	83	387	0.85	397.32	2.11E+00	5.75E-03 47.0	
10	0	238.08*	51	286	1.33	475.96	1.90E+00	3.54E-03 64.6	
11	0	351.81*	137	163	1.62	703.26	1.43E+00	9.54E-03 20.4	
12	0	608.94*	145	124	1.32	1217.30	9.41E-01	1.01E-02 19.8	
13	0	1120.80*	41	24	2.19	2241.11	6.15E-01	2.87E-03 32.3	
14	0	1460.56*	31	35	2.02	2921.07	5.10E-01	2.18E-03 60.9	
15	0	1763.56*	32	24	1.41	3527.73	4.38E-01	2.23E-03 42.3	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al					
11001100	-1601				Uncorrected	l Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K-40	1460.81	31	10.67*	5.096E-01	3.523E+01	3.523E+01	121.88
RA-226	186.21	15	3.28*	2.175E+00	1.262E+01	1.262E+01	523.03
TH-228	238.63	51	44.60*	1.903E+00	3.661E+00	3.691E+00	129.19
	240.98		3.95	1.888E+00	Li	ne Not Found	

Flag: "*" = Keyline
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Page : 2 Summary of Nuclide Activity Acquisition date : 19-MAY-2006 12:19:40 Sample ID : 23L28671-3 15 Total number of lines in spectrum Number of unidentified lines 12 Number of lines tentatively identified by NID 3 20.00% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Nuclide Hlife Decay 4.294E+01 121.88 3.523E+01 3.523E+01 K-40 1.28E+09Y 1.00 523.03 RA-226 1600.00Y 1.00 1.262E+01 1.262E+01 6.601E+01 4.768E+00 129.19 3.661E+00 3.691E+00 TH-228 1.91Y 1.01 _ _ _ _ _ _ _ _ _ _ _ _ _____ 5.154E+01 5.152E+01 Total Activity : Grand Total Activity : 5.152E+01 5.154E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

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0.463

0.000E+00

7.973E+00

Page : 3 Unidentified Energy Lines Acquisition date : 19-MAY-2006 12:19:40 Sample ID : 23L28671-3 Channel Left Pw Cts/Sec %Err Flags %Eff Bkgnd FWHM Area It Energy 8.08E-02 65 25 1.16E-03 **** 67.50 1.00 7 17 33.67 9 1.00E-01 65 25 1.73E-04 **** 1.47 70.01 2 58 34.93 9 65 25 4.21E-03 **** 1.48E-01 75.15 2.04 151 61 37.50 9 65 25 5.60E-03 89.6 2.03E-01 79.92 245 2.18 81 9 39.89 65 25 2.60E-03 **** 2.78E-01 244 2.19 85.51 37 9 42.68 9 1.65E-03 **** 1.94E+00185.26 181 1.70 510 24 92.61 0 8 5.10E-03 **** 2.32E+00 276 279.57 1.10 73 414 139.80 0 392 10 5.75E-03 94.1 2.11E+00 397.32 387 0.85 83 198.73 0 1.43E+00 699 10 9.54E-03 40.9 703.26 1.62 163 351.81 137 0 1217.30 1210 15 1.01E-02 39.7 9.41E-01 1.32 124 145 608.94 0 6.15E-01 2241.11 2236 14 2.87E-03 64.6 24 2.19 1120.80 41 0 3527.73 3520 16 2.23E-03 84.7 4.38E-01 1.41 32 24 1763.56 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 15 Total number of lines in spectrum 12 Number of unidentified lines Number of lines tentatively identified by NID 20.00% 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr %Error Flags 2-Sigma Error pCi/L pCi/L Decay Hlife Nuclide 121.88 4.294E+01 3.523E+01 3.523E+01 1.00 1.28E+09Y K-40 523.03 6.601E+01 1.262E+01 1.262E+01 1.00 RA-226 1600.00Y 129.19 4.768E+00 3.691E+00 1.01 3.661E+00 1.91Y TH-228 _____ _____ 5.152E+01 5.154E+01 Total Activity : 5.154E+01 Grand Total Activity : 5.152E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)(pCi/L)Nuclide 0.854 0.000E+00 4.124E+01 4.294E+01 3.523E+01 K-40 0.126 0.000E+00 6.601E+01 9.978E+01 1.262E+01

4.768E+00

---- Non-Identified Nuclides ----

3.691E+00

RA-226

TH-228

Nuclide	Key-Line Activity K.I (pCi/L) Ide	. Act error ed	MDA (pCi/L)	MDA error	Act/MDA
_	4 0000.00	つ つ名2日上01	3.832E+01	0.000E+00	-0.126
BE-7	-4.820E+00	2.2021101	Half-Life to	o short	
NA-24	-2.210E-02	2.492F+01	4.092E+01	0.000E+00	-0.732
CR-51	-2.996E+UI	2.4920+01	4.799E+00	0.000E+00	0.530
MN-54	2.544E+00	$2.500 \pm 00$	4.151E+00	0.000E+00	-0.457
CO-57	-1.898E+00	2.5020+00	4.085E+00	0.000E+00	-0.459
CO-58	-1.874E+00	2.5110+00	8.897E+00	0.000E+00	-0.522
FE-59	-4.644E+00	2.4775+00	4.332E+00	0.000E+00	0.193
CO-60	8.370E-01	$2.300 \pm 00$	9 945E+00	0.000E+00	-0.107
ZN-65	-1.069E+00	5.977E+00	6 058E+00	0.000E+00	-0.040
SE-75	-2.431E-01	3.833E+00	6.000E+00	0.000E+00	1.785
SR-85	1.071E+01	3.170E+00	5.071E+00	0.000E+00	0.030
Y-88	1.513E-01	2.815E+00	4 040E+00	0.000E+00	-0.394
NB-94	-1.593E+00	2.442E+00	$4.010\pm100$	0.000E+00	0.133
NB-95	5.959E-01	2.579E+00	7 934E+00	0.000E+00	-0.099
ZR-95	-7.823E-01	4.668E+00	2 419E+02	0.000E+00	-0.251
MO-99	-6.066E+01		5.165E+00	0.000E+00	0.198
RU-103	1.024E+00	$3.006\pm00$	4 0.08E+01	0.000E+00	-0.108
RU-106	-4.330E+00		4.404E+00	0.000E+00	0.080
AG-110m	3.537E-01	2.535E+00	5739E+00	0.000E+00	0.034
SN-113	1.938E-01	3.351E+00	4.723E+00	0.000E+00	-0.906
SB-124	-4.277E+00	3.549E+00	1 256E+01	0.000E+00	0.275
SB-125	3.451E+00	7.218E+00	5.698E+01	0.000E+00	0.113
TE-129M	6.442E+00	3.324E+01	8 783E+00	0.000E+00	-0.057
I-131	-5.013E-01	5.152E+00	6.526E+00	0.000E+00	1.007
BA-133	6.569E+00	4.1198+00	5411E+00	0.000E+00	0.737
CS-134	3.989E+00	3.475E+00	5.989E+00	0.000E+00	-0.042
CS-136	-2.494E-01	3.5046+00	4.620E+00	0.000E+00	-0.321
CS-137	-1.484E+00	2.763E+00	4.275E+00	0.000E+00	-0.011
CE-139	-4.848E-02	2.51/E+00	2.275100	0.000E+00	0.058
BA-140	1.356E+00		7.416E+00	0.000E+00	0.324
LA-140	2.399E+00	3.958E+00	8 361E+00	0.000E+00	0.761
CE-141	6.363E+00	5.480E+00	3.175E+01	0.000E+00	-0.519
CE-144	-1.649E+01	2.323E+UI	1 320E+01	0.000E+00	-0.095
EU-152	-1.251E+00	8.826E+00	8.616E+00	0.000E+00	-0.260
EU-154	-2.239E+00	5.275E+00	$1.796E\pm01$	0.000E+00	0.317
AC-228	5.697E+00	9.8166+00	1.791E+01	0.000E+00	0.317
TH-232	5.681E+00	9./90E+00	2.752E+01	0.000E+00	0.704
U-235	2.293E+01		1 601E+02	0.000E+00	-0.196
U-238	-9.179E+01	2.71/E+02	4.091日+02 つ つつ8日+01	0.000E+00	-0.914
AM-241	-2.036E+01	T.308E+0T	2.2200+01	0.000	

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A,23L28671.	- 3	,05/19/2006	16:20,05/11/2	006 11:35,	3.081E+00,L2867	1-3 WG BR
B,23L28671	-3	,LIBD	,06/	24/2005 07:59	9,233L082404	
C,K-40	,YES,	3.523E+01,	4.294E+01,	4.124E+01,,	0.854	
C,RA-226	,YES,	1.262E+01,	6.601E+01,	9.978E+01,,	0.126	
C, TH-228	,YES,	3.691E+00,	4.768E+00,	7.973E+00,,	0.463	
C,BE-7	,NO,	-4.820E+00,	2.282E+01,	3.832E+01,,	-0.126	
C,CR-51	,NO,	-2.996E+01,	2.492E+01,	4.092E+01,,	-0.732	
C, MN-54	,NO,	2.544E+00,	2.600E+00,	4.799E+00,,	0.530	
C,CO-57	,NO ,	-1.898E+00,	2.562E+00,	4.151E+00,,	-0.457	
C,CO-58	,NO ,	-1.874E+00,	2.511E+00,	4.085E+00,,	-0.459	
C,FE-59	,NO ,	-4.644E+00,	5.477E+00,	8.897E+00,,	-0.522	
C, CO-60	,NO ,	8.370E-01,	2.366E+00,	4.332E+00,,	0.193	
C.ZN-65	, NO ,	-1.069E+00,	6.977E+00,	9.945E+00,,	-0.107	
C.SE-75	, NO ,	-2.431E-01,	3.633E+00,	6.058E+00,,	-0.040	
C.SR-85	, NO ,	1.071E+01,	3.176E+00,	6.000E+00,,	1.785	
C.Y-88	, NO ,	1.513E-01,	2.815E+00,	5.071E+00,,	0.030	
C.NB-94	.NO .	-1.593E+00,	2.442E+00,	4.040E+00,,	-0.394	
C. NB-95	NO .	5.959E-01,	2.579E+00,	4.494E+00,,	0.133	
$C_{2}ZR - 95$	NO .	-7.823E-01,	4.668E+00,	7.934E+00,,	-0.099	
C.MO-99	.NO .	-6.066E+01,	1.445E+02,	2.419E+02,,	-0.251	
C.RU-103	NO ,	1.024E+00,	3.006E+00,	5.165E+00,,	0.198	
C.RU-106	NO .	-4.330E+00,	2.340E+01,	4.008E+01,,	-0.108	
C.AG-110m	NO ,	3.537E-01,	2.533E+00,	4.404E+00,,	0.080	
C.SN-113	NO ,	1.938E-01,	3.351E+00,	5.739E+00,,	0.034	
C.SB-124	NO ,	-4.277E+00,	3.549E+00,	4.723E+00,,	-0.906	
C.SB-125	NO .	3.451E+00,	7.218E+00,	1.256E+01,,	0.275	
C.TE-129M	, NO ,	6.442E+00,	3.324E+01,	5.698E+01,,	0.113	
C.T-131	NO .	-5.013E-01,	5.152E+00,	8.783E+00,,	-0.057	
C.BA-133	.NO .	6.569E+00,	4.119E+00,	6.526E+00,,	1.007	
$C_{1}CS = 134$	NO .	3.989E+00,	3.475E+00,	5.411E+00,,	0.737	
C.CS-136	.NO .	-2.494E-01,	3.504E+00,	5.989E+00,,	-0.042	
C.CS-137	.NO .	-1.484E+00,	2.763E+00,	4.620E+00,,	-0.321	
$C_{1}CE = 139$	.NO .	-4.848E-02,	2.517E+00,	4.275E+00,,	-0.011	
C.BA-140	.NO .	1.356E+00,	1.330E+01,	2.327E+01,,	0.058	
$C_{\rm L}A - 140$	NO .	2.399E+00,	3.958E+00,	7.416E+00,,	0.324	
$C_{1}CE - 141$	, NO ,	6.363E+00,	5.480E+00,	8.361E+00,,	0.761	
C CE - 144	NO .	-1.649E+01	2.323E+01,	3.175E+01,,	-0.519	
C EU = 152	NO .	-1.251E+00.	8.826E+00,	1.320E+01,,	-0.095	
C = 154	NO .	-2.239E+00.	5.275E+00,	8.616E+00,,	-0.260	
$C_{A}C_{-228}$	, NO	5.697E+00.	9.816E+00,	1.796E+01,,	0.317	
$C TH_{23}$	NO	5.681E+00	9.790E+00.	1.791E+01,,	0.317	
C. II-235	NO	2.293E+01.	2.146E+01.	3.258E+01,,	0.704	
$C_{11} = 238$	, NO	-9.179E+01.	2.717E+02.	4.691E+02,,	-0.196	
$C \Delta M - 241$	NO	-2.036E+01	1.368E+01.	2.228E+01,	-0.914	
	1					

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Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-MAY-2006 12:16:23.21 TBE23 03017322 HpGe ******** Aquisition Date/Time: 19-MAY-2006 08:36:55.68 LIMS No., Customer Name, Client ID: WG L28671-4 BRAIDWOOD

LIMS:

Sample ID	•	2312867	1 – 4		Smple Date	::	11-MAY-2006 14:00:00.
Sample Type	•	WG			Geometry	:	233L082404
Quantity	:	3.17660	E+00 L		BKGFILE	:	23BG050506MT
Start Channel	:	50	Energy Tol :	1.50000	Real Time	:	0 03:30:08.60
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 03:30:00.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	Fit
1	0	34.42*	77	101	2.21	69.01	9.22E-02	6.10E-03 29.5	
2	4	63.18*	33	348	1.16	126.47	1.04E+00	2.62E-03102.1	9.87E-01
3	4	66.28*	80	415	1.34	132.66	1.16E+00	6.37E-03 45.6	
4	0	92.40*	87	512	1.20	184.86	1.93E+00	6.88E-03 54.8	
5	0	139.71*	108	400	1.10	279.38	2.32E+00	8.58E-03 35.5	
6	0	185.61*	38	358	0.99	371.10	2.17E+00	3.04E-03100.6	
7	0	198.46*	76	292	1.05	396.79	2.11E+00	6.02E-03 42.1	
8	0	238.77*	10	273	1.15	477.33	1.90E+00	8.28E-04291.3	
9	0	351.63*	37	176	0.93	702.90	1.44E+00	2.98E-03 69.6	
10	Õ	596.12	43	65	1.19	1191.67	9.56E-01	3.43E-03 37.3	
11	Õ	608.65*	78	73	1.79	1216.72	9.41E-01	6.19E-03 27.0	
12	Ō	1120.56*	12	32	1.37	2240.63	6.15E-01	9.73E-04102.6	
13	Ő	1379.37	24	33	3.87	2758.56	5.32E-01	1.92E-03 60.4	
14	Õ	1460.47*	41	12	2.27	2920.89	5.10E-01	3.27E-03 37.5	
15	Õ	1763.74*	14	14	1.96	3528.09	4.38E-01	1.10E-03 73.5	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	1					
11002200	-1201				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
K-40	1460.81	41	10.67*	5.097E-01	5.115E+01	5.115E+01	75.01
RA-226	186.21	38	3.28*	2.175E+00	3.622E+01	3.622E+01	201.20
TH-228	238.63	10	44.60*	1.899E+00	8.314E-01	8.379E-01	582.67
	240.98		3.95	1.888E+00	Li:	ne Not Found	

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Page : 2 Summary of Nuclide Activity Acquisition date : 19-MAY-2006 08:36:55 Sample ID : 23L28671-4 15 Total number of lines in spectrum Number of unidentified lines 12 20.00% Number of lines tentatively identified by NID 3 Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Nuclide Hlife 75.01 5.115E+01 5.115E+01 3.837E+01 1.00 K-40 1.28E+09Y 201.20 7.288E+01 1.00 3.622E+01 3.622E+01 1600.00Y RA-226 48.82E-01 582.67 8.379E-01 1.01 8.314E-01 TH-228 1.91Y _____ _____ 8.821E+01 Total Activity : 8.820E+01 Grand Total Activity : 8.820E+01 8.821E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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3 Page : Unidentified Energy Lines Acquisition date :  $19-MAY-2006 \ 08:36:55$ Sample ID : 23L28671-4 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM Area It Energy 9.22E-02 9 6.10E-03 59.1 69.01 65 2.21 77 101 0 34.42 123 14 2.62E-03 **** 1.04E+00 126.47 1.16 63.18 33 348 4 1.16E+00 123 14 6.37E-03 91.2 132.66 1.34 80 415 4 66.28 1.93E+00 180 11 6.88E-03 **** 184.86 1.20 87 512 92.40 0 2.32E+00 275 9 8.58E-03 71.0 279.38 400 1.10 108 0 139.71 2.11E+00 8 6.02E-03 84.2 396.79 393 292 1.05 76 0 198.46 9 2.98E-03 **** 1.44E+00702.90 699 176 0.93 37 351.63 0 9.56E-01 9 3.43E-03 74.6 1191.67 1187 1.19 43 65 596.12 0 1216.72 1211 12 6.19E-03 54.1 9.41E-01 73 1.79 78 608.65 0 2240.63 2234 11 9.73E-04 **** 6.15E-01 32 1.37 12 0 1120.56 2758.56 2749 19 1.92E-03 **** 5.32E-01 3.87 33 24 1379.37 0 3528.09 3522 16 1.10E-03 **** 4.38E-01 1.96 14 14 0 1763.74 Flags: "T" = Tentatively associated Summary of Nuclide Activity 15 Total number of lines in spectrum 12 Number of unidentified lines Number of lines tentatively identified by NID 20.00% 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Hlife Nuclide 75.01 3.837E+01 5.115E+01 5.115E+01 1.00 1.28E+09Y K-40 201.20 7.288E+01 3.622E+01 3.622E+01 1.00 1600.00Y RA-226 582.67 48.82E-01 8.314E-01 8.379E-01 1.91Y 1.01 TH-228 _____ ______ 8.821E+01 8.820E+01 Total Activity : 8.821E+01 Grand Total Activity : 8.820E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)(pCi/L)Nuclide 1.171 0.000E+00 4.366E+01 3.837E+01 5.115E+01 K-40 0.345 0.000E+00 1.051E+02 7.288E+01 3.622E+01 RA-226 0.000E+00 0.102 8.235E+00 4.882E+00

---- Non-Identified Nuclides ----

TH-228

8.379E-01

Nuclide	Key-Line Activity K.L. (pCi/L) Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
		2 393E+01	3.993E+01	0.000E+00	-0.216
BE-7	-8.629E+00	7 302E-03	Half-Life too	o short	0 0 2 4
NA-24		2 511E+01	4.318E+01	0.000E+00	-0.034
CR-51	-1.477E+00	2.577E+00	4.646E+00	0.000E+00	0.216
MN-54	1.003E+00	2.660E+00	4.405E+00	0.000E+00	0.021
CO-57	9.435E-02	$2.000 \pm 00$ $2.595 \pm 00$	4.330E+00	0.000E+00	-0.257
CO-58	-1.115E+00	5.177E+00	9.803E+00	0.000E+00	0.581
FE-59	5.698E+00	2.549E+00	4.119E+00	0.000E+00	-0.611
CO-60	-2.517E+00	5 983E+00	1.009E+01	0.000E+00	0.727
ZN-65	7.330E+00	3.709E+00	6.140E+00	0.000E+00	-0.196
SE-75	-1.20IE+00	$3.705 \pm 00$	6.111E+00	0.000E+00	1.603
SR-85	9.797E+00	$3.230 \pm 100$ $2.017 \pm 00$	5.412E+00	0.000E+00	-0.008
Y-88	-4.530E-02	3.017100	4.490E+00	0.000E+00	-0.111
NB-94	-4.978E-01	2.0500,00	5.098E+00	0.000E+00	0.346
NB-95	1.763E+00	Z.859E+00	9.005E+00	0.000E+00	-0.010
ZR-95	-8.940E-02	1 365F±02	2.349E+02	0.000E+00	-0.027
MO-99	-6.281E+00	2.385E+00	5.457E+00	0.000E+00	-0.221
RU-103	-1.207E+00	$3.200 \pm 00$ $2.287 \pm 01$	3.935E+01	0.000E+00	-0.109
RU-106	-4.290E+00	$2.207 \pm 01$	4.498E+00	0.000E+00	-0.048
AG-110m	-2.177E-01	2.0110700 3.579E+00	5.969E+00	0.000E+00	-0.335
SN-113	-1.997E+00	3.375E+00	4.573E+00	0.000E+00	0.884
SB-124	4.043E+00	7.398E+00	1.257E+01	0.000E+00	-0.067
SB-125	-8.434E-01	7.300E+00	5.729E+01	0.000E+00	-0.282
TE-129M	-1.61/E+U1	5.113E+00	9.009E+00	0.000E+00	0.355
I-131	3.1988+00	J.115⊟+00 4 307E+00	6.252E+00	0.000E+00	-0.052
BA-133	-3.259E-01	3.578E+00	5.287E+00	0.000E+00	1.606
CS-134	8.494 <u>E</u> +00	3.607E+00	6.159E+00	0.000E+00	-0.074
CS-136	-4.536E-01	2.865E+00	4.928E+00	0.000E+00	-0.057
CS-137	-2.793E-01	2.666E+00	4.483E+00	0.000E+00	-0.248
CE-139	-1.110E+00	1.364E+01	2.302E+01	0.000E+00	-0.365
BA-140	-8.394E+00	3.890E+00	6.578E+00	0.000E+00	-0.271
LA-140	-1.785E+00	5.880E+00	8.865E+00	0.000E+00	0.521
CE-141	4.015E+00	2 427E+01	3.423E+01	0.000E+00	0.027
CE-144	9.318E-01	9 536E+00	1.416E+01	0.000E+00	-0.193
EU-152	-2.728E+00	5.525E+00	9.145E+00	0.000E+00	0.018
EU-154		9.631 $E+00$	1.792E+01	0.000E+00	0.326
AC-228	5.841E+00	$9.605 \pm 0.00$	1.787E+01	0.000E+00	0.326
TH-232	5.825E+UU	2 331E+01	3.410E+01	0.000E+00	-0.020
U-235	-6.813E-U1	2.3310102 2.803E+02	4.863E+02	0.000E+00	-0.208
U-238	-1.009E+02	1.579E+01	2.334E+01	0.000E+00	0.160
AM-241	3./386+00	T. 0 / 0 1 0 T			

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A.23L28671	-4	.05/19/2006	12:16,05/11/	2006 14:00,	3.177E+00,WG	L28671-4	BR
B.23L28671	-4	,LIBD	,06	5/24/2005 07:59	9,233L082404		
C,K-40	,YES,	, 5.115E+01,	3.837E+01,	4.366E+01,,	1.171		
C,RA-226	YES.	3.622E+01,	7.288E+01,	1.051E+02,,	0.345		
C.TH-228	YES.	8.379E-01,	4.882E+00,	8.235E+00,,	0.102		
C.BE-7	, NO ,	-8.629E+00,	2.393E+01,	3.993E+01,,	-0.216		
$C_{C}CR = 51$	.NO	-1.477E+00,	2.511E+01,	4.318E+01,,	-0.034		
C. MN-54	. NO	1.003E+00,	2.577E+00,	4.646E+00,,	0.216		
$C_{1}C_{0}-57$	NO	9.435E-02.	2.660E+00,	4.405E+00,,	0.021		
C, CO-58	. NO	-1.115E+00,	2.595E+00,	4.330E+00,,	-0.257		
C. FE-59	, NO	5,698E+00,	5.177E+00,	9.803E+00,,	0.581		
$C_{1}C_{0} = 60$	NO	-2.517E+00	2.549E+00.	4.119E+00,,	-0.611		
$C_{2} ZN - 65$	. NO	7.330E+00,	5.983E+00,	1.009E+01,,	0.727		
C SE - 75	NO	-1.201E+00	3.709E+00.	6.140E+00,	-0.196		
C.SR-85	, NO	9.797E+00,	3.236E+00,	6.111E+00,,	1.603		
C.Y-88	, NO	-4.530E-02.	3.017E+00,	5.412E+00,,	-0.008		
C NB - 94	NO	-4.978E-01,	2.638E+00,	4.490E+00,,	-0.111		
C NB-95	NO	1.763E+00	2.859E+00,	5.098E+00,,	0.346		
$C_{1}ZR - 95$	, NO	-8.940E-02.	5.252E+00,	9.005E+00,,	-0.010		
C MO - 99	NO	-6.281E+00	1.365E+02,	2.349E+02,,	-0.027		
C RII-103	NO	-1.207E+00.	3.286E+00.	5.457E+00,,	-0.221		
C RU-106	NO	-4.290E+00.	2.287E+01.	3.935E+01,,	-0.109		
C.AG-110m	, NO	, -2.177E-01.	2.611E+00,	4.498E+00,,	-0.048		
C.SN-113	, NO	, -1.997E+00,	3.579E+00,	5.969E+00,,	-0.335		
C.SB-124	, NO	, <u>4.043E+00</u> ,	4.795E+00,	4.573E+00,,	0.884		
C.SB-125	, NO	-8.434E-01.	7.398E+00,	1.257E+01,,	-0.067		
C.TE-129M	, NO	, -1.617E+01,	3.447E+01,	5.729E+01,,	-0.282		
C. T-131	, NO	, <u>3.198E+00</u> ,	5.113E+00,	9.009E+00,,	0.355		
C.BA-133	, NO	, -3.259E-01.	4.307E+00,	6.252E+00,,	-0.052		
C.CS-134	, NO	, 8.494E+00,	3.578E+00,	5.287E+00,,	1.606		
C.CS-136	, NO	4.536E-01,	3.607E+00,	6.159E+00,,	-0.074		
C.CS-137	, NO	, -2.793E-01,	2.865E+00,	4.928E+00,,	-0.057		
C.CE-139	, NO	, -1.⊥10E+00,	2.666E+00,	4.483E+00,,	-0.248		
C.BA-140	, NO	-8.394E+00,	1.364E+01,	2.302E+01,,	-0.365		
C.LA-140	. NO	, -1.785E+00,	3.890E+00,	6.578E+00,,	-0.271		
C.CE-141	, NO	, 4.615E+00,	5.880E+00,	8.865E+00,,	0.521		
$C_{1}CE = 144$	, NO	, 9.318E-01,	2.427E+01,	3.423E+01,,	0.027		
$C_{\rm EU} = 152$	, NO	-2.728E+00.	9.536E+00,	1.416E+01,,	-0.193		
C.EU-154	, NO	, <u>1.688E-01</u> ,	5.525E+00,	9.145E+00,,	0.018		
C.AC-228	, NO	, 5.841E+00,	9.631E+00,	1.792E+01,,	0.326		
C. TH-232	NO	, 5.825E+00,	9.606E+00.	1.787E+01,,	0.326		
C.U-235	, NO	-6.813E-01	2.331E+01.	3.410E+01.,	-0.020		
C.U-238	, NO	-1.009E+02.	2.803E+02.	4.863E+02,,	-0.208		
C.AM-241	, NO	, 3.738E+00.	1.579E+01.	2.334E+01	0.160		
~,	,	,					

Sec. Review: Analyst: LIMS: _^

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 18-MAY-2006 13:15:48.28 TBE23 03017322 HpGe ******** Aquisition Date/Time: 18-MAY-2006 10:00:45.43 LIMS No., Customer Name, Client ID: WG L28671-5 BRAIDWOOD

Sample ID Sample Type Quantity Start Channel End Channel MDA Constant	: : :	23L28671-5 WG 3.47390E+00 L 50 Energy Tol : 1.5 4090 Pk Srch Sens: 5.6 0.00 Library Used: LI	Sm Ge BK 50000 Re 00000 Li BD	ple Date ometry GFILE al Time ve time	0 : : : :	11-MAY-2006 15:00:00. 2335L090704 23BG050506MT 0 03:14:48.93 0 03:14:40.93
--------------------------------------------------------------------------------------	-------	-------------------------------------------------------------------------------------------------------------	----------------------------------------------	---------------------------------------------------	-----------	----------------------------------------------------------------------------------------

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 0 11 2	7 0 0 0 0 0 0 0 0 0	33.78* 40.65* 92.50* 139.79* 185.86* 198.97* 352.00* 595.77 609.15* 910.50* 1120.79* 1460.31*	16 1 48 153 35 142 92 39 44 18 7 30	21 183 411 361 439 525 195 96 59 28 45 19	1.15 1.18 1.57 1.24 1.07 4.53 1.38 1.41 1.78 1.43 1.40 1.52	67.73 81.45 185.04 279.55 371.59 397.80 703.64 1190.98 1217.72 1820.38 2241.10 2920.56	9.38E-02 2.29E-01 1.69E+00 2.05E+00 1.95E+00 1.32E+00 8.74E-01 8.59E-01 6.39E-01 5.52E-01 4.60E-01	$1.39E-03$ $1.20E-04^{\circ}$ $4.08E-03$ $1.31E-02$ $3.03E-03^{\circ}$ $1.22E-02$ $7.86E-03$ $3.33E-03$ $3.75E-03$ $1.58E-03$ $6.00E-04$ $2.57E-03$	91.8 **** 84.4 25.1 125.0 38.2 34.8 51.4 40.2 66.4 217.1 53.2	6.18E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al			Uncorrected	Decay Corr	2-Sigma
Nuclide K-40 RA-226 AC-228	Energy 1460.81 186.21 835.50 911.07	Area 30 35 	%Abn 10.67* 3.28* 1.75 27.70*	%Eff 4.596E-01 1.947E+00 6.790E-01 6.386E-01	pCi/L 4.085E+01 3.691E+01 Lin 6.961E+00	pCi/L 4.085E+01 3.691E+01 ne Not Found 6.977E+00	%Error 106.40 249.99  132.78

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2 Page : Summary of Nuclide Activity Acquisition date : 18-MAY-2006 10:00:45 Sample ID : 23L28671-5 12 Total number of lines in spectrum Number of unidentified lines 9 Number of lines tentatively identified by NID 25.00% 3 Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Hlife Nuclide 106.40 4.346E+01 4.085E+01 K-40 1.28E+09Y 1.00 4.085E+01 249.99 9.228E+01 3.691E+01 3.691E+01 1.00 1600.00Y RA-226 132.78 9.264E+00 6.977E+00 1.00 6.961E+00 5.75Y AC-228 _____ ______ Total Activity : 8.472E+01 8.473E+01 Grand Total Activity : 8.472E+01 8.473E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

L28671 75 of 123 3 Page : Unidentified Energy Lines Acquisition date : 18-MAY-2006 10:00:45 Sample ID : 23L28671-5 %Eff Area Bkqnd FWHM Channel Left Pw Cts/Sec %Err Flags It Energy 67.73 65 15 1.39E-03 **** 9.38E-02 21 1.15 7 33.78 16 1.18 6 1.20E-04 **** 2.29E-01 81.45 80 183 0 40.65 1 9 4.08E-03 **** 1.69E+00 185.04 0 92.50 48 411 1.57 181 279.55 2.05E+00 139.79 153 361 1.24 275 10 1.31E-02 50.2 0 525 4.53 397.80 390 17 1.22E-02 76.5 1.89E+00 0 198.97 142 698 14 7.86E-03 69.6 1.32E+00 195 1.38 703.64 92 0 352.00 1190.98 1184 11 3.33E-03 **** 8.74E-01 1.41 0 595.77 39 96 1217.72 1213 9 3.75E-03 80.4 8.59E-01 59 1.78 0 609.15 44 2241.10 2234 13 6.00E-04 **** 5.52E-01 0 1120.79 7 45 1.40 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 12 9 Number of unidentified lines 3 Number of lines tentatively identified by NID 25.00% Nuclide Type : natural Wtd Mean Wtd Mean 2-Siqma Uncorrected Decay Corr Decay Corr pCi/L 2-Sigma Error %Error Flags Nuclide pCi/L Hlife Decay 106.40 4.085E+01 4.346E+01 1.00 4.085E+01 K-40 1.28E+09Y 9.228E+01 249.99 RA-226 1600.00Y 1.00 3.691E+01 3.691E+01 132.78 6.977E+00 9.264E+00 AC-228 5.75Y 1.00 6.961E+00 _____ 8.473E+01 Total Activity : 8.472E+01 8.473E+01 Grand Total Activity : 8.472E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA MDA error Activity Act error (pCi/L)Nuclide (pCi/L)4.541E+01 0.900 4.346E+01 0.000E+00 K-40 4.085E+01 0.318 RA-226 3.691E+01 9.228E+01 1.162E+020.000E+00 9.264E+00 1.532E+01 0.000E+00 0.456 AC-228 6.977E+00 ---- Non-Identified Nuclides ----Key-Line

MDA

Activity K.L. Act error

MDA error

Act/MDA

Nuclide	(pCi/L)	Ided		(pCi/L)		
DF7	-5 924E+00		2.508E+01	4.215E+01	0.000E+00	-0.141
DE-/ NN 04	-6 185E+03		5.543E+03	8.793E+03	0.000E+00	-0.703
NA - 24	-9.840E+00		2.607E+01	4.428E+01	0.000E+00	-0.222
CR-51	-1.659E+00		2.688E+00	4.543E+00	0.000E+00	-0.365
MIN = 54	2.125E+00		2.802E+00	4.745E+00	0.000E+00	0.448
CO = 57	2.1250100 2.196E+00		2.856E+00	5.181E+00	0.000E+00	0.424
CO-58	2.1900+00		5.278E+00	9.246E+00	0.000E+00	-0.004
FE-59	-3.JZIE 02 1 515F-01		2.629E+00	4.679E+00	0.000E+00	-0.032
CO-60	-1.515E-01		6.994E+00	1.172E+01	0.000E+00	0.764
ZN-65	$3.940\pm00$		3.937E+00	6.387E+00	0.000E+00	-0.527
SE-75	-3.300E+00		3.489E+00	6.668E+00	0.000E+00	1.798
SR-85	1.1996+01		3.400E+00	5.658E+00	0.000E+00	-0.412
Y-88	-Z.3ZOE+00		2.716E+00	4.428E+00	0.000E+00	-0.537
NB-94	-2.370E+00		2.930E+00	5.331E+00	0.000E+00	0.484
NB-95	2.500E+00		4 889E+00	8.001E+00	0.000E+00	-0.451
ZR-95	-3.6106+00		1.176E+02	2.017E+02	0.000E+00	-0.048
MO-99	-9.663E+00		3 0558+00	5.549E+00	0.000E+00	0.711
RU-103	3.944E+00		2.035100 2.042E+01	4.214E+01	0.000E+00	-0.085
RU-106	-3.596E+00		2.442D101	4.505E+00	0.000E+00	-0.022
AG-110m	-9.963E-02		$2.550 \pm 00$ $2.617 \pm 00$	6.222E+00	0.000E+00	0.046
SN-113	2.862E-UI		3.01/10+00	5 027E+00	0.000E+00	-1.362
SB-124	-6.846E+00		7.8705+00	1 345E+01	0.000E+00	0.587
SB-125	7.893E+00		$7.440 \pm 00$	6 260E+01	0.000E+00	0.056
TE-129M	3.4978+00		5.0000401	8 993E+00	0.000E+00	0.564
I-131	5.075E+00		5.024 <u>6</u> +00	6 903E+00	0.000E+00	0.383
BA-133	2.647E+00		4.5705+00	5 401E+00	0.000E+00	0.403
CS-134	2.176E+00	)	4.102E+00	6 409E+00	0.000E+00	-0.168
CS-136	-1.078E+00	)	3.802E+00	4 921E+00	0.000E+00	-0.275
CS-137	-1.354E+00	)	2.922E+00	4 884E+00	0.000E+00	0.229
CE-139	1.121E+00	)	2.838E+00	2.004E+01	0.000E+00	0.246
BA-140	5.901E+00	)		7.098E+00	0.000E+00	0.023
LA-140	1.633E-01	L	3.953E+00	9 922E+00	0.000E+00	-0.097
CE-141	-8.576E-01	L	6.054E+00	2 610E+01	0.000E+00	0.298
CE-144	1.074E+01	L	2.512E+01	1 4458.01	0.000E+00	-0.108
EU-152	-1.560E+00	)	9.979E+00		0.000E+00	0.176
EU-154	1.722E+00	C	5.865E+00	9.795E+00	0.000E+00	-0.091
TH-228	-8.231E-01	1	5.356E+00	7.0305+00 1 0005,01	0.000E+00	0.382
TH-232	6.961E+00	+ C	9.243E+00	1.023E+V1 2.611E+01	0.000E+00	0.372
U-235	1.345E+01	1	2.405E+01	3.611E+UI	0.00000,000	0.153
U-238	8.534E+03	1	3.074E+02	5.505E+VZ	0.00000000	-1.161
AM-241	-2.864E+0	1	1.535E+01	乙,467匹+01	0.0001-00	

### L28671 77 of 123

A 231,28671	-5	.05/18/2006	13:15,05/11/2	2006 15:00,	3.474E+00,WG	L28671-5	BR
B 231,28671	-5	.LIBD	,06/	24/2005 07:59	9,2335L090704		
C K = 40	YES.	4.085E+01,	4.346E+01,	4.541E+01,,	0.900		
C R = 226	YES.	3.691E+01,	9.228E+01,	1.162E+02,,	0.318		
C, RA 220	VES	6 977E+00,	9.264E+00,	1.532E+01,,	0.456		
$C_{PF_7}$	NO	-5.924E+00.	2.508E+01,	4.215E+01,,	-0.141		
C, BE = 7	NO ,	-6.185E+03.	5.543E+03,	8.793E+03,,	-0.703		
$C, NA^{-24}$	NO ,	-9.840E+00	2.607E+01,	4.428E+01,,	-0.222		
C, CR-SI	NO	-1.659E+00.	2.688E+00,	4.543E+00,,	-0.365		
C, MN = 54	NO	2.125E+00	2.802E+00,	4.745E+00,,	0.448		
C, CO=57	NO	2.1250+007 2.196E+00	2.856E+00,	5.181E+00,,	0.424		
C, CO-50	, NO ,	-2.100100,	5.278E+00	9.246E+00,,	-0.004		
C, FE-59	, NO ,	-3.521002, 1.515 $F_01$	2.629E+00.	4.679E+00,	-0.032		
C, CO-60	, NO , NO ,	-1.515E-01, 0.046E+00	6.994E+00.	1.172E+01,,	0.764		
C, ZN-65	, NO ,	$3.940\pm00,$	3.937E+00	6.387E+00.	-0.527		
C, SE-75	, NO ,	$-3.300\pm00,$	3.489E+00	6.668E+00.	1.798		
C, SR-85	, NO ,	1.1995+01	3.400E+00	5.658E+00.	-0.412		
C, Y-88	, NO ,	-2.3200+00,	$2.716E \pm 0.0$	4 428E+00.	-0.537		
C,NB-94	, NO ,	-2.370E+00,	2.7100+00, 2.930E+00	5 331E+00.	0.484		
C,NB-95	, NO ,	2.500E+00	2.990E+00,	8 001E+00.	-0.451		
C, ZR-95	, NO ,	-3.610E+00,	4.0055+00, 1.176F+02	2.017E+02	-0.048		
C,MO-99	,NO ,	-9.663E+00,	1.1700+02	5.549E+00	0.711		
C,RU-103	,NO ,	3.944E+00,	3.055E+00,	$1 214E \pm 01$	-0.085		
C,RU-106	,NO ,	-3.596E+00,	2.442E+01	4.505F+00	-0.022		
C,AG-110m	,NO,	-9.963E-02,	2.596E+00,	4.303E+00,,	0.046		
C,SN-113	,NO,	2.862E-UI,	3.61/E+00,	5.222E+00,,	-1 362		
C,SB-124	,NO,	-6.846E+00,	7.870E+00,	3.0270+00,, 1 $245E+01$	0 587		
C,SB-125	,NO,	7.893E+00,	7.440E+00,	1.3450+01,	0.056		
C,TE-129M	,NO,	3.497E+00,	3.660E+01,	0.2000+01,	0.564		
C,I-131	,NO,	5.075E+00,	5.024E+00,	6.993E+00,,	0.383		
C,BA-133	,NO,	2.64/E+00,	4.570E+00,	$6.903 \pm 00,$	0.203		
C,CS-134	,NO,	2.176E+00,	4.182E+00,	5.4010+00,,	-0 168		
C,CS-136	,NO,	-1.078E+00,	3.802E+00,	$4 \ 921 E \pm 00,$	-0.275		
C,CS-137	,NO,	-1.354E+00,	2.922E+00,	4.9210+00,,	0.279		
C,CE-139	,NO,	1.121E+00,	2.838E+00,	4.0040+00,,	0.246		
C,BA-140	,NO,	5.901E+00,	1.343E+01,	2.4046+01,,	0.023		
C,LA-140	,NO,	1.633E-01,	3.953E+00,	7.090E+00,,	-0.025		
C,CE-141	,NO,	-8.576E-01,	6.054E+00,	0.022E+00,,	0.298		
C,CE-144	,NO,	1.074E+01,	2.512E+01,	3.61UE+U1,,	0.200		
C,EU-152	,NO,	-1.560E+00,	9.979E+00,	1.4456+01,	0.176		
C,EU-154	,NO ,	1.722E+00,	5.865E+UU,	9.195E+00,	01		
C,TH-228	,NO,	-8.231E-01,	5.356E+00,	ソ・U36世+UU,, 1 002世・01	, -0.091 , -0.091		
C,TH-232	,NO,	6.961E+00,	9.243E+00,	1.023E+U1,,	, 0.302 A 279		
C,U-235	,NO,	1.345E+01,	2.405E+01,	3.611E+01,,	0.374		
C,U-238	,NO,	8.534E+01,	3.074E+02,	5.505E+UZ,	, 0.100		
C,AM-241	,NO,	-2.864E+01,	1.535E+01,	乙.4676+01,	, -1.101		

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Sec. Review: Analyst: LIMS:  ${
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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 18-MAY-2006 13:17:02.10
TBE07 P-10768B HpGe ******** Aquisition Date/Time: 18-MAY-2006 10:16:50.60

LIMS No., Customer Name, Client ID: WG L28671-6 BRAIDWOOD

Sample ID	:	07L28671	1-6		Smple Date	:	11-MAY-2006 15:15:00.
Sample Type	:	WG			Geometry	:	0735L090904
Quantity	:	3.309501	E+00 L		BKGFILE	:	07BG050506MT
Start Channel	:	40	Energy Tol :	1.30000	Real Time	:	0 03:00:02.16
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 03:00:00.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.25*	82	330	1.44	133.34	7.22E-01	7.55E-03	41.2	1.40E+00
2	1	91.86*	145	420	4.48	184.59	1.54E+00	1.34E-02	31.0	9.78E+00
3	1	139.85*	81	271	1.16	280.59	2.09E+00	7.46E-03	38.4	1.56E+00
4	1	198.39*	63	238	1.04	397.71	1.98E+00	5.79E-03	48.3	1.79E+00
5	2	241.78	62	179	1.38	484.52	1.80E+00	5.72E-03	39.1	1.92E+00
6	1	295.60*	79	249	2.21	592.18	1.60E+00	7.34E-03	44.0	3.07E+00
7	1	351.90*	139	136	1.61	704.82	1.43E+00	1.28E-02	19.5	9.01E-01
8	1	500.78	52	79	4.90	1002.63	1.13E+00	4.80E-03	39.6	3.48E+00
9	1	595.86	49	70	1.43	1192.82	9.96E-01	4.52E-03	32.7	2.12E+00
10	1	609.02*	103	74	1.73	1219.13	9.81E-01	9.51E-03	21.7	9.13E-01
11	1	1120.33*	21	22	1.82	2241.69	6.26E-01	1.90E-03	51.1	5.73E-01
12	1	1461.11*	31	13	2.12	2923.05	5.15E-01	2.84E-03	48.0	2.32E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natural						
					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K-40	1460.81	31	10.67*	5.150E-01	4.217E+01	4.217E+01	95.91

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	Page : 2
Summary of Nuclide Activity Sample ID : 07L28671-6	Acquisition date : 18-MAY-2006 10:16:50
Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified	12 10 1 by NID 2 16.67%
Nuclide Type : natural	Decay Corr Decay Corr 2-Sigma
Uncorrected Nuclide Hlife Decay pCi/L K-40 1.28E+09Y 1.00 4.217E+01	pCi/L 2-Sigma Error %Error Flags 4.217E+01 4.044E+01 95.91
Total Activity : 4.217E+01	4.217E+01
Grand Total Activity : 4.217E+01	4.217E+01
Flags: "K" = Keyline not found "E" = Manually edited	"M" = Manually accepted "A" = Nuclide specific abn. limit

L28671 80 of 123 Unidentified Energy Lines Paqe : 3 Acquisition date : 18-MAY-2006 10:16:50 Sample ID : 07L28671-6 Channel Left Pw Cts/Sec %Err %Eff Ιt Energy Area Bkqnd FWHM Flags 1 66.25 133.34 8 7.55E-03 82.5 7.22E-01 82 330 1.44 130 145 184.59 182 13 1.34E-02 62.1 1.54E+001 91.86 420 4.48 8 7.46E-03 76.8 2.09E+00 1 139.85 81 271 1.16 280.59 277 397.71 9 5.79E-03 96.7 1.98E+00 1 198.39 63 238 1.04 394 2 241.78 62 179 1.38 484.52 472 18 5.72E-03 78.3 1.80E+00 Т 1 295.60 79 249 2.21 592.18 587 13 7.34E-03 88.0 1.60E+00 351.90 139 136 704.82 699 11 1.28E-02 39.0 1.43E+00 1 1.61 500.78 52 79 4.90 1002.63 996 14 4.80E-03 79.1 1.13E+001 70 595.86 8 4.52E-03 65.3 9.96E-01 1 49 1.43 1192.82 1189 1 609.02 103 74 1.73 1219.13 1212 13 9.51E-03 43.3 9.81E-01 1 1120.33 21 22 1.82 2241.69 2238 8 1.90E-03 **** 6.26E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 12 Number of unidentified lines 10 Number of lines tentatively identified by NID 2 16.67% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma pCi/L pCi/L Nuclide Hlife 2-Sigma Error %Error Flags Decay K-40 4.044E+01 95.91 1.28E+09Y 1.00 4.217E+01 4.217E+01 Total Activity : 4.217E+01 4.217E+01 Grand Total Activity : 4.217E+01 4.217E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA Activity Act error MDA MDA error Nuclide (pCi/L)(pCi/L)K-40 4.217E+01 4.044E+01 4.601E+01 0.000E+00 0.916 ---- Non-Identified Nuclides ----Key-Line Activity K.L. Act error MDA MDA error Act/MDA Ided Nuclide (pCi/L) (pCi/L)

#### L28671 81 of 123

					0 0 9 1
~ ~ ~	4 043E+00	2.580E+01	4.324E+01	0.000E+00	0.094
BE-7	4.045 <u>0</u> +00	6.057E+03	9.148E+03	0.000E+00	-0.505
NA-24	-5.529E+05	2.963E+01	4.601E+01	0.000E+00	-0.570
CR-51	-2.651E+01	2.893E+00	4.669E+00	0.000E+00	-0.261
MN-54	-1.221E+00	2.533E+00	4.291E+00	0.000E+00	0.200
CO-57	8.829E-UI	3 150E+00	4.780E+00	0.000E+00	-0.627
CO-58	-2.995E+00	6 218E+00	1.115E+01	0.000E+00	0.673
FE-59	7.50/E+00	3 235E+00	5.361E+00	0.000E+00	0.017
CO-60	9.01/E-02	7.469E+00	1.174E+01	0.000E+00	0.779
ZN-65	9.150E+00	7.4000+00	6.203E+00	0.000E+00	-0.499
SE-75	-3.096E+00	3.9010100	7.479E+00	0.000E+00	2.901
SR-85	2.170E+01	$3.787 \pm 00$	5.655E+00	0.000E+00	-0.020
Y-88	-1.157E-01	3.4020+00	4.076E+00	0.000E+00	-0.825
NB-94	-3.364E+00	2.0940+00	4.869E+00	0.000E+00	0.209
NB-95	1.016E+00	2.909E+00	8.746E+00	0.000E+00	-0.051
ZR-95	-4.437E-01	5.574E+00 1 020E+02	2.060E+02	0.000E+00	0.132
MO-99	2.709E+01	1.239E+02	5.240E+00	0.000E+00	0.498
RU-103	2.608E+00	3.5210+00	4.556E+01	0.000E+00	0.142
RU-106	6.448E+00	2.7675701	4 543E+00	0.000E+00	0.228
AG-110m	1.037E+00	2.675E+00	6 232E+00	0.000E+00	0.215
SN-113	1.337E+00	3.7200+00	5 179E+00	0.000E+00	0.845
SB-124	4.379E+00	6.124E+00	1.329E+01	0.000E+00	0.099
SB-125	1.320E+00	8.084E+00	6 359E+01	0.000E+00	0.400
TE-129M	2.542E+01	3.794E+01	8.274E+00	0.000E+00	-0.357
I-131	-2.950E+00	5.141E+00	6.844E+00	0.000E+00	0.779
BA-133	5.329E+00	4.5110+00	5.752E+00	0.000E+00	0.635
CS-134	3.651E+00	4.971E+00	6.715E+00	0.000E+00	0.237
CS-136	1.592E+00	4.022E+00	4 806E+00	0.000E+00	-0.284
CS-137	-1.366E+00	2.986E+00	4.386E+00	0.000E+00	0.148
CE-139	6.500E-01	2.653E+00	2.341E+01	0.000E+00	0.105
BA-140	2.457E+00		7.690E+00	0.000E+00	-0.245
LA-140	-1.885E+00	4.834E+00	8 286E+00	0.000E+00	0.363
CE-141	3.006E+00	5.673E+00	3 294E+01	0.000E+00	0.101
CE-144	3.324E+00	2.192E+01	1.366E+01	0.000E+00	-0.869
EU-152	-1.188E+01	1.045E+01	8 919E+00	0.000E+00	0.366
EU-154	3.262E+00	5.221E+00	1 149E+02	0.000E+00	-0.274
RA-226	-3.146E+01	7.036E+01	1.893E+01	0.000E+00	-0.040
AC-228	-7.596E-01	1.112E+01	9.527E+00	0.000E+00	0.757
TH-228	7.214E+00	6.068E+00	9.5270+00 1 889E+01	0.000E+00	-0.040
TH-232	-7.578E-01	1.1106+01	2 229E+01	0.000E+00	-0.196
U-235	-6.341E+00	2.29/6+01	5.22JU-01 5.471E+02	0.000E+00	0.083
U-238	4.559E+01	3.3098+02	3.4716E+01	0.000E+00	-0.570
AM-241	-2.119E+01	2.358E+01	J. / 101 TOT		

A,07L28671	-6	,05/18/2006	13:17,05/11/	2006 15:15,	3.309E+00,WG	L28671-6	BR
B,07L28671	6	,LIBD	,06	/23/2005 07:20	5,0/35L090904		
C,K-40	,YES,	4.217E+01,	4.044E+01,	4.601E+01,,	0.916		
C,BE-7	,NO,	4.043E+00,	2.580E+01,	4.324E+01,,	0.094		
C,NA-24	,NO,	-5.329E+03,	6.057E+03,	9.148E+03,,	-0.583		
C,CR-51	,NO,	-2.651E+01,	2.963E+01,	4.601E+01,,	-0.576		
C,MN-54	,NO,	-1.221E+00,	2.893E+00,	4.669E+00,,	-0.261		
C,CO-57	,NO,	8.829E-01,	2.533E+00,	4.291E+00,,	0.206		
C,CO-58	,NO,	-2.995E+00,	3.150E+00,	4.780E+00,,	-0.627		
C,FE-59	,NO,	7.507E+00,	6.218E+00,	1.115E+01,,	0.673		
C, CO-60	,NO,	9.017E-02,	3.235E+00,	5.361E+00,,	0.017		
C,ZN-65	, NO ,	9.150E+00,	7.469E+00,	1.174E+01,,	0.779		
C.SE-75	NO ,	-3.096E+00,	3.901E+00,	6.203E+00,,	-0.499		
C.SR-85	.NO .	2.170E+01,	3.767E+00,	7.479E+00,,	2.901		
$C \cdot Y - 88$	NO .	-1.157E-01.	3.482E+00,	5.655E+00,,	-0.020		
C. NB-94	NO .	-3.364E+00.	2.694E+00.	4.076E+00,,	-0.825		
C NB - 95	NO	1 016E+00.	2.909E+00.	4.869E+00.	0.209		
C $ZR = 95$	NO /	-4.437E-01	5.374E+00.	8.746E+00.	-0.051		
C MO-99	NO	2.709E+01	1 239E+02	2.060E+02.	0.132		
$C_{\rm PII} = 103$	, NO , NO	2.7000+01, 2.608F+00	3.521E+00	5.240E+00	0 498		
C, RU=103	, NO , NO	$2.000 \pm 00,$	$2.767E\pm01$	4 556E+01	0 142		
C, RO=100	, NO , NO	$1 037 E \pm 00,$	2.707070101, 2.675E+00	4.530101,	0.228		
$C, AG^{-110m}$	, NO	$1 227 \overline{E} \cdot 00,$	2.075E+00, 3.728E+00	£ 232E+00	0.215		
C, SN-113	, NO , NO	1.337E+00,	$5.720 \pm 00$	$5.179E \pm 00,$	0.215		
C, SB-124	, NO ,	4.379E+00,	0.124E+00,	$1 220 \overline{E} \cdot 01$	0.040		
C, SB-125	, NO ,	1.3200+00,	0.004E+00,	1.329E+01,	0.099		
C, 1E-129M	, NO ,	2.542E+01,	5.794E+01,	0.339E+01,	0.400		
C, 1 - 131	,NO ,	$-2.950\pm+00,$	5.141E+00,	0.2/4E+00,,	-0.337		
C, BA-133	, NO ,	5.329E+00,	4.511E+00,	0.044E+00,,	0.775		
C, CS-134	,NO,	3.651E+00,	4.971E+00,	5.752E+00,,	0.035		
C,CS-136	,NO ,	1.592E+00,	4.022E+00,	6./15E+00,,	0.237		
C, CS-137	,NO,	-1.366E+00,	2.986E+00,	4.806E+00,,	-0.284		
C,CE-139	,NO,	6.500E-01,	2.653E+00,	4.386E+00,,	0.148		
C,BA-140	,NO,	2.457E+00,	1.408E+01,	2.341E+01,,	0.105		
C,LA-140	,NO,	-1.885E+00,	4.834E+00,	7.690E+00,,	-0.245		
C,CE-141	,NO,	3.006E+00,	5.673E+00,	8.286E+00,,	0.363		
C,CE-144	,NO,	3.324E+00,	2.192E+01,	3.294E+01,,	0.101		
C,EU-152	,NO,	-1.188E+01,	1.045E+01,	1.366E+01,,	-0.869		
C,EU-154	,NO,	3.262E+00,	5.221E+00,	8.919E+00,,	0.366		
C,RA-226	,NO,	-3.146E+01,	7.036E+01,	1.149E+02,,	-0.274		
C,AC-228	,NO,	-7.596E-01,	1.112E+01,	1.893E+01,,	-0.040		
C,TH-228	,NO,	7.214E+00,	6.068E+00,	9.527E+00,,	0.757		
C,TH-232	,NO,	-7.578E-01,	1.110E+01,	1.889E+01,,	-0.040		
C,U-235	,NO,	-6.341E+00,	2.297E+01,	3.229E+01,,	-0.196		
C,U-238	,NO,	4.559E+01,	3.309E+02,	5.471E+02,,	0.083		
C,AM-241	,NO,	-2.119E+01,	2.358E+01,	3.716E+01,,	-0.570		

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-MAY-2006 16:36:53.72 TBE04 P-40312B HpGe ******** Aquisition Date/Time: 19-MAY-2006 13:02:50.66 --- ---

LIMS No., Customer Name, Client ID: L28671-7 WG BRAIDWOOD

Sample ID	:	04L2867	1-7		Smple Date	:	11-MAY-2006 14:40:00.		
Sample Type	:	WG			Geometry	:	043L082004		
Quantity	:	2.822901	E+00 L		BKGFILE	:	04BG050506MT		
Start Channel	:	90	Energy Tol :	1.70000	Real Time	:	0 03:33:56.05		
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 03:33:53.97		
MDA Constant	:	0.00	Library Used:	LIBD					

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66 42*	81	223	1 09	133 40	6 67F-01	6 29F_03	11 Q	6 12F-01
2	1	140.15*	67	311	1.55	280.88	2.04E+00	5.20E-03	50.7	2.23E+00
3	1	198.47*	66	182	1.13	397.54	1.86E+00	5.16E-03	37.3	9.02E-01
4	1	352.44*	23	126	1.97	705.50	1.28E+00	1.76E-031	.06.3	1.78E+00
5	1	596.19	82	66	2.42	1192.99	8.63E-01	6.35E-03	23.7	1.70E+00
6	1	609.75*	22	70	1.93	1220.10	8.48E-01	1.71E-03	80.2	8.40E-01
7	1	1174.29*	17	19	2.16	2348.98	5.08E-01	1.36E-03	61.1	2.71E+00
8	1	1727.80	37	12	7.80	3455.53	3.82E-01	2.84E-03	20.9	1.19E+00
9	1	1765.50*	31	8	3.14	3530.89	3.77E-01	2.38E-03	31.4	3.41E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: activation

					Uncorrected	d Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
CO-60	1173.22	17	100.00	5.081E-01	2.566E+00	2.573E+00	122.16
	1332.49		100.00*	4.604E-01	L:	ine Not Found	

Flag: "*" = Keyline

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Summary of Nuclide Activity Page : 2 Acquisition date : 19-MAY-2006 13:02:50 Sample ID : 04L28671-7 9 Total number of lines in spectrum Number of unidentified lines 8 Number of lines tentatively identified by NID 1 11.11% Nuclide Type : activation Uncorrected Decay Corr Decay Corr 2-Sigma Nuclide pCi/L pCi/L 2-Sigma Error %Error Flags Hlife Decay 2.566E+00 2.573E+00 3.143E+00 122.16 K CO-60 5.27Y 1.00 ______ _____ Total Activity : 2.566E+00 2.573E+00 Grand Total Activity : 2.566E+00 2.573E+00 "M" = Manually accepted Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

Unidentifie Sample ID	ed Energy L. : 04L28671-	ines 7		Acquisi	tion date	: 19-MAY-	Page -2006 13	: 3 :02:50
It Energy	y Area	Bkgnd	FWHM Chan	nel Left	Pw Cts/Se	ec %Err	%Eff	Flags
1 66.42 1 140.19 1 198.47 1 352.44 1 596.19 1 609.79 1 1727.80 1 1765.50	2       81         5       67         7       66         4       23         9       82         5       22         0       37         0       31	333 311 182 126 66 70 12 8	1.09 133 1.55 280 1.13 397 1.97 705 2.42 1192 1.93 1220 7.80 3455 3.14 3530	.42 130 .88 277 .54 394 .50 700 .99 1186 .10 1215 .53 3449 .89 3525	8 6.29E-( 9 5.20E-( 7 5.16E-( 11 1.76E-( 13 6.35E-( 10 1.71E-( 12 2.84E-( 16 2.38E-(	03 83.8 03 **** 03 74.7 03 **** 03 47.5 03 **** 03 41.7 03 62.7	6.67E-0 2.04E+0 1.86E+0 1.28E+0 8.63E-0 8.48E-0 3.82E-0 3.77E-0	1 0 0 1 1 1 1
Flags: "T"	= Tentativ	ely assc	ociated					
Summary of	Nuclide Ac	tivity						
Total num Number of Number of	per of line unidentifi lines tent	s in spe ed lines atively	ctrum identified	by NID	9 8 1	11.11%		
Nuclide Ty	pe : activa	tion W+	d Moon	Wtd Moo	n			
Nuclide CO-60 To	Hlife D 5.27Y otal Activi	Unc ecay 1.00 2.  ty : 2.	corrected pCi/L 566E+00 566E+00	Decay Co pCi/L 2.573E+ 2.573E+	rr Decay 2-Sigm 00 3.14  00	Corr 2 a Error 3E+00 2	2-Sigma %Error 122.16	Flags
Grand To	otal Activi	ty : 2.	566E+00	2.573E+	00			
Flags: "K" "E"	= Keyline = Manually	not four edited	ıd	"M" = Ma "A" = Nu	nually acc clide spec	epted ific abn	. limit	
Interferen	ce Report							
No interfe:	rence corre	ction pe	erformed					
Combined A	ctivity-MDA	Report						
Ident	ified Nucli	des						
Nuclide	Activit (pCi/L	У }	Act error	(	MDA pCi/L)	MDA e:	rror	Act/MDA
CO-60	2.573E+	00	3.143E+00	6.	029E+00	0.000	E+00	0.427
Non-I	dentified N	uclides						
Nuclide	Key-Lin Activit (pCi/L	e y K.L. ) Ided	Act error	. (	MDA pCi/L)	MDA e:	rror	Act/MDA
BE-7	1.075E+	01	2.778E+01	4.	641E+01	0.000	E+00	0.232
NA-24 K-40	9.519E- 2.474E+	03	⊥.∠⊥3E-02 4.160E+01	: На . 8.	11-L11е to 115E+01	o snort 0.0001	E+00	0.305

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CR-51	-1.405E+01	3.139E+01	5.001E+01	0.000E+00	-0.281
MN-54	-4.179E-01	2.959E+00	4.842E+00	0.000E+00	-0.086
CO-57	-9.244E-02	2.631E+00	4.361E+00	0.000E+00	-0.021
CO-58	-1.377E+00	3.117E+00	4.997E+00	0.000E+00	-0.276
FE-59	1.104E+00	6.481E+00	1.088E+01	0.000E+00	0.102
ZN-65	-2.222E+00	6.519E+00	1.046E+01	0.000E+00	-0.212
SE-75	6.031E-01	3.996E+00	6.625E+00	0.000E+00	0.091
SR-85	2.060E+01	3.998E+00	7.845E+00	0.000E+00	2.626
Y-88	8.577E-01	3.137E+00	5.359E+00	0.000E+00	0.160
NB-94	1.695E-01	2.961E+00	4.857E+00	0.000E+00	0.035
NB-95	3.003E+00	3.181E+00	5.519E+00	0.000E+00	0.544
ZR-95	-2.802E+00	5.528E+00	8.616E+00	0.000E+00	-0.325
MO-99	6.092E+01	1.747E+02	2.912E+02	0.000E+00	0.209
RU-103	1.787E+00	3.534E+00	5.922E+00	0.000E+00	0.302
RU-106	-9.297E+00	2.951E+01	4.772E+01	0.000E+00	-0.195
AG-110m	-2.334E+00	3.150E+00	4.921E+00	0.000E+00	-0.474
SN-113	1.373E+00	3.833E+00	6.472E+00	0.000E+00	0.212
SB-124	-4.715E+00	8.194E+00	5.304E+00	0.000E+00	-0.889
SB-125	-1.943E+00	8.223E+00	1.337E+01	0.000E+00	-0.145
TE-129M	4.168E+00	3.903E+01	6.436E+01	0.000E+00	0.065
I-131	2.538E+00	5.793E+00	9.855E+00	0.000E+00	0.258
BA-133	1.141E+00	4.644E+00	6.719E+00	0.000E+00	0.170
CS-134	8.427E-01	5.752E+00	5.240E+00	0.000E+00	0.161
CS-136	1.484E+00	4.416E+00	7.497E+00	0.000E+00	0.198
CS-137	2.564E+00	3.331E+00	5.742E+00	0.000E+00	0.447
CE-139	7.751E-01	2.808E+00	4.625E+00	0.000E+00	0.168
BA-140	6.413E+00	1.604E+01	2.665E+01	0.000E+00	0.241
LA-140	4.798E-01	5.547E+00	9.163E+00	0.000E+00	0.052
CE-141	-1.330E+00	6.076E+00	8.478E+00	0.000E+00	-0.157
CE-144	4.482E+00	2.184E+01	3.260E+01	0.000E+00	0.137
EU-152	-3.643E+00	1.087E+01	1.515E+01	0.000E+00	-0.240
EU-154	3.941E+00	5.396E+00	9.165E+00	0.000E+00	0.430
RA-226	8.524E+00	7.017E+01	1.156E+02	0.000E+00	0.074
AC-228	-3.205E+00	1.206E+01	2.025E+01	0.000E+00	-0.158
TH-228	6.170E+00	5.658E+00	1.001E+01	0.000E+00	0.616
TH-232	-3.197E+00	1.203E+01	2.020E+01	0.000E+00	-0.158
U-235	-1.122E+00	2.372E+01	3.342E+01	0.000E+00	-0.034
U-238	4.504E+02	3.497E+02	6.279E+02	0.000E+00	0.717
AM-241	-1.002E+01	2.876E+01	4.533E+01	0.000E+00	-0.221

A.04L28671	L-7	,05/19/2006	16:36,05/11/2	2006 14:40,	2.823E+00,L	28671-7	WG BR	
B.04L28671	1-7	,LIBD	,03/	14/2005 09:04	,043L082004			
C, CO = 60	.YES.	, 2.573E+00,	3.143E+00,	6.029E+00,,	0.427			
C. BE-7	NO .	1.075E+01,	2.778E+01,	4.641E+01,,	0.232			
C K - 40	NO .	2.474E+01.	4.160E+01,	8.115E+01,,	0.305			
C CR = 51	NO	-1.405E+01.	3.139E+01,	5.001E+01,,	-0.281			
C MN - 54	NO	-4.179E-01.	2.959E+00.	4.842E+00,,	-0.086			
C C - 57	NO	-9.244E-02.	2.631E+00,	4.361E+00,,	-0.021			
$C_{1}C_{2}C_{2}C_{2}C_{2}C_{2}C_{2}C_{2}C_{2$	NO ,	-1 377E+00.	3.117E+00,	4.997E+00,,	-0.276			
C FE-59	NO ,	1 104E+00.	6.481E+00,	1.088E+01,,	0.102			
C ZN-65	NO ,	-2 222E+00.	6.519E+00,	1.046E+01,,	-0.212			
$C, \Sigma R = 75$	, NO , NO	6.031E-01.	3,996E+00,	6.625E+00,,	0.091			
C, DE 75	NO ,	2.060E+01	3.998E+00.	7.845E+00,,	2.626			
C, SIC=05	NO	8.577E-01	3.137E+00.	5.359E+00,,	0.160			
C, 1 = 00	NO	1.695E-01	2.961E+00.	4.857E+00,,	0.035			
C, ND - 94	NO	3 003E+00	3.181E+00.	5.519E+00,,	0.544			
C, NB = 95	NO	-2.802E+00	5.528E+00.	8.616E+00.	-0.325			
$C, \Delta R = 95$	, NO , NO	-2.002E+00,	1.747E+02	2.912E+02.	0.209			
C, MO = 99	, NO , NO	1 787F±00	3,534E+00	5,922E+00.	0.302			
C, RU=103	, NO ,	1.7075+00,	$2.954 \pm 00,$ $2.951 \pm 01$	4.772E+01	-0.195			
C, RU = 106	, NO , NO	-9.29/E+00,	2.JJIE+01, 3 150F±00	4.921E+00.	-0.474			
C, AG-110m	, NO ,	-2.3346+00,	3 833E+00	4.9210100,, 6.472E+00	0 212			
C, SN-113	, NO ,	1.373E+00,	9.19/E+00,	5.304E+00	-0.889			
C,SB-124	, NO ,	-4.715E+00,	0.194E+00,	3.3040+00,, 1 337 $E+01$	-0 145			
C,SB-125	, NO ,	-1.943E+00,	0.223E+00	1.3373+01,	0.065			
C, TE-129M	, NO ,	4.100E+00,	5.903E+01	$0.450\pm01,$	0.009			
C, I - I 3 I	, NO ,	$2.538 \pm +00,$	5.793E+00,	5.0555+00,,	0.230			
C, BA-133	, NO ,	1.141E+00,	4.644E+00,	5.7190+00,,	0 161			
C, CS-134	,NO ,	8.42/E-UL,	5.752E+00,	3.2400+00,,	0.101			
C,CS-136	,NO,	1.484E+00,	4.416E+00,	7.497E+00,,	0.117			
C,CS-137	,NO,	2.564E+00,	3.331E+00,	5.742E+00,,	0.447			
C,CE-139	,NO,	7.751E-01,	2.808E+00,	4.625E+00,,	0.100			
C,BA-140	,NO,	6.413E+00,	1.604E+01,	2.005E+01,,	0.241			
C,LA-140	,NO,	4.798E-01,	5.547E+00,	9.1636+00,,	0.052			
C,CE-141	,NO,	-1.330E+00,	6.076E+00,	8.4/8E+00,,	-0.137			
C,CE-144	,NO,	4.482E+00,	2.184E+01,	3.260E+01,,	0.137			
C,EU-152	,NO,	-3.643E+00,	1.087E+01,	1.5158+01,,	-0.240			
C,EU-154	,NO,	3.941E+00,	5.396E+00,	9.165E+00,,	0.430			
C,RA-226	,NO,	8.524E+00,	7.017E+01,	1.156E+02,,	0.074			
C,AC-228	,NO,	-3.205E+00,	1.206E+01,	2.025E+01,,	-0.158			
C,TH-228	,NO,	6.170E+00,	5.658E+00,	1.001E+01,,	0.616			
C,TH-232	,NO,	-3.197E+00,	1.203E+01,	2.020E+01,,	-0.158			
C,U-235	,NO,	-1.122E+00,	2.372E+01,	3.342E+01,,	-0.034			
C,U-238	,NO,	4.504E+02,	3.497E+02,	6.279E+02,,	0.717			
C,AM-241	,NO,	-1.002E+01,	2.876E+01,	4.533E+01,,	-0.221			

Sec.	Re	view: Ana	alyst:	LIMS:	$\checkmark$					
VAX, TBE	VMS 13 P	Teledyne 1 -10727B Hp0	======== Brown Eng Ge *****		atory uisit	Gamma Re lon Date/	eport: 19-N 'Time: 19-N	1AY-2006 1 1AY-2006 (	L2:25: 08:36:	05.48
LIMS	5 No	., Custome:	r Name, C	lient I	D: WG	L28671-8	BRAIDWOOI	)		
Samp Samp Quar Star End MDA	ole ntit ct C Cha Con	ID : 1 Type : Wo y : 3 hannel : 2 nnel : 4 stant : 0	3L28671-8 G .24680E+0 5 En 090 Pk .00 Li	0 L ergy To Srch S brary U	l : 1 ens: 9 sed: 1	L.50000 5.00000 JIBD	Smple Date Geometry BKGFILE Real Time Live time	e: 11-MAY- : 133L082 : 13BG050 : 0 03:48 : 0 03:48	-2006 2404 0506MJ 3:05.0 3:00.8	14:15:00. 2 38
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	2	07 76+	20	256	1 10	174 45			07 0	4 905 01
2	1	140 12*	80	430	1 25	280 08	$2.27 \pm 00$	$5.84F_{-}03$	17 9	4.900-01
2	1	198 20*	118	330	1 27	396 16	2.275+00	3.04E-03	29 0	2.020+00 8.52F-01
4	1	238 81*	23	283	0 95	477 32	1.94E+00	2.41E - 03	97 9	9.26E - 01
5	1	295 30*	36	287	1 16	590 22	1.70E+00	2.41000	99 1	3 34E±00
6	1	351 81*	96	218	1 18	703 17	1.51E+00	7 04E - 03	32 5	1.25E+00
7	1	583 03*	32	122	1 92	1165 44	1.04E+00	2 33E-03	79 2	8 93E-01
8	1	609.28*	196	122	2.22	1217.91	1.01E+00	1.43E-02	15.6	2.01E+00
9	1	911.60*	8	107	1.99	1822.53	7.36E-01	5.66E-047	325.1	1.16E+00
10	1	1120.59*	52	33	2.98	2240.63	6.26E-01	3.83E-03	29.3	1.33E+00

501.322478.955.80E-011.73E-0362.11.25E+01262.213530.764.55E-011.52E-0367.78.33E-01

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Flag: "*" = Peak area was modified by background subtraction

24 21

Nuclide Line Activity Report

Nuclide Type: natural

11 1 1239.70* 12 1 1765.17*

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
AC-228	835.50		1.75	7.877E-01	Lir	ne Not Found	
	911.07	8	27.70*	7.358E-01	2.312E+00	2.318E+00	650.29
TH-228	238.63	33	44.60*	1.937E+00	2.326E+00	2.344E+00	195.81
	240.98		3.95	1.927E+00	Lir	ne Not Found	
TH-232	583.14	32	30.25	1.040E+00	6.157E+00	6.157E+00	158.33
	911.07	8	27.70*	7.358E-01	2.312E+00	2.312E+00	650.29
	969.11		16.60	7.014E-01	Lir	ne Not Found	

L28671 89 of 123

Page : 2 Summary of Nuclide Activity Acquisition date : 19-MAY-2006 08:36:52 Sample ID : 13L28671-8 Total number of lines in spectrum 12 Number of unidentified lines 9 Number of lines tentatively identified by NID 3 25.00% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr pCi/L 2-Sigma Error %Error Flags Nuclide Hlife Decay pCi/L 650.29 1.00 2.312E+00 2.318E+00 15.07E+00 AC-228 5.75Y 1.01 2.326E+00 4.589E+00 TH-228 1.91Y 2.344E+00 195.81 TH-232 1.41E+10Y 1.00 2.312E+00 2.312E+00 15.03E+00 650.29 _ _ _ _ _ _ _ _ _ _ -----6.973E+00 Total Activity : 6.949E+00 6.973E+00 Grand Total Activity : 6.949E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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3 Paqe : Unidentified Energy Lines Acquisition date : 19-MAY-2006 08:36:52 Sample ID : 13L28671-8 Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags Area Ιt Energy 174.45 165 13 2.83E-03 **** 1.59E+00 356 1.10 3 87.26 39 280.08 276 8 5.84E-03 95.8 140.12 198.20 2.27E+00 430 1.35 80 140.12 1 396.16 393 8 8.60E-03 58.1 2.13E+00 332 1.27 118 1 590.22 586 11 2.60E-03 **** 1.70E+00 36 287 1.16 295.30 1 703.17 697 10 7.04E-03 64.9 1.51E+00 218 1.18 96 351.81 1 122 2.22 1217.91 1210 16 1.43E-02 31.2 1.01E+00 609.28 196 1 33 2.98 2240.63 2235 13 3.83E-03 58.5 6.26E-01 1120.59 52 1 50 1.32 2478.95 2471 11 1.73E-03 **** 5.80E-01 24 1 1239.70 1765.17 21 26 2.21 3530.76 3520 16 1.52E-03 **** 4.55E-01 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 12 Total number of lines in spectrum 9 Number of unidentified lines Number of lines tentatively identified by NID 3 25.00% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma NuclideHlifeDecaypCi/LpCi/L2-Sigma Error%ErrorTH-2281.91Y1.012.326E+002.344E+004.589E+00195.81TH-2321.41E+10Y1.005.019E+005.019E+008.179E+00162.97 2-Sigma Error %Error Flags Nuclide _ _ _ _ _ _ _ _ _ _ _ 7.345E+00 7.363E+00 Total Activity : 7.363E+00 Grand Total Activity : 7.345E+00 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit Interference Report Interfered Interfering ______ Nuclide Line Line Nuclide TH-232 911.07 AC-228 911.07 Combined Activity-MDA Report ---- Identified Nuclides ----MDA error Act/MDA MDA Act error Activity (pCi/L) (pCi/L) Nuclide 0.339 0.000E+00 6.918E+00 4.589E+00 2.344E+00 TH-228 0.332 0.000E+00 1.512E+01 8.179E+00 TH-232 5.019E+00

---- Non-Identified Nuclides ----

Nuclide	Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	9.338E+00		2.439E+01	4.049E+01	0.000E+00	0.231
NA-24	-2.605E-03		8.858E-03	Half-Life to	oo short	
K-40	2.298E+01		3.809E+01	7.645E+01	0.000E+00	0.301
CR-51	-6.939E+00		2.589E+01	4.170E+01	0.000E+00	-0.166
MN-54	4.332E-01		2.519E+00	4.192E+00	0.000E+00	0.103
CO-57	-8.965E-01		2.360E+00	3.898E+00	0.000E+00	-0.230
CO-58	-3.185E-02		2.764E+00	4.560E+00	0.000E+00	-0.007
FE-59	-5.011E-01		5.801E+00	9.494E+00	0.000E+00	-0.053
CO-60	1.096E+00		2.698E+00	4.601E+00	0.000E+00	0.238
ZN-65	4.112E+00		7.231E+00	1.053E+01	0.000E+00	0.390
SE-75	2.036E-02		3.415E+00	5.634E+00	0.000E+00	0.004
SR-85	2.228E+01		3.434E+00	6.740E+00	0.000E+00	3.305
Y-88	-2.807E+00		2.960E+00	4.358E+00	0.000E+00	-0.644
NB-94	-6.889E-01		2.558E+00	4.102E+00	0.000E+00	-0.168
NB-95	6.647E-01		2.845E+00	4.778E+00	0.000E+00	0.139
ZR-95	3.056E+00		4.893E+00	8.401E+00	0.000E+00	0.364
MO-99	-2.810E+01		1.384E+02	2.278E+02	0.000E+00	-0.123
RU-103	1.065E+00		2.850E+00	4.719E+00	0.000E+00	0.226
RU-106	-1.426E+01		2.466E+01	3.870E+01	0.000E+00	-0.368
AG-110m	-1.561E+00		2.642E+00	4.186E+00	0.000E+00	-0.373
SN-113	-3.758E-01		3.281E+00	5.411E+00	0.000E+00	-0.069
SB-124	-3.351E+00		3.413E+00	4.422E+00	0.000E+00	-0.758
SB-125	-1.533E-01		7.060E+00	1.161E+01	0.000E+00	-0.013
TE-129M	4.400E+00		3.248E+01	5.350E+01	0.000E+00	0.082
I-131	3.432E+00		4.758E+00	8.152E+00	0.000E+00	0.421
BA-133	4.510E+00		3.998E+00	6.039E+00	0.000E+00	0.747
CS-134	3.064E+00		3.439E+00	5.062E+00	0.000E+00	0.605
CS-136	-2.678E-02		3.761E+00	6.201E+00	0.000E+00	-0.004
CS-137	2.291E+00		2.798E+00	4.780E+00	0.000E+00	0.479
CE-139	1.867E-01		2.410E+00	3.956E+00	0.000E+00	0.047
BA-140	1.228E+01		1.309E+01	2.276E+01	0.000E+00	0.539
LA-140	2.661E+00		4.613E+00	8.010E+00	0.000E+00	0.332
CE-141	3.816E+00	I	5.400E+00	7.880E+00	0.000E+00	0.484
CE-144	-1.010E+01		1.990E+01	2.903E+01	0.000E+00	-0.348
EU-152	-9.445E+0C	)	1.001E+01	1.300E+01	0.000E+00	-0.726
EU-154	-1.491E+0C		4.874E+00	8.062E+00	0.000E+00	-0.185
RA-226	-5.864E+01		6.715E+01	1.111E+02	0.000E+00	-0.528
AC-228	2.318E+00	)	1.507E+01	1.875E+01	0.000E+00	0.124
U-235	1.246E+01	_	2.137E+01	3.112E+01	0.000E+00	0.400
U-238	9.628E+01	-	3.110E+02	5.233E+02	0.000E+00	0.184
AM-241	-4.153E+01	-	2.094E+01	3.270E+01	0.000E+00	-1.270
and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec						

							T 0 0 C T 1 0	ЪЪ
A,13L28671	- 8		,05/19/2006	12:25,05/11/2	006 14:15,	3.247E+00,WG	T58911-8	BK
B,13L28671	- 8		,LIBD	,08/	05/2005 08:1	6,133L082404		
C,TH-228	,YES,		2.344E+00,	4.589E+00,	6.918E+00,,	0.339		
C, TH-232	,YES,		5.019E+00,	8.179E+00,	1.512E+01,,	0.332		
C,BE-7	,NO,		9.338E+00,	2.439E+01,	4.049E+01,,	0.231		
C,K-40	, NO		2.298E+01,	3.809E+01,	7.645E+01,,	0.301		
C,CR-51	, NO	,	-6.939E+00,	2.589E+01,	4.170E+01,,	-0.166		
C.MN-54	, NO	,	4.332E-01,	2.519E+00,	4.192E+00,,	0.103		
$C_{-}CO-57$	, NO		-8.965E-01,	2.360E+00,	3.898E+00,,	-0.230		
$C_{1}C_{2}-58$	. NO		-3.185E-02,	2.764E+00,	4.560E+00,,	-0.007		
C.FE-59	NO		-5.011E-01,	5.801E+00,	9.494E+00,,	-0.053		
C C C - 60	NO		1.096E+00,	2.698E+00,	4.601E+00,,	0.238		
C $ZN-65$	NO		4.112E+00,	7.231E+00,	1.053E+01,,	0.390		
C SE - 75	NO		2.036E-02.	3.415E+00,	5.634E+00,,	0.004		
C, SE - 85	NO		2.228E+01,	3.434E+00,	6.740E+00,,	3.305		
$C_{\rm V}$	NO	'	-2.807E+00	2.960E+00,	4.358E+00,,	-0.644		
C NB-94	, NO	,	-6.889E-01,	2.558E+00,	4.102E+00,,	-0.168		
C NB-95	NO	,	6 647E-01.	2.845E+00,	4.778E+00,,	0.139		
C, MB = 95	, NO	'	3.056E+00.	4.893E+00,	8.401E+00,	0.364		
$C, \Delta R = 99$		'	-2.810E+01	1.384E+02.	2.278E+02,	-0.123		
C, MO = 99	NO	'	1.065E+00.	2.850E+00.	4.719E+00,	0.226		
C, RU=106	$, \mathbb{NO}$	'	-1 426E+01.	2.466E+01,	3.870E+01,	-0.368		
C, RO=100	, NO	'	-1 561E+00	2.642E+00	4.186E+00,	-0.373		
C, AG=110		'	-3 758E-01	3.281E+00.	5.411E+00,	-0.069		
C, SN = 113		1	-3 $351E+00$	3.413E+00.	4.422E+00,	, -0.758		
C, SD = 124		'	-1.533E-01	7.060E+00.	1.161E+01,	, -0.013		
C, SB-125		'	$-1.000 \pm 00$	3.248E+01	5.350E+01,	, 0.082		
C, IE = IZ M		'	3 /32F+00,	4.758E+00	8.152E+00.	, 0.421		
C, I = I > I	, NO	'	3.4320+00, 4.5100+00	3 998E+00	6.039E+00.	0.747		
C, BA-133	, NO	'	4.5100+00,	3.439E+00	5.062E+00	0.605		
C, CS - 134	, NO	1	3.0040+00,	3.761E+00	6.201E+00	-0.004		
C, CS-136	, NO	'	-2.070E-02,	$2.798F_{-00}$	4.780E+00	0.479		
C, CS-137	, NO	'	2.2910+00,	2.100100, 2.1100+00	3.956E+00	0.047		
C, CE-139	, NO	'	1.00/E-01	2.4100+00, 1 200F+01	2.276E+01	0.539		
C, BA-140	, NO	'	1.220E+01,	1.3095+01,	2.2701701, 8 010E+00	0.332		
C,LA-140	, NO	'	2.661E+00,	4.0130+00,	7 880F+00	0 484		
C,CE-141	, NO	1	3.816E+00,	1.000E+00,	$2.903E\pm01$	-0 348		
C,CE-144	, NO	1	-1.010E+01,	1.990E+01,	$2.905 \pm 01$	-0.726		
C,EU-152	, NO	1	-9.445E+00,	1.001E+01,	1.300E+01,	-0 185		
C,EU-154	, NO	1	-1.491E+00,	4.8/40+00,	$1 111E_{1}02$	-0.528		
C,RA-226	, NO	'	-5.864E+UL,	0./10E+U1,	1 0750±01	, 0.520		
C,AC-228	, NO	1	2.3188+00,	1.50/E+01,	$\perp \cdot \circ / \Im \Box + \lor \bot_i$	, 0.124		
C,U-235	, NO	1	1.246E+01,	Z.IJ/E+UI,	3.1120+01	, 0.400		
C,U-238	, NO	1	9.628E+01,	3.110E+02,	5.233E+UZ,	, 0.104		
C,AM-241	, NO	,	-4.153E+01,	2.094E+01,	3.2/0E+01,	, -1.2/0		

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-MAY-2006 16:29:19.64 TBE13 P-10727B HpGe ******** Aquisition Date/Time: 19-MAY-2006 12:28:51.62

LIMS No., Customer Name, Client ID: L28671-9 WG BRAIDWOOD

13L28671-9	Smple Date: 11-MAY-2006 15:15:00
WG	Geometry : 1335L090904
2.97640E+00 L	BKGFILE : 13BG050506MT
25 Energy Tol : 1.50000	Real Time : 0 04:00:08.16
4090 Pk Srch Sens: 5.00000	Live time : 0 04:00:00.00
0.00 Library Used: LIBD	
	L3L28671-9 VG 2.97640E+00 L 25 Energy Tol : 1.50000 4090 Pk Srch Sens: 5.00000 0.00 Library Used: LIBD

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	Fit
1	1	139.98*	41	429	1.04	279.80	2.02E+00	2.86E-03 93.3	4.73E+00
2	1	198.23*	113	314	1.47	396.22	1.90E+00	7.84E-03 30.1	2.84E+00
3	1	238.62*	12	261	1.35	476.92	1.73E+00	8.25E-04265.9	2.41E+00
4	1	294.64*	19	193	1.55	588.90	1.52E+00	1.34E-03136.0	2.77E+00
5	1	351.69*	10	212	1.79	702.94	1.34E+00	7.10E-04302.0	1.51E+00
6	1	583.31*	5	59	0.91	1166.00	9.26E-01	3.30E-04329.9	1.38E+00
7	1	595.80	86	135	1.48	1190.97	9.11E-01	6.00E-03 29.1	9.72E-01
8	1	608.86*	34	117	1.62	1217.08	8.97E-01	2.34E-03 75.6	1.13E+00
9	1	911.11*	34	39	1.50	1821.55	6.64E-01	2.38E-03 50.3	1.63E+00
10	1	1461.25*	9	23	2.96	2922.34	4.69E-01	6.39E-04190.9	1.90E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

	* <b>T</b>				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K-40	1460.81	9	10.67*	4.687E-01	1.161E+01	1.161E+01	381.78
AC-228	835.50		1.75	7.084E-01	Liı	ne Not Found	
	911.07	34	27.70*	6.640E-01	1.173E+01	1.176E+01	100.56
TH-228	238.63	12	44.60*	1.733E+00	9.694E-01	9.771E-01	531.72
	240.98		3.95	1.723E+00	Li	ne Not Found	
TH-232	583.14	5	30.25	9.260E-01	1.069E+00	1.069E+00	659.82
	911.07	34	27.70*	6.640E-01	1.173E+01	1.173E+01	100.56
	969.11		16.60	6.342E-01	Lin	ne Not Found	

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Summary of Nuclide Activity Page : 2 Sample ID : 13L28671-9 Acquisition date : 19-MAY-2006 12:28:51

Total number of lines in spectrum10Number of unidentified lines6Number of lines tentatively identified by NID440.00%

Nuclide Type : natural

Nuclide K-40 AC-228 TH-228 TH-232	Hlife 1.28E+09Y 5.75Y 1.91Y 1.41E+10Y Total Activ	Decay 1.00 1.00 1.01 1.00 vity :	Uncorrected pCi/L 1.161E+01 1.173E+01 9.694E-01 1.173E+01  3.603E+01	Decay Corr pCi/L 1.161E+01 1.176E+01 9.771E-01 1.173E+01 	Decay Corr 2-Sigma Error 4.431E+01 1.183E+01 51.95E-01 1.179E+01	2-Sigma %Error 381.78 100.56 531.72 100.56	Flags
Gran	d Total Activ	vity :	3.603E+01	3.607E+01			
Flags:	"K" = Keylin "E" = Manual	e not ly edi	found ted	"M" = Manua "A" = Nucli	lly accepted de specific ab	n. limit	

3 Paqe : Unidentified Energy Lines Acquisition date : 19-MAY-2006 12:28:51 Sample ID : 13L28671-9 Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags Energy Area It 2.02E+00 279.80 276 8 2.86E-03 **** 429 1.04 139.98 41 198.23 113 314 1.47 396.22 393 8 7.84E-03 60.2 1.90E+00 1 1.52E+00 588.90 586 8 1.34E-03 **** 1 193 1.55 19 294.64 1 702.94 698 11 7.10E-04 **** 1.34E+00 212 1.79 1190.97 1185 12 6.00E-03 58.1 9.11E-01 351.69 10 1 135 1.48 595.80 608.86 86 117 1.62 1217.08 1211 13 2.34E-03 **** 1 8.97E-01 34 608.86 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 10 Total number of lines in spectrum 6 Number of unidentified lines Number of lines tentatively identified by NID 4 40.00% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pĊi/L Hlife Decay pCi/L 28E+09Y 1.00 1.161E+01 1 Nuclide 4.431E+01 381.78 1.161E+01 1.00 1.161E+01 K-40 1.28E+09Y 1.378E+01 128.93 51.95E-01 531.72 1.00 1.066E+01 1.069E+01 5.75Y AC-228 9.771E-01 1.91Y 1.01 9.694E-01 TH-228 659.82 1.41E+10Y 1.00 1.069E+00 1.069E+00 7.055E+00 TH-232 ______ -----2.434E+01 2.430E+01 Total Activity : Grand Total Activity : 2.430E+01 2.434E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report Interfered Interfering _____ Nuclide Line Nuclide Line TH-232 911.07 AC-228 911.07 Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Activity Act error (pCi/L) (pCi/L) Nuclide 0.244 0.000E+00 4.759E+01 4.431E+01 1.161E+01 0.567 K-40 0.000E+00 1.886E+01 1.378E+01 1.069E+01 AC-228 0.117 0.000E+00 8.338E+00 5.195E+00 9.771E-01 0.051 TH-228 0.000E+00 2.082E+01 7.055E+00 1.069E+00

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---- Non-Identified Nuclides ----

TH-232

Nuclide	Key-Line Activity K.L. (pCi/L) Ideo	Act error	MDA (pCi/L)	MDA error	Act/MDA
~~ 7		2 662E+01	4.346E+01	0.000E+00	0.005
BE-7	$2.213 \text{ H}^{-} \text{ O} \text{ I}$	1 078E - 02	Half-Life too	o short	
NA-24	-1.760E-02	2920E+01	4.434E+01	0.000E+00	-1.095
CR-51	-4.033E+01	3.051E+00	4.941E+00	0.000E+00	-0.172
MN-54	-8.402E-01	2.649E+00	4.330E+00	0.000E+00	-0.444
CO-57	-1.921E+00	3 219E+00	5.086E+00	0.000E+00	-0.462
CO-58	-2.340E+00	$5.245\pm00$	1.067E+01	0.000E+00	0.196
FE-59	2.094E+00	2.842E+00	4.814E+00	0.000E+00	0.172
CO-60	8.276E-01	6 883E+00	1.143E+01	0.000E+00	0.095
ZN-65	1.0848+00	3 949E+00	6.425E+00	0.000E+00	-0.247
SE-75	-1.589E+00	4 0268+00	7.721E+00	0.000E+00	2.912
SR-85	2.2486+01	4.0201100	5.440E+00	0.000E+00	-0.278
Y-88	-1.511E+00	3.470H+00 2 159F+00	5.202E+00	0.000E+00	0.135
NB-94	7.010E-01	3.137E+00	5.379E+00	0.000E+00	0.053
NB-95	2.825E-01	5.227E+00	9.360E+00	0.000E+00	-0.102
ZR-95	-9.539E-01	$5.009 \pm 00$	2.744E+02	0.000E+00	0.074
MO-99	2.033E+01	1.0305+02 2 /21F+00	5.800E+00	0.000E+00	0.535
RU-103	3.102E+00	3.4ZIE+00 2.963E+01	4.714E+01	0.000E+00	-0.405
RU-106	-1.9108+01	$2.903 \pm 01$ 2.974 F $\pm 0.0$	4.844E+00	0.000E+00	-0.056
AG-110m	-2.702E-01	2.9740+00 2.766 $E+00$	6 182E+00	0.000E+00	-0.134
SN-113	-8.293E-01	5.700E+00	5 303E+00	0.000E+00	0.387
SB-124	2.054E+00	8.763E+00	1 352E+01	0.000E+00	-0.410
SB-125	-5.541E+00	2.4010+00	6.634E+01	0.000E+00	0.218
TE-129M	1.4468+01	3.909E+01	9.211E+00	0.000E+00	0.004
I-131	3.511E-02	3.520E+00	6 416E+00	0.000E+00	0.338
BA-133	2.168E+00	4.3636+00	5.417E+00	0.000E+00	0.802
CS-134	4.343E+00	4.900E+00	7 461E+00	0.000E+00	0.404
CS-136	3.013E+00	4.343E+00	5.306E+00	0.000E+00	-0.012
CS-137	-6.457E-02	3.246E+00	4 594E+00	0.000E+00	0.228
CE-139	1.048E+00	2.//4E+00	2.749E+01	0.000E+00	0.299
BA-140	8.217E+00	1.6148+01	2.745 <u>0</u> +01	0.000E+00	0.044
LA-140	3.875E-01	5.3308+00	8.000E+00	0.000E+00	0.275
CE-141	2.477E+00	6.25/E+00	9.0220+00	0.000E+00	-0.047
CE-144	-1.616E+00	2.323E+U1	3.4476+01	0.000E+00	-0.603
EU-152	-8.908E+00	1.127E+01		$0.000 \pm 00$	-0.355
EU-154	-3.190E+00	5.471E+00	8.9/4E+00	$0.000 \pm 00$	-0.082
RA-226	-1.018E+01	7.341E+01	1.244D+V2 2 E21E,01	0.00000+00	0.263
U-235	9.257E+00	2.437E+01	3.5ZIE+VI	$0.000\pm00$	-0.201
U-238	-1.180E+02	3.631E+02	5.8/ZE+UZ	0.00000+00	-0.872
AM-241	-3.482E+01	2.507E+01	3.9918+01	0.0000-00	0.072

					2 0765,00	T.28671-9	WG	BR
A.13L28671	-9	,05/19/2006	16:29,05/11/2	006 15:15,	2.9700+00		ne	2
B.13L28671	-9	,LIBD	,08/	05/2005 08:1	6,I335L0909			
$C_{K-40}$	.YES,	1.161E+01,	4.431E+01,	4.759E+01,,	0.244			
$C_{\Delta}C_{-228}$	YES.	1.069E+01,	1.378E+01,	1.886E+01,,	0.567			
C, TU-228	YES.	9.771E-01,	5.195E+00,	8.338E+00,,	0.117			
C, III 220	VES	1.069E+00,	7.055E+00,	2.082E+01,,	0.051			
C, In-252	NO	2 213E-01.	2.662E+01,	4.346E+01,,	0.005			
C, BE = 7	NO	-4.853E+01.	2.920E+01,	4.434E+01,,	-1.095			
C, CR-51	, NO ,	9.482E-01	3.051E+00,	4.941E+00,,	-0.172			
C, MN - 54	, NO ,	-0.402001	2 649E+00,	4.330E+00,,	-0.444			
C, CO-57	, NO ,	-1.9210+00,	3.219E+00.	5.086E+00,,	-0.462			
C, CO-58	,NO,	-2.340E+00,	5.249E+00	1.067E+01,,	0.196			
C,FE-59	,NO ,	2.0946+00,	2 842E+00	4.814E+00,,	0.172			
C,CO-60	,NO,	8.2/6E-UI,	$\angle 093F+00$	1 143E+01.	0.095			
C,ZN-65	,NO,	1.084E+00,	$0.000 \pm 00$	6 425E+00.	-0.247			
C,SE-75	,NO,	-1.589E+00,	3.949E+00,	7 721E+00.	2.912			
C,SR-85	,NO,	2.248E+01,	4.026E+00,	5 440E+00.	-0.278			
C,Y-88	,NO,	-1.511E+00,	3.4/8E+00,	5.440 <u>0</u> +00,,	0.135			
C,NB-94	,NO,	7.010E-01,	3.159E+00,	5.2020+00,,	0 053			
C,NB-95	,NO,	2.825E-01,	3.227E+00,	5.379E+00,	-0 102			
C,ZR-95	,NO,	-9.539E-01,	5.689E+00,	9.3606+00,,	0.102			
C, MO-99	,NO,	2.033E+01,	1.638E+02,	2.744E+02,	, 0.07 <del>1</del>			
C, RU-103	,NO,	3.102E+00,	3.421E+00,	5.800E+00,	, 0.555			
C.RU-106	, NO ,	-1.910E+01,	2.963E+01,	4.714E+01,	, -0.405			
C.AG-110m	,NO,	-2.702E-01,	2.974E+00,	4.844E+00,	, -0.050			
C.SN-113	NO ,	-8.293E-01,	3.766E+00,	6.182E+00,	, -0.134			
C SB - 124	NO .	2.054E+00,	6.763E+00,	5.303E+00,	, 0.307			
$C_{SB} = 125$	NO .	-5.541E+00,	8.461E+00,	1.352E+01,	, -0.410			
C TE = 129M	NO .	1.446E+01,	3.989E+01,	6.634E+01,	, 0.218			
C T-131	NO	3.511E-02,	5.528E+00,	9.211E+00,	, 0.004			
$C_{\rm D} = 133$	NO	2.168E+00,	4.383E+00,	6.416E+00,	, 0.338			
C, DA 133	NO ,	4.343E+00,	4.900E+00,	5.417E+00,	, 0.802			
C, CB-136	NO /	3.013E+00,	4.343E+00,	7.461E+00,	, 0.404			
C, CS = 130	NO	-6 457E-02,	3.246E+00,	5.306E+00,	, -0.012			
C, CS = 137	, NO , NO	1.048E+00	2.774E+00,	4.594E+00,	, 0.228			
C, CE - 139	, NO ,	$2.040 \pm 100$	1.614E+01,	2.749E+01,	, 0.299			
C, BA-140	, NO ,	2.21/1100	5 330E+00.	8.888E+00,	, 0.044			
C,LA-140	, NO ,	$3.873 \pm 01$	6.257E+00.	9.022E+00,	, 0.275			
C,CE-141	, NO ,	2.471E+00	2.323E+01.	3.447E+01,	, -0.047			
C,CE-144	, NO ,	-1.010E+00,	1 127E+01	1.477E+01,	-0.603			
C,EU-152	, NO ,	-0.9000+00,	5.471E+00	8.974E+00,	, -0.355			
C,EU-154	, NO ,	-3.190E+00,	$7 2/1 \mathbb{R} \pm 00$	1.244E+02.	, -0.082			
C,RA-226	, NO ,	-1.UI8E+UI,	/.J±⊥⊡+U⊥/ つ /27〒⊥∩1	3.521E+01.	0.263			
C,U-235	,NO,	9.257E+00,		5 872E+02	-0.201			
C,U-238	,NO,	-1.180E+02,	3.0310+02	3.991E+01	-0.872			
C,AM-241	,NO,	-3.482E+01,	Z.50/6+01,		,			

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 20-MAY-2006 01:13:48.98 TBE11 P-20610B HpGe ******* Aquisition Date/Time: 19-MAY-2006 14:06:50.26

LIMS No., Customer Name, Client ID: WG L28671-10 BRAIDWOOD

Sample ID	:	11L2867:	1-10		Smple Date:	12-MAY-2006 09:00:00.
Sample Type	:	WG			Geometry :	113L082304
Quantity	:	3.093701	E+00 L		BKGFILE :	11BG050506MT
Start Channel	:	40	Energy Tol :	1.30000	Real Time :	0 11:06:54.79
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time :	0 11:06:40.00
MDA Constant	:	0.00	Library Used:	LIBD		

0 - - - -

10

Τt	Energy	Area	вкдпа	FWHM	Channel	SEII	Cts/Sec %Err	Flt
0	66.33	215	1367	0.87	131.85	6.87E-01	5.37E-03 30.1	
0	92.77*	20	1124	1.23	184.87	1.47E+00	5.04E-04326.9	
0	139.82	298	1115	1.31	279.25	1.90E+00	7.46E-03 21.0	
0	175.29	142	905	1.48	350.37	1.84E+00	3.56E-03 39.0	
0	186.08*	24	876	1.39	372.02	1.80E+00	6.01E-04247.8	
0	198.31*	236	938	1.14	396.53	1.75E+00	5.90E-03 26.5	
0	294.82*	39	457	1.76	590.06	1.37E+00	9.78E-04105.4	
0	338.33*	33	456	1.38	677.30	1.24E+00	8.20E-04128.1	
0	351.92*	52	476	0.91	704.56	1.20E+00	1.31E-03 89.3	
0	583.37*	27	220	1.02	1168.52	8.17E-01	6.76E-04125.2	
0	595.62	152	225	1.43	1193.07	8.04E-01	3.79E-03 20.2	
0	609.06*	113	249	1.76	1220.00	7.90E-01	2.84E-03 31.7	
0	727.23	34	147	0.93	1456.82	6.88E-01	8.62E-04 65.9	
0	911.71*	1	213	3.25	1826.43	5.74E-01	1.36E-05****	
0	967.95*	60	160	0.84	1939.09	5.47E-01	1.50E-03 54.2	
0	1120.18*	30	74	2.26	2244.01	4.86E-01	7.61E-04 66.9	
0	1460.13*	74	101	2.15	2924.66	3.92E-01	1.85E-03 43.1	
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1t       Energy         0       66.33         0       92.77*         0       139.82         0       175.29         0       186.08*         0       198.31*         0       294.82*         0       338.33*         0       351.92*         0       595.62         0       609.06*         0       727.23         0       911.71*         0       967.95*         0       120.18*         0       1460.13*	It       Energy       Area         0       66.33       215         0       92.77*       20         0       139.82       298         0       175.29       142         0       186.08*       24         0       198.31*       236         0       294.82*       39         0       338.33*       33         0       351.92*       52         0       595.62       152         0       609.06*       113         0       727.23       34         0       911.71*       1         0       967.95*       60         0       1120.18*       30         0       1460.13*       74	ItEnergyAreaBkgnd066.332151367092.77*2011240139.8229811150175.291429050186.08*248760198.31*2369380294.82*394570338.33*334560351.92*524760595.621522250609.06*1132490727.23341470911.71*12130967.95*6016001120.18*307401460.13*74101	ItEnergyAreaBkgndFWHM066.3321513670.87092.77*2011241.230139.8229811151.310175.291429051.480186.08*248761.390198.31*2369381.140294.82*394571.760338.33*334561.380351.92*524760.910583.37*272201.020595.621522251.430609.06*1132491.760727.23341470.930911.71*12133.250967.95*601600.8401120.18*30742.2601460.13*741012.15	ItEnergyAreaBkgndFWHM Channel066.3321513670.87131.85092.77*2011241.23184.870139.8229811151.31279.250175.291429051.48350.370186.08*248761.39372.020198.31*2369381.14396.530294.82*394571.76590.060338.33*334561.38677.300351.92*524760.91704.560595.621522251.431193.070609.06*1132491.761220.000727.23341470.931456.820911.71*12133.251826.430967.95*601600.841939.0901120.18*30742.262244.0101460.13*741012.152924.66	ItEnergyAreaBkgndFWHMChannel%EII066.3321513670.87131.856.87E-01092.77*2011241.23184.871.47E+000139.8229811151.31279.251.90E+000175.291429051.48350.371.84E+000186.08*248761.39372.021.80E+000198.31*2369381.14396.531.75E+000294.82*394571.76590.061.37E+000338.33*334561.38677.301.24E+000351.92*524760.91704.561.20E+000583.37*272201.021168.528.17E-010595.621522251.431193.078.04E-010609.06*1132491.761220.007.90E-010727.23341470.931456.826.88E-010911.71*12133.251826.435.74E-010967.95*601600.841939.095.47E-0101120.18*30742.262244.014.86E-0101460.13*741012.152924.663.92E-01	ItEnergyAreaBkgndFWHM Channel%EIFCts/Sec %Err066.3321513670.87131.856.87E-015.37E-0330.1092.77*2011241.23184.871.47E+005.04E-04326.90139.8229811151.31279.251.90E+007.46E-0321.00175.291429051.48350.371.84E+003.56E-0339.00186.08*248761.39372.021.80E+006.01E-04247.80198.31*2369381.14396.531.75E+005.90E-030294.82*394571.76590.061.37E+009.78E-04105.40338.33*334561.38677.301.24E+008.20E-04128.10351.92*524760.91704.561.20E+001.31E-0389.30583.37*272201.021168.528.17E-016.76E-04125.20595.621522251.431193.078.04E-013.79E-0320.20609.06*1132491.761220.007.90E-012.84E-0331.70727.23341470.931456.826.88E-018.62E-0465.90911.71*12133.251826.435.74E-011.36E-05*****0967.95*601600.841939.095.47E-011.50E-03

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

				Uncorrected	Decay Corr	2-Sigma
Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
1460.81	74	10.67*	3.920E-01	3.872E+01	3.872E+01	86.10
186.21	24	3.28*	1.798E+00	8.903E+00	8.903E+00	495.61
835.50		1.75	6.158E-01	Li	ne Not Found	
911.07	1	27.70*	5.742E-01	7.470E-02	7.488E-02	13969.08
583.14	27	30.25	8.169E-01	2.389E+00	2.389E+00	250.32
911.07	1	27.70*	5.742E-01	7.470E-02	7.470E-02	13969.08
969.11	60	16.60	5.472E-01	1.440E+01	1.440E+01	108.37
143.76		10.50*	1.906E+00	Li	ne Not Found	
163.35		4.70	1.876E+00	Li	ne Not Found	
185.71	24	54.00	1.798E+00	5.408E-01	5.408E-01	495.61
205.31		4.70	1.718E+00	Li	ne Not Found	
	Energy 1460.81 186.21 835.50 911.07 583.14 911.07 969.11 143.76 163.35 185.71 205.31	Energy Area 1460.81 74 186.21 24 835.50 911.07 1 583.14 27 911.07 1 969.11 60 143.76 163.35 185.71 24 205.31	Energy Area %Abn 1460.81 74 10.67* 186.21 24 3.28* 835.50 1.75 911.07 1 27.70* 583.14 27 30.25 911.07 1 27.70* 969.11 60 16.60 143.76 10.50* 163.35 4.70 185.71 24 54.00 205.31 4.70	EnergyArea%Abn%Eff1460.817410.67*3.920E-01186.21243.28*1.798E+00835.501.756.158E-01911.07127.70*5.742E-01583.142730.258.169E-01911.07127.70*5.742E-01969.116016.605.472E-01143.7610.50*1.906E+00163.354.701.876E+00205.314.701.718E+00	Uncorrected Energy Area %Abn %Eff pCi/L 1460.81 74 10.67* 3.920E-01 3.872E+01 186.21 24 3.28* 1.798E+00 8.903E+00 835.50 1.75 6.158E-01 Li: 911.07 1 27.70* 5.742E-01 7.470E-02 583.14 27 30.25 8.169E-01 2.389E+00 911.07 1 27.70* 5.742E-01 7.470E-02 969.11 60 16.60 5.472E-01 1.440E+01 143.76 10.50* 1.906E+00 Li: 163.35 4.70 1.876E+00 Li: 185.71 24 54.00 1.798E+00 5.408E-01 205.31 Li:	Uncorrected Decay CorrEnergyArea%Abn%EffpCi/LpCi/L1460.817410.67*3.920E-013.872E+013.872E+01186.21243.28*1.798E+008.903E+008.903E+00835.501.756.158E-01Line Not Found911.07127.70*5.742E-017.470E-027.488E-02583.142730.258.169E-012.389E+002.389E+00911.07127.70*5.742E-017.470E-027.470E-02969.116016.605.472E-011.440E+011.440E+01143.7610.50*1.906E+00Line Not Found163.354.701.876E+00Line Not Found185.712454.001.798E+005.408E-015.408E-01205.314.701.718E+00Line Not Found

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Page : 2 Summary of Nuclide Activity Acquisition date : 19-MAY-2006 14:06:50 Sample ID : 11L28671-10 Total number of lines in spectrum 17 Number of unidentified lines 12 Number of lines tentatively identified by NID 5 29.41% Nuclide Type : natural Uncorrected Decay Corr 2-Sigma Decay Corr 2-Sigma Error %Error Flags 3.334E+01 86.10 pCi/L pCi/L Nuclide Hlife Decay 3.872E+01 1.00 3.872E+01 1.28E+09Y K-40 495.61 44.13E+00 1600.00Y 1.00 8.903E+00 8.903E+00 RA-226 1046.E-02 13969.08 5.75Y 1.00 7.470E-02 7.488E-02 AC-228 1043.E-02 13969.08 1.00 7.470E-02 7.470E-02 1.41E+10Y TH-232 5.408E-01 26.80E-01 495.61 K 5.408E-01 U-235 7.04E+08Y 1.00 _____ _____ 4.831E+01 Total Activity : 4.831E+01 4.831E+01 Grand Total Activity : 4.831E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited
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Unidentified Energy Lines Sample ID : 11L28671-10 Page : 3 Acquisition date : 19-MAY-2006 14:06:50

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Ρw	Cts/Sec	%Err	%Eff F	lags
0	66.33	215	1367	0.87	131.85	129	7	5.37E-03	60.1	6.87E-01	
0	92.77	20	1124	1.23	184.87	181	9	5.04E-04	****	1.47E+00	
0	139.82	298	1115	1.31	279.25	275	9	7.46E-03	42.0	1.90E+00	
0	175.29	142	905	1.48	350.37	347	9	3.56E-03	77.9	1.84E+00	
0	198.31	236	938	1.14	396.53	392	10	5.90E-03	53.0	1.75E+00	
0	294.82	39	457	1.76	590.06	586	8	9.78E-04	* * * *	1.37E+00	
0	338.33	33	456	1.38	677.30	672	9	8.20E-04	****	1.24E+00	
0	351.92	52	476	0.91	704.56	699	10	1.31E-03	****	1.20E+00	
0	595.62	152	225	1.43	1193.07	1189	10	3.79E-03	40.3	8.04E-01	
0	609.06	113	249	1.76	1220.00	1215	10	2.84E-03	63.4	7.90E-01	
0	727.23	34	147	0.93	1456.82	1453	9	8.62E-04	* * * *	6.88E-01	
0	1120.18	30	74	2.26	2244.01	2239	9	7.61E-04	* * * *	4.86E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total	numk	ber of	lines	in	spe	ectrum			17	
Number	of	unider	ntified	1 li	lnes	5			12	
Number	of	lines	tentat	∶iv∈	ely	identified	by	NID	5	29.41%

Nuclide Type : natural

			Wtd Mean	Wtd Mean			
			Uncorrected	Decay Corr	Decay Corr	2-Sigma	
Nuclide	Hlife	Decay	pCi/L	pĊi/L	2-Sigma Error	%Error	Flags
K-40	1.28E+09Y	1.00	3.872E+01	3.872E+01	3.334E+01	86.10	
RA-226	1600.00Y	1.00	8.903E+00	8.903E+00	44.13E+00	495.61	
TH-232	1.41E+10Y	1.00	3.069E+00	3.069E+00	4.924E+00	160.41	
	Total Acti	vity :	5.069E+01	5.069E+01			
Grand	d Total Acti	vity :	5.069E+01	5.069E+01			

Flags:	"K"	=	Keyline not found	"M"	=	Manually	v accepted	1	
Û,	"E"	=	Manually edited	"A"	==	Nuclide	specific	abn.	limit

Interference Report

Interfe	ring	Interf	ered
Nuclide	Line	Nuclide	Line
TH-232	911.07	AC-228	911.07

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	3.872E+01	3.334E+01	2.834E+01	0.000E+00	1.366
RA-226	8.903E+00	4.413E+01	6.666E+01	0.000E+00	0.134

# ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	1.004E+01		1.655E+01	2.764E+01	0.000E+00	0.363
ND-24	1.871E+03		7.433E+03	1.242E+04	0.000E+00	0.151
CP-51	-1.793E+01		1.802E+01	2.862E+01	0.000E+00	-0.627
MN = 54	-2.170E-01		1.806E+00	2.927E+00	0.000E+00	-0.074
$CO_{-57}$	5 860E-01		1.679E+00	2.773E+00	0.000E+00	0.211
CO = 58	-1.882E+00		1.903E+00	2.979E+00	0.000E+00	-0.632
EE_59	3.090E+00		3.913E+00	6.637E+00	0.000E+00	0.466
CO-60	1.020E+00		1.927E+00	3.271E+00	0.000E+00	0.312
ZN = 65	2.978E+00		4.687E+00	6.722E+00	0.000E+00	0.443
2N-05 CF_75	8 822E-02		2.402E+00	3.950E+00	0.000E+00	0.022
SD-85	1 777E+01		2.211E+00	4.266E+00	0.000E+00	4.165
V_88	-1.563E+00		2.140E+00	3.349E+00	0.000E+00	-0.467
1-00 ND-0/	2.008E+00		1.719E+00	2.947E+00	0.000E+00	0.681
ND-94 ND-95	1.503E+00		1.830E+00	3.095E+00	0.000E+00	0.486
7D-95	-1.803E+00		3.370E+00	5.410E+00	0.000E+00	-0.333
MO-99	1.990E+01		8.627E+01	1.429E+02	0.000E+00	0.139
	1.832E+00		2.079E+00	3.492E+00	0.000E+00	0.525
RU-105	1.286E+00		1.712E+01	2.848E+01	0.000E+00	0.045
RO=100	4 563E-01		1.770E+00	2.954E+00	0.000E+00	0.154
AG-110	7 830E-02		2.309E+00	3.835E+00	0.000E+00	0.020
SN-113 CD_12/	-2 960E-01		4.461E+00	3.164E+00	0.000E+00	-0.094
3D-124 CD-125	1.281E+00		5.062E+00	8.418E+00	0.000E+00	0.152
30-123 TT-129M	4 388E+00		2.295E+01	3.796E+01	0.000E+00	0.116
T_121	-1.489E+00		3.330E+00	5.484E+00	0.000E+00	-0.272
T-T27	3 815E+00		2.853E+00	4.108E+00	0.000E+00	0.929
DA-133	3 775E+00		3.183E+00	3.374E+00	0.000E+00	1.119
CS = 1.34	-4.428E-01		2.513E+00	4.069E+00	0.000E+00	-0.109
CS = 1.30	1.451E+00		1.913E+00	3.246E+00	0.000E+00	0.447
CE 129	1.525E+00		1.780E+00	2.931E+00	0.000E+00	0.520
CE = 139	1.525B+00		9.328E+00	1.546E+01	0.000E+00	0.299
BA-140	-7 080E-01		3.190E+00	5.128E+00	0.000E+00	-0.138
DA = 140	-7.000E 01		3.911E+00	5.381E+00	0.000E+00	-0.238
CE = 141	-1.2010+00 5 917E+00		1 529E+01	2.152E+01	0.000E+00	0.275
CE-144	5.9170+00		1.175E+01	8.932E+00	0.000E+00	0.061
EU-15Z	_1 450E+00		3.505E+00	5.711E+00	0.000E+00	-0.254
BU-154 NC 229	7 4888-02		1.046E+01	1.214E+01	0.000E+00	0.006
AC-220	5 950F+00		3.472E+00	5.838E+00	0.000E+00	1.019
1H-220	7 AQAR±00		1.547E+01	2.164E+01	0.000E+00	0.207
0-230	5 6/QF±01		2.139E+02	3.395E+02	0.000E+00	0.166
U-230 MM 041	3.040ETUI 1 EA2E:A1		2.545E+01	3.831E+01	0.000E+00	0.392
AM-24⊥	T.203E+0T		2.9498404	0.0010.01		

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В

A,11L28671	-10	,05/20/2006	01:13,05/12/	2006 09:00,	3.094E+00,WG	L28671-10
B,11L28671	-10	,LIBD	,09	/01/2005 07:43	,113L082304	
C,K-40	,YES,	3.872E+01,	3.334E+01,	2.834E+01,,	1.366	
C,RA-226	,YES,	8.903E+00,	4.413E+01,	6.666E+01,,	0.134	
C,TH-232	,YES,	3.069E+00,	4.924E+00,	1.032E+01,,	0.298	
C, BE-7	,NO,	1.004E+01,	1.655E+01,	2.764E+01,,	0.363	
C,NA-24	,NO,	1.871E+03,	7.433E+03,	1.242E+04,,	0.151	
C,CR-51	,NO,	-1.793E+01,	1.802E+01,	2.862E+01,,	-0.627	
C,MN-54	,NO,	-2.170E-01,	1.806E+00,	2.927E+00,,	-0.074	
C, CO-57	,NO,	5.860E-01,	1.679E+00,	2.773E+00,,	0.211	
C,CO-58	,NO,	-1.882E+00,	1.903E+00,	2.979E+00,,	-0.632	
C,FE-59	,NO ,	3.090E+00,	3.913E+00,	6.637E+00,,	0.466	
C, CO-60	,NO ,	1.020E+00,	1.927E+00,	3.271E+00,,	0.312	
C, ZN-65	,NO ,	2.978E+00,	4.687E+00,	6.722E+00,,	0.443	
C,SE-75	,NO,	8.822E-02,	2.402E+00,	3.950E+00,,	0.022	
C,SR-85	,NO,	1.777E+01,	2.211E+00,	4.266E+00,,	4.165	
C,Y-88	,NO ,	-1.563E+00,	2.140E+00,	3.349E+00,,	-0.467	
C, NB-94	,NO,	2.008E+00,	1.719E+00,	2.947E+00,,	0.681	
C, NB-95	,NO,	1.503E+00,	1.830E+00,	3.095E+00,,	0.486	
C,ZR-95	,NO,	-1.803E+00,	3.370E+00,	5.410E+00,,	-0.333	
C,MO-99	,NO,	1.990E+01,	8.627E+01,	1.429E+02,,	0.139	
C,RU-103	,NO,	1.832E+00,	2.079E+00,	3.492E+00,,	0.525	
C,RU-106	,NO,	1.286E+00,	1.712E+01,	2.848E+01,,	0.045	
C,AG-110m	,NO,	4.563E-01,	1.770E+00,	2.954E+00,,	0.154	
C, SN-113	,NO,	7.830E-02,	2.309E+00,	3.835E+00,,	0.020	
C,SB-124	,NO,	-2.960E-01,	4.461E+00,	3.164E+00,,	-0.094	
C,SB-125	,NO,	1.281E+00,	5.062E+00,	8.418E+00,,	0.152	
C,TE-129M	,NO,	4.388E+00,	2.295E+01,	3.796E+01,,	0.116	
C,I-131	,NO,	-1.489E+00,	3.330E+00,	5.484E+00,,	-0.272	
C,BA-133	,NO,	3.815E+00,	2.853E+00,	4.108E+00,,	0.929	
C,CS-134	,NO,	3.775E+00,	3.183E+00,	3.374E+00,,	1.119	
C,CS-136	,NO,	-4.428E-01,	2.513E+00,	4.069E+00,,	-0.109	
C,CS-137	,NO,	1.451E+00,	1.913E+00,	3.246E+00,,	0.447	
C,CE-139	,NO,	1.525E+00,	1.780E+00,	2.931E+00,,	0.520	
C,BA-140	,NO,	4.616E+00,	9.328E+00,	1.546E+01,,	0.299	
C,LA-140	,NO,	-7.080E-01,	3.190E+00,	5.128E+00,,	-0.138	
C,CE-141	,NO,	-1.281E+00,	3.911E+00,	5.381E+00,,	-0.238	
C,CE-144	,NO,	5.917E+00,	1.529E+01,	2.152E+01,,	0.275	
C,EU-152	,NO,	5.486E-01,	1.175E+01,	8.932E+00,,	0.061	
C,EU-154	,NO,	-1.450E+00,	3.505E+00,	5.711E+00,,	-0.254	
C,AC-228	,NO,	7.488E-02,	1.046E+01,	1.214E+01,,	0.006	
C,TH-228	,NO,	5.950E+00,	3.472E+00,	5.838E+00,,	1.019	
C,U-235	,NO,	4.490E+00,	1.547E+01,	2.164E+01,,	0.207	
C,U-238	,NO,	5.648E+01,	2.139E+02,	3.395E+02,,	0.166	
C,AM-241	,NO,	1.503E+01,	2.545E+01,	3.831E+01,,	0.392	

Sec. Review: Analyst

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 19-MAY-2006 12:52:08.89 TBE04 P-40312B HpGe ******** Aquisition Date/Time: 19-MAY-2006 09:21:58.41

LIMS No., Customer Name, Client ID: WG L28671-11 BRAIDWOOD

LIMS:

Sample ID Sample Type	:	04L2867 WG	1-11		Smple Date Geometry	:	12-MAY-2006 09:45:00. 043L082004
Quantity	:	3.08840	E+00 L		BKGFILE	:	04BG050506MT
Start Channel End Channel	::	90 4090 0 00	Energy Tol : Pk Srch Sens: Library Used:	1.70000 5.00000 LIBD	Real Time Live time	:	0 03:30:03.50
MDA CONScane	•	0.00					

It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	66.58*	116	434	1.51	133.72	6.73E-01	9.24E-03	35.5	1.19E+00
2	77.33*	44	237	1.06	155.23	1.07E+00	3.48E-03	62.6	1.69E+00
1	139 90*	73	282	1.07	280.39	2.04E+00	5.81E-03	40.6	2.13E+00
1	198 23*	75	298	1.67	397.07	1.87E+00	5.96E-03	45.5	1.03E+00
1	238 91*	43	235	1.69	478.43	1.68E+00	3.44E-03	73.0	2.70E+00
1	283.52	50	128	1.65	567.66	1.50E+00	3.96E-03	41.6	1.34E+00
1	295.15*	33	176	0.89	590.92	1.46E+00	2.58E-03	76.0	1.79E+00
1	352.06*	161	95	1.57	704.73	1.28E+00	1.28E-02	14.8	2.43E+00
1	582.96*	6	50	1.24	1166.53	8.77E-01	5.11E-042	220.1	1.45E+00
1	595.72	37	90	0.99	1192.04	8.63E-01	2.92E-03	52.5	6.79E-01
1	609.21*	125	110	1.29	1219.03	8.49E-01	9.95E-03	19.7	2.60E+00
1	910.64*	17	36	3.63	1821.81	6.21E-01	1.32E-03	83.8	5.23E+00
1	1119.93*	25	29	1.94	2240.30	5.27E-01	1.94E-03	61.7	1.54E+00
1	1332.34*	16	17	2.85	2664.98	4.60E-01	1.29E-03	63.5	1.30E+00
1	1460.74*	35	24	3.71	2921.67	4.30E-01	2.75E-03	45.4	1.15E+00
1	1763.83*	39	12	2.18	3527.55	3.77E-01	3.12E-03	27.9	6.67E-01
1	1779.33	13	11	1.66	3558.55	3.75E-01	1.05E-03	58.3	4.43E-01
	It 1211111111111111111111111111111111111	It Energy 1 66.58* 2 77.33* 1 139.90* 1 198.23* 1 238.91* 1 283.52 1 295.15* 1 352.06* 1 595.72 1 609.21* 1 910.64* 1 119.93* 1 1332.34* 1 460.74* 1 763.83* 1 779.33	ItEnergyArea166.58*116277.33*441139.90*731198.23*751238.91*431283.52501295.15*331352.06*1611582.96*61595.72371609.21*1251910.64*1711119.93*2511332.34*1611460.74*3511763.83*3911779.3313	ItEnergyAreaBkgnd166.58*116434277.33*442371139.90*732821198.23*752981238.91*432351283.52501281295.15*331761352.06*161951582.96*6501595.7237901609.21*1251101910.64*17361119.93*252911332.34*161711460.74*352411763.83*391211779.331311	ItEnergyAreaBkgndFWHM166.58*1164341.51277.33*442371.061139.90*732821.071198.23*752981.671238.91*432351.691283.52501281.651295.15*331760.891352.06*161951.571582.96*6501.241595.7237900.991609.21*1251101.291910.64*17363.631119.93*25291.9411332.34*16172.8511460.74*35243.7111763.83*39122.1811779.3313111.66	ItEnergyAreaBkgndFWHM Channel166.58*1164341.51133.72277.33*442371.06155.231139.90*732821.07280.391198.23*752981.67397.071238.91*432351.69478.431283.52501281.65567.661295.15*331760.89590.921352.06*161951.57704.731582.96*6501.241166.531595.7237900.991192.041609.21*1251101.291219.031910.64*17363.631821.8111119.93*25291.942240.3011332.34*16172.852664.9811460.74*35243.712921.6711763.83*39122.183527.5511779.3313111.663558.55	ItEnergyAreaBkgndFWHMChannel%Eff166.58*1164341.51133.726.73E-01277.33*442371.06155.231.07E+001139.90*732821.07280.392.04E+001198.23*752981.67397.071.87E+001238.91*432351.69478.431.66E+001283.52501281.65567.661.50E+001295.15*331760.89590.921.46E+001352.06*161951.57704.731.28E+001595.7237900.991192.048.63E-011609.21*1251101.291219.038.49E-0111119.93*25291.942240.305.27E-0111332.34*16172.852664.984.60E-0111460.74*35243.712921.674.30E-0111763.83*39122.183527.553.77E-0111779.3313111.663558.553.75E-01	ItEnergyAreaBkgndFWHMChannel%EffCts/Sec166.58*1164341.51133.726.73E-019.24E-03277.33*442371.06155.231.07E+003.48E-031139.90*732821.07280.392.04E+005.81E-031198.23*752981.67397.071.87E+005.96E-031238.91*432351.69478.431.68E+003.44E-031283.52501281.65567.661.50E+003.96E-031295.15*331760.89590.921.46E+002.58E-031352.06*161951.57704.731.28E+001.28E-021582.96*6501.241166.538.77E-015.11E-0421595.7237900.991192.048.63E-012.92E-031609.21*1251101.291219.038.49E-019.95E-0311910.64*17363.631821.816.21E-011.32E-031119.93*25291.942240.305.27E-011.94E-031132.34*16172.852664.984.60E-011.29E-0311460.74*35243.712921.674.30E-012.75E-0311763.83*39122.183527.553.77E-013.12E-03<	ItEnergyAreaBkgndFWHMChannel%EffCts/Sec %Err166.58*1164341.51133.726.73E-019.24E-0335.5277.33*442371.06155.231.07E+003.48E-0362.61139.90*732821.07280.392.04E+005.81E-0340.61198.23*752981.67397.071.87E+005.96E-0345.51238.91*432351.69478.431.68E+003.44E-0373.01283.52501281.65567.661.50E+003.96E-0341.61295.15*331760.89590.921.46E+002.58E-0376.01352.06*161951.57704.731.28E+001.28E-0214.81582.96*6501.241166.538.77E-015.11E-04220.11595.7237900.991192.048.63E-012.92E-0352.51609.21*1251101.291219.038.49E-019.95E-0319.71910.64*17363.631821.816.21E-011.32E-0383.81119.93*25291.94240.305.27E-011.94E-0361.711332.34*16172.852664.984.60E-011.29E-0363.511460.74*35243.71

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nucriae 1	Type. macure				Uncorrected	Decay Corr	2-Sigma
Nuclide	Enerav	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
K-40	1460.81	35	10.67*	4.296E-01	5.249E+01	5.249E+01	90.86
AC-228	835.50		1.75	6.649E-01	Liı	ne Not Found	
110 220	911.07	17	27.70*	6.214E-01	6.692E+00	6.708E+00	167.50
ТН-228	238.63	43	44.60*	1.678E+00	4.020E+00	4.048E+00	146.04
	240.98		3.95	1.669E+00	Li	ne Not Found	
тн-232	583.14	6	30.25	8.775E-01	1.685E+00	1.685E+00	440.18
111 252	911.07	17	27.70*	6.214E-01	6.692E+00	6.692E+00	167.50
	969.11		16.60	5.916E-01	Li	ne Not Found	

Nuclide 1	Type: activa	tion					
	- 7 T				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error

# L28671 104 of 123

CO-60	1173.22 1332.49	16	100.00 100.00*	5.085E-01 4.605E-01	Line Not Found 2.456E+00 2.463E+00	127.04
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Flag: "*" = Keyline

L28671 105 of 123

2 Summary of Nuclide Activity Page : Sample ID : 04L28671-11 Acquisition date : 19-MAY-2006 09:21:58 Total number of lines in spectrum 17 Number of unidentified lines 11 Number of lines tentatively identified by NID 6 35.29% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr pCi/L 2-Sigma Error %Error Flags Nuclide Hlife Decay pCi/L 4.770E+01 90.86 5.249E+01 5.249E+01 K-40 1.28E+09Y 1.00 AC-228 5.75Y 1.00 6.692E+00 6.708E+00 11.24E+00 167.50 5.912E+00 4.048E+00 146.04 TH-228 1.91Y 1.01 4.020E+00 11.21E+00 167.50 TH-232 1.41E+10Y 1.00 6.692E+00 6.692E+00 Total Activity : 6.990E+01 6.994E+01 Nuclide Type : activation 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags Nuclide Hlife pCi/L pCi/L Decay 3.129E+00 127.04 CO-60 5.27Y 1.00 2.456E+00 2.463E+00 ______ _ _ _ _ _ _ _ _ _ _ Total Activity : 2.456E+00 2.463E+00

Grand Total Activity : 7.235E+01 7.240E+01
Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

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Unidentified Energy Lines Sample ID : 04L28671-11 Page : 3 Acquisition date : 19-MAY-2006 09:21:58

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Ρw	Cts/Sec	%Err	%Eff	Flags
1 2	66.58 77.33	116 44	434 237	1.51	133.72 155.23	128 148	10 11	9.24E-03 3.48E-03	71.1	6.73E-01 1.07E+00	
1	139.90 198 23	73 75	282 298	1.07 1.67	280.39	392	10	5.81E-03 5.96E-03	81.2 90.9	1.87E+00	
1	283.52	50	128	1.65	567.66	564	8	3.96E-03	83.3	1.50E+00	Т
1	295.15	33	176	0.89	590.92	587	8	2.58E-03	**** 29 6	1.46E+00	
1	352.06	161 37	95 90	1.57	1192.04	1186	11	2.92E-03	29.0 ****	8.63E-01	
1	609.21	125	110	1.29	1219.03	1214	12	9.95E-03	39.4	8.49E-01	
1	1119.93	25	29	1.94	2240.30	2231	19	1.94E-03	****	5.27E-01	
1	1763.83	39	12	2.18	3527.55	3522	15	3.12E-03	55.7	3.//E-01	
1	1779.33	13	11	⊥.66	3558.55	3552	ΤT	T.02E-03	~ ~ ^ ^	3./36-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	17	
Number of unidentified lines	11	
Number of lines tentatively identified b	by NID 6	35.29%

Nuclide Type : natural

			Wtd Mean	Wtd Mean			
			Uncorrected	Decay Corr	Decay Corr	2-Sigma	
Nuclide	Hlife	Decay	pCi/L	pĊi/L	2-Sigma Error	%Error	Flags
K-40	1.28E+09Y	1.00	5.249E+01	5.249E+01	4.770E+01	90.86	
AC-228	5.75Y	1.00	5.007E+00	5.019E+00	13.47E+00	268.44	
TH-228	1.91Y	1.01	4.020E+00	4.048E+00	5.912E+00	146.04	
TH-232	1.41E+10Y	1.00	1.685E+00	1.685E+00	7.417E+00	440.18	
	Total Acti	vity :	6.321E+01	6.325E+01			

Nuclide	Туре :	acti	vation	Wtd Mean	Wtd Mean	- ~		
Nuclide CO-60	Hl: 5.2	ife 27Y	Decay 1.00	Uncorrected pCi/L 2.456E+00	Decay Corr pCi/L 2.463E+00	Decay Corr 2-Sigma Error 3.129E+00	2-Sigma %Error 127.04	Flags
	Total	Acti	vity :	2.456E+00	2.463E+00			

Grand Total Activity : 6.566E+01	6.571E+01
Flags: "K" = Keyline not found	"M" = Manually accepted
"E" = Manually edited	"A" = Nuclide specific abn. limit

Interference Report

Interfe	ring	Interf	ered
Nuclide	Line	Nuclide	Line
TH-232	911.07	AC-228	911.07

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	5.249E+01	4.770E+01	5.329E+01	0.000E+00	0.985
CO-60	2.463E+00	3.129E+00	4.594E+00	0.000E+00	0.536
AC-228	5.019E+00	1.347E+01	1.808E+01	0.000E+00	0.278
TH-228	4.048E+00	5.912E+00	8.161E+00	0.000E+00	0.496
TH-232	1.685E+00	7.417E+00	1.975E+01	0.000E+00	0.085

# ---- Non-Identified Nuclides ----

Key-Line Activity Nuclide (pCi/L)	K.L. Act error Ided	MDA (pCi/L)	MDA error	Act/MDA
PR-7 3 002E+00	2.566E+01	4.222E+01	0.000E+00	0.071
-1 324E+04	8.270E+03	1.158E+04	0.000E+00	-1.143
$CP_{-51} = -3.377E_{+01}$	2.779E+01	4.259E+01	0.000E+00	-0.793
$CR-51$ $3.377\pm02$	2.835E+00	4.828E+00	0.000E+00	0.241
$mn = 54$ $\pm 1000$ $mn = 60$	2.510E+00	4.052E+00	0.000E+00	-0.512
$C_{0}=58$ 1 346E=01	2.789E+00	4.642E+00	0.000E+00	0.029
-4.622E+00	6.135E+00	9.511E+00	0.000E+00	-0.486
71.65 $5.092E+00$	7.823E+00	1.171E+01	0.000E+00	0.435
$2N = 05$ $= 1.568E \pm 00$	3.916E+00	6.349E+00	0.000E+00	-0.247
SE = 75 $1.300E + 01$	3.671E+00	7.092E+00	0.000E+00	2.397
$V_{0}$ 2 120E+00	3.721E+00	6.492E+00	0.000E+00	0.327
-4 131E-01	2.891E+00	4.680E+00	0.000E+00	-0.088
$ND = 94$ $4.13 \pm 02$ $ND = 95$ $1.299E \pm 00$	3.162E+00	5.276E+00	0.000E+00	0.246
1 189E+00	5.072E+00	8.386E+00	0.000E+00	0.142
MO = 90 2 5 9 0 E + 0 0	1.244E+02	2.027E+02	0.000E+00	0.013
MO-99 2.990E+00	3.290E+00	5.616E+00	0.000E+00	0.506
RU=105 = 2.637E+00	2.695E+01	4.418E+01	0.000E+00	-0.060
AC = 1100 = 1 417E+00	2.888E+00	4.589E+00	0.000E+00	-0.309
$AG^{-110m}$ 1 329E+00	3.790E+00	6.390E+00	0.000E+00	0.208
SN = 124 = 5 824E+00	8.386E+00	5.354E+00	0.000E+00	-1.088
SB = 124 $S = 0.021E + 0.000$	8.387E+00	1.431E+01	0.000E+00	0.420
TE = 129M = 2 548E+00	3.584E+01	5.851E+01	0.000E+00	-0.044
$T_{-131}$ 4 253E-01	5.181E+00	8.667E+00	0.000E+00	0.049
$P_{A} = 133$ 7.352E+00	4.432E+00	6.987E+00	0.000E+00	1.052
$C_{S-134}$ 5 110E+00	4.911E+00	6.006E+00	0.000E+00	0.851
$CS = 134$ $-7 \cdot 324E - 02$	3.758E+00	6.216E+00	0.000E+00	-0.012
CS = 137 1.758E+00	3.141E+00	5.343E+00	0.000E+00	0.329
CE = 139 2.582E+00	2.770E+00	4.657E+00	0.000E+00	0.554
$R_{A} = 140$ 1 080E+01	1.455E+01	2.466E+01	0.000E+00	0.438
$E_{A} = 140$ $f = 409E \pm 00$	5.245E+00	9.600E+00	0.000E+00	0.668
$CE_{-141}$ 2 757E+00	5.843E+00	8.429E+00	0.000E+00	0.327
$CE_{-144} = 1.425E+01$	2.111E+01	3.141E+01	0.000E+00	-0.454
$EII_{152} = -7 149E+00$	1.010E+01	1.373E+01	0.000E+00	-0.521
EU = 152 $1 = 919E + 00$	5.208E+00	8.741E+00	0.000E+00	0.220
$R\Delta = 226$ 3 738E+01	7.138E+01	1.189E+02	0.000E+00	0.314
$II_{-235}$ 4.100E+00	2.355E+01	3.353E+01	0.000E+00	0.122
TI_238 2 233E+02	3.231E+02	5.561E+02	0.000E+00	0.402
AM-241 -2.132E+01	2.968E+01	4.276E+01	0.000E+00	-0.499

A,04L28671	11	,05/19/2006	12:52,05/12/	2006 09:45,	3.088E+00,WG	L28671-11	В
B,04L28671	-11	,LIBD	,03	/14/2005 09:0	)4,043L082004		
C,K-40	,YES,	5.249E+01,	4.770E+01,	5.329E+01,,	, 0.985		
C,CO-60	,YES,	2.463E+00,	3.129E+00,	4.594E+00,,	, 0.536		
C,AC-228	,YES,	5.019E+00,	1.347E+01,	1.808E+01,	, 0.278		
C,TH-228	,YES,	4.048E+00,	5.912E+00,	8.161E+00,	, 0.496		
C.TH-232	,YES,	1.685E+00,	7.417E+00,	1.975E+01,	, 0.085		
, C.BE-7	, NO ,	3.002E+00,	2.566E+01,	4.222E+01,	, 0.071		
C.NA-24	NO .	-1.324E+04,	8.270E+03,	1.158E+04,	, -1.143		
C, CR-51	NO .	-3.377E+01,	2.779E+01,	4.259E+01,	, -0.793		
C.MN-54	.NO .	1.163E+00,	2.835E+00,	4.828E+00,	, 0.241		
$C_{-}CO_{-}57$	NO .	-2.075E+00.	2.510E+00,	4.052E+00,	, -0.512		
$C_{1}C_{2}-58$	NO	1.346E-01.	2.789E+00.	4.642E+00,	0.029		
C FE-59	NO /	-4.622E+00	6.135E+00.	9.511E+00.	, -0.486		
C ZN-65	NO ,	5.092E+00	7.823E+00	1.171E+01.	, 0.435		
$C_{SE} = 75$	NO /	-1.568E+00	3 916E+00	6.349E+00.	-0.247		
C SR - 85	NO ,	1.700E+01	3.671E+00	7.092E+00	. 2.397		
$C_{V-88}$	NO ,	2.120E+00.	3.721E+00,	6.492E+00	. 0.327		
C NB-94	NO	-4 131E-01	2.891E+00	4.680E+00	-0.088		
C NR-95	NO	1 299E±00	3.162E+00	5.276E+00	0.246		
C, ND = 95	NO	1 189F±00,	5.1020+00	8 386E+00	0 142		
$C, \Delta R = 95$	, NO ,	1.109E+00,	1 244E+00	$0.300 \pm 00,$ $2.027 \pm 02$	, 0.13		
C, MO - 99	, NO ,	2.590E+00,	1.2440+02	5.0270+02,	, 0.015		
C, RU = 103	, INO ,	2.039E+00,	3.2900+00,	3.0100+00,	, 0.500		
C, RU = 106	, INO ,	-2.637E+00,	2.095E+01,	4.4105+01,	, -0.000		
C, AG-110m	, INO ,	-1.41/E+00,	2.000E+00,	4.309E+00,	, -0.305		
C, SN-113	, NO ,	1.329E+00,	3.790E+00,	5.390E+00,	, 0.200		
C, SB-124	, NO ,	-5.824E+00,	8.386E+00,	5.354E+00,	, -1.000		
C, SB-125	,NO ,	6.015E+00,	8.38/E+00,	1.431E+01,	, 0.420		
C, TE-129M	,NO,	-2.548E+00,	3.584E+01,	5.851E+01,	, -0.044		
C,1-131	,NO ,	4.253E-01,	5.181E+00,	8.66/E+00,	, 0.049		
C, BA-133	,NO,	7.352E+00,	4.432E+00,	6.98/E+00,	, 1.052		
C,CS-134	,NO,	5.110E+00,	4.911E+00,	6.006E+00,	, 0.851		
C,CS-136	,NO,	-7.324E-02,	3.758E+00,	6.216E+00,	, -0.012		
C,CS-137	,NO,	1.758E+00,	3.141E+00,	5.343E+00,	, 0.329		
C,CE-139	,NO,	2.582E+00,	2.770E+00,	4.657E+00,	, 0.554		
C,BA-140	,NO,	1.080E+01,	1.455E+01,	2.466E+01,	, 0.438		
C,LA-140	,NO,	6.409E+00,	5.245E+00,	9.600E+00,	, 0.668		
C,CE-141	,NO ,	2.757E+00,	5.843E+00,	8.429E+00,	, 0.327		
C,CE-144	,NO,	-1.425E+01,	2.111E+01,	3.141E+01,	, -0.454		
C,EU-152	,NO,	-7.149E+00,	1.010E+01,	1.373E+01,	, -0.521		
C,EU-154	,NO,	1.919E+00,	5.208E+00,	8.741E+00,	, 0.220		
C,RA-226	,NO,	3.738E+01,	7.138E+01,	1.189E+02,	, 0.314		
C,U-235	,NO,	4.100E+00,	2.355E+01,	3.353E+01,	, 0.122		
C,U-238	,NO,	2.233E+02,	3.231E+02,	5.561E+02,	, 0.402		
C,AM-241	,NO,	-2.132E+01,	2.968E+01,	4.276E+01,	, -0.499		

					1				L2867	1 109	of 1
Sec.	Rev	view:	Analyst:	LIMS: _						,	÷
VAX/ TBE(	VMS )7 P	Teledyn -10768B	e Brown Eng HpGe *****	g. Labor ***** Aq	atory uisit	Gamma Re Lon Date,	eport: 19-N /Time: 19-N	1AY-2006 1AY-2006 (	L0:49: 08:36:	57.55	
LIMS	5 No	., Custo	omer Name, 🤇	Client I	D: WG	L28671-1	12 BRAIDWOO	DD			
Sam <u>r</u> Sam <u>r</u> Quar Star End MDA	ole ntit ct Cl Chan Con	ID : Type : y : hannel : nnel : stant :	07L28671-3 WG 3.28350E+4 40 E3 4090 P3 0.00 L3	12 00 L nergy To k Srch S ibrary U	l : : ens: ! sed: ]	L.30000 5.00000 LIBD	Smple Date Geometry BKGFILE Real Time Live time	e: 12-MAY : 0735L09 : 07BG050 : 0 02:13 : 0 02:13	-2006 90904 0506MT 3:02.6 3:01.0	08:45 2 )1	:00.
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fi	t
1 2 3 4 5 6 7 8	1 1 1 1 1 1	66.16 198.17 241.63 295.58 351.89 609.21 1068.39 1903.68	* 50 * 49 70 * 58 * 129 * 103 * 18 5 15	222 131 111 149 117 63 17 0	1.45 1.63 1.25 2.55 1.31 1.58 1.73 1.44	133.17 397.28 484.23 592.14 704.79 1219.52 2137.82 3807.73	7.19E-01 1.98E+00 1.80E+00 1.60E+00 1.43E+00 9.81E-01 6.48E-01 4.34E-01	6.22E-03 6.16E-03 8.77E-03 7.21E-03 1.61E-02 1.28E-02 2.19E-03 1.86E-03	53.6 43.3 30.4 47.4 19.9 19.2 45.3 27.0	6.36E 3.69E 1.59E 2.82E 5.08E 1.25E 9.93E 4.48E	-01 +00 +00 -01 +00 -01 -01

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

#### L28671 110 of 123

Page : 2 Summary of Nuclide Activity Acquisition date : 19-MAY-2006 08:36:45 Sample ID : 07L28671-12 8 Total number of lines in spectrum Number of unidentified lines 7 Number of lines tentatively identified by NID 12.50% 1 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 19-MAY-2006 08:36:45 Sample ID : 07L28671-12 Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags Area It Enerqy 7 6.22E-03 **** 7.19E-01 130 1.45 133.17 50 222 66.16 1 1.98E+00 394 7 6.16E-03 86.6 131 1.63 397.28 49 1 198.17 Т 471 18 8.77E-03 60.8 1.80E+00 111 1.25 484.23 1 241.63 70 586 13 7.21E-03 94.8 1.60E+00 592.14 149 2.55 295.58 58 1 704.79 700 12 1.61E-02 39.7 1.43E+00 129 117 1.31 351.89 1 1219.52 1214 11 1.28E-02 38.4 9.81E-01 1.58 63 103 609.21 1 17 1.73 2137.82 2135 8 2.19E-03 90.6 6.48E-01 18 1 1068.39 0 1.44 3807.73 3803 10 1.86E-03 54.0 4.34E-01 1 1903.68 15 Flags: "T" = Tentatively associated Summary of Nuclide Activity 8 Total number of lines in spectrum 7 Number of unidentified lines Number of lines tentatively identified by NID 12.50% 1 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA K.L. Act error Activity (pCi/L)Ided Nuclide (pCi/L) 0 0007.00 0 775

BE-7	-1.087E+01	2.853E+01	4.630E+01	0.000E+00	-0.235
NA-24	-6.857E+03	9.551E+03	1.461E+04	0.000E+00	-0.469
K-40	-3.186E+00	4.648E+01	8.908E+01	0.000E+00	-0.036
CP = 51	-2.208E+01	3.308E+01	5.154E+01	0.000E+00	-0.428
MN = 54	-1 322E+00	3.418E+00	5.506E+00	0.000E+00	-0.240
$CO_{-}57$	-7.680E-01	2.999E+00	4.974E+00	0.000E+00	-0.154
CO = 58	-2 730E+00	3.714E+00	5.679E+00	0.000E+00	-0.481
EU-50 FF-59	1 955E+00	7.327E+00	1.238E+01	0.000E+00	0.158
CO = 60	4 283E+00	3.496E+00	6.482E+00	0.000E+00	0.661
ZN = 65	1 428E+01	8.527E+00	1.576E+01	0.000E+00	0.906
2N-05 QF-75	-1 060E-01	4.474E+00	7.341E+00	0.000E+00	-0.014
GD_95	1.778E+01	4.246E+00	8.276E+00	0.000E+00	2.149
V OO	-4.000E+00	3712E+00	5.082E+00	0.000E+00	-0.787
	-1 872E+00	3 221E+00	5.082E+00	0.000E+00	-0.368
ND OF	1 913E+00	3 324E+00	5.170E+00	0.000E+00	-0.370
NB-95	-1.913E+00	5 769E+00	9590E+00	0.000E+00	0.113
ZR-95	1.005E+00	1 497E+02	2518E+02	0.000E+00	0.259
MO-99	6.513E+U1		6 663F+00	0 000E+00	0.253
RU-103	1.684E+00	3.9266+00	5.005E+00	0.0005+00	0 177
RU-106	9.412E+00	3.207E+01	5.3168+01	0.000E+00	0 178
AG-110m	1.057E+00	3.519E+00	5.950E+00	0.000E+00	0.170

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$\begin{array}{llllllllllllllllllllllllllllllllllll$	SN-113	2.321E+00	4.672E+00	7.877E+00	0.000E+00	0.295
$\begin{array}{llllllllllllllllllllllllllllllllllll$	SB-124	-4.305E+00	5.000E+00	6.330E+00	0.000E+00	-0.680
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	SB-125	-4.805E+00	9.324E+00	1.471E+01	0.000E+00	-0.327
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	TE-129M	3.375E+01	4.477E+01	7.580E+01	0.000E+00	0.445
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	I-131	3.449E+00	5.900E+00	1.006E+01	0.000E+00	0.343
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	BA-133	5.544E+00	5.339E+00	8.108E+00	0.000E+00	0.684
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	CS-134	6.279E+00	4.949E+00	7.459E+00	0.000E+00	0.842
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	CS-136	-6.727E-01	4.726E+00	7.584E+00	0.000E+00	-0.089
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	CS-137	-2.001E+00	3.780E+00	6.038E+00	0.000E+00	-0.331
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	CE-139	-3.868E-02	3.175E+00	5.200E+00	0.000E+00	-0.007
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	BA-140	1.172E+00	1.690E+01	2.793E+01	0.000E+00	0.042
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	LA-140	3.970E+00	5.391E+00	9.660E+00	0.000E+00	0.411
CE-144-2.190E+012.455E+013.952E+010.000E+00-0.554EU-152-7.349E+001.222E+011.711E+010.000E+00-0.430EU-154-2.411E+006.226E+001.027E+010.000E+00-0.235RA-226-4.853E+018.093E+011.319E+020.000E+00-0.368AC-228-8.624E+001.332E+012.179E+010.000E+00-0.396TH-2281.158E+016.484E+001.179E+010.000E+000.983TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	CE-141	-5.550E+00	6.099E+00	9.739E+00	0.000E+00	-0.570
EU-152-7.349E+001.222E+011.711E+010.000E+00-0.430EU-154-2.411E+006.226E+001.027E+010.000E+00-0.235RA-226-4.853E+018.093E+011.319E+020.000E+00-0.368AC-228-8.624E+001.332E+012.179E+010.000E+00-0.396TH-2281.158E+016.484E+001.179E+010.000E+000.983TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	CE-144	-2.190E+01	2.455E+01	3.952E+01	0.000E+00	-0.554
EU-154-2.411E+006.226E+001.027E+010.000E+00-0.235RA-226-4.853E+018.093E+011.319E+020.000E+00-0.368AC-228-8.624E+001.332E+012.179E+010.000E+00-0.396TH-2281.158E+016.484E+001.179E+010.000E+000.983TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	EU-152	-7.349E+00	1.222E+01	1.711E+01	0.000E+00	-0.430
RA-226-4.853E+018.093E+011.319E+020.000E+00-0.368AC-228-8.624E+001.332E+012.179E+010.000E+00-0.396TH-2281.158E+016.484E+001.179E+010.000E+000.983TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	EU-154	-2.411E+00	6.226E+00	1.027E+01	0.000E+00	-0.235
AC-228-8.624E+001.332E+012.179E+010.000E+00-0.396TH-2281.158E+016.484E+001.179E+010.000E+000.983TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	RA-226	-4.853E+01	8.093E+01	1.319E+02	0.000E+00	-0.368
TH-2281.158E+016.484E+001.179E+010.000E+000.983TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	AC-228	-8.624E+00	1.332E+01	2.179E+01	0.000E+00	-0.396
TH-232-8.604E+001.328E+012.174E+010.000E+00-0.396U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	TH-228	1.158E+01	6.484E+00	1.179E+01	0.000E+00	0.983
U-235-2.371E+012.489E+013.968E+010.000E+00-0.597U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	TH-232	-8.604E+00	1.328E+01	2.174E+01	0.000E+00	-0.396
U-2381.098E+023.598E+026.084E+020.000E+000.180AM-241-1.518E+012.768E+014.409E+010.000E+00-0.344	U-235	-2.371E+01	2.489E+01	3.968E+01	0.000E+00	-0.597
AM-241 -1.518E+01 2.768E+01 4.409E+01 0.000E+00 -0.344	U-238	1.098E+02	3.598E+02	6.084E+02	0.000E+00	0.180
	AM-241	-1.518E+01	2.768E+01	4.409E+01	0.000E+00	-0.344

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			10 10 05/10/0		283ETOU MG	T28671-12 B
A,07L28671	-12	,05/19/2006	10:49,05/12/2	006 06:45; 5	07351.090904	
B,07L28671	-12	,LIBD	,06/	23/2005 07:20,	0735009090904	
C,BE-7	,NO ,	-1.087E+01,	2.853E+01,	4.630E+01,,	-0.235	
C,NA-24	,NO,	-6.857E+03,	9.551E+03,	1.4618+04,,	-0.469	
C,K-40	,NO,	-3.186E+00,	4.648E+01,	8.908E+01,,	-0.036	
C, CR-51	,NO,	-2.208E+01,	3.308E+01,	5.154E+01,,	-0.428	
C, MN-54	,NO,	-1.322E+00,	3.418E+00,	5.506E+00,,	-0.240	
C, CO-57	,NO,	-7.680E-01,	2.999E+00,	4.974E+00,,	-0.154	
C.CO-58	,NO ,	-2.730E+00,	3.714E+00,	5.679E+00,,	-0.481	
C.FE-59	NO .	1.955E+00,	7.327E+00,	1.238E+01,,	0.158	
C C C - 60	NO .	4.283E+00,	3.496E+00,	6.482E+00,,	0.661	
$C_{\rm ZN-65}$	NO .	1.428E+01,	8.527E+00,	1.576E+01,,	0.906	
C SE-75	NO .	-1.060E-01,	4.474E+00,	7.341E+00,,	-0.014	
C, SB - 85	NO ,	1.778E+01.	4.246E+00,	8.276E+00,,	2.149	
C, DR 00	, NO , NO	-4 000E+00.	3.712E+00,	5.082E+00,,	-0.787	
C, I = 00	NO ,	-1.872E+00.	3.221E+00,	5.082E+00,,	-0.368	
C, MD = 95	NO	-1 913E+00.	3.324E+00,	5.170E+00,,	-0.370	
C, ND = 95	NO	1.085E+00.	5.769E+00,	9.590E+00,,	0.113	
$C, \Delta R - 95$	, NO ,	£ 513E+01	1 487E+02.	2.518E+02,,	0.259	
C, MO = 99	, NO , NO	1.684E+00	3.926E+00.	6.663E+00,,	0.253	
C, RU-103	, NO ,	1.0040+00, 9.112F+00	3.207E+01	5.316E+01,	0.177	
C, RU-106	, NO ,	9.4120+00, 1 057E+00	3.519E+00	5.950E+00,	0.178	
C, AG-110m	, NO ,	1.03/E+00,	4.672E+00	7 877E+00.	0.295	
C, SN-113	, NO ,	$\angle . 2 \angle \underline{E} + 00,$	5 000E+00	6.330E+00	-0.680	
C,SB-124	, NO ,	-4.305E+00,	9.224 E + 00,	1.471E+01	-0.327	
C,SB-125	, NO ,	-4.805E+00,	9.5240+00,	7.580E+01	0.445	
C, TE-129M	, NO ,	3.3/5E+01,		1.006E+01	0.343	
C,I-131	, NO ,	3.449E+00,	5.900E+00,	2.0000101,,, 8.108E+00	0.684	
C,BA-133	, NO ,	5.544E+00,	5.339E+00,	7 159F+00	0 842	
C,CS-134	,NO,	6.279E+00,	4.949E+00,	7.4395+00,, 7.58/F+00	-0.089	
C,CS-136	,NO,	-6.727E-01,	4.726E+00,	$7.304 \pm 00,$	-0.331	
C,CS-137	,NO,	-2.001E+00,	3.780E+00,	5.030E+00,,	-0.007	
C,CE-139	,NO,	-3.868E-02,	3.175E+00,	$5.200\pm00,,$	-0.007	
C,BA-140	,NO,	1.172E+00,	1.690E+01,	2.793E+01,	0.042	
C,LA-140	,NO,	3.970E+00,	5.391E+00,	9.660E+00,,	0.411	
C,CE-141	,NO,	-5.550E+00,	6.099E+00,	9./39E+00,,	-0.570	
C,CE-144	,NO,	-2.190E+01,	2.455E+01,	3.952E+01,,	-0.554	
C,EU-152	,NO,	-7.349E+00,	1.222E+01,	1.711E+01,,	-0.430	
C,EU-154	,NO,	-2.411E+00,	6.226E+00,	1.027E+01,,	-0.235	
C,RA-226	,NO,	-4.853E+01,	8.093E+01,	1.319E+02,,	-0.368	
C,AC-228	, NO ,	-8.624E+00,	1.332E+01,	2.179E+01,,	-0.396	
C,TH-228	, NO	, 1.158E+01,	6.484E+00,	1.179E+01,,	0.983	
C, TH-232	, NO	-8.604E+00,	1.328E+01,	2.174E+01,,	-0.396	
C,U-235	, NO	, -2.371E+01,	2.489E+01,	3.968E+01,,	-0.597	
C,U-238	, NO	, 1.098E+02,	3.598E+02,	6.084E+02,,	0.180	
C,AM-241	, NO	, -1.518E+01,	2.768E+01,	4.409E+01,,	-0.344	

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 22-MAY-2006 13:56:55.23 TBE23 03017322 HpGe ******** Aquisition Date/Time: 22-MAY-2006 10:56:34.16 LIMS No., Customer Name, Client ID: L28671-13R1 WG BRAIDWOOD

Sample ID	:	23L2867	1-13R1		Smple Date:	12-MAY-2006 09:35:00.
Sample Type	:	WG			Geometry :	233L082404
Quantity	:	3.24050	E+00 L		BKGFILE :	23BG050506MT
Start Channel	:	50	Energy Tol :	1.50000	Real Time :	0 03:00:07.19
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time :	0 03:00:00.00
MDA Constant	:	0.00	Library Used:	LIBD		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	Fit
1	0	63.01*	6	351	1.00	126.13	1.03E+00	5.80E-04544.5	
2	0	92.51*	11	460	1.30	185.06	1.93E+00	1.04E-03382.0	
3	0	139.55*	77	372	1.08	279.06	2.32E+00	7.13E-03 49.1	
4	0	198.45*	54	163	1.11	396.76	2.11E+00	4.96E-03 42.4	
5	0	238.49*	1	198	1.02	476.78	1.90E+00	8.30E-05****	
6	0	351.41*	22	104	1.20	702.46	1.44E+00	2.07E-03 90.9	
7	Ō	596.65	40	78	1.47	1192.72	9.55E-01	3.74E-03 48.8	
8	0	1711.85	15	4	1.10	3424.17	4.49E-01	1.39E-03 34.6	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	a 7					
Mucriac					Uncorrecte	ed Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
TH-228	238.63	1	44.60*	1.901E+00	8.168E-02	2 8.250E-02	5574.61
	240.98		3.95	1.888E+00	]	Line Not Found	

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Acquisition date : 22-MAY-2006 10:56:34 Sample ID : 23L28671-13R1 Total number of lines in spectrum 8 7 Number of unidentified lines Number of lines tentatively identified by NID 1 12.50% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma Decay pCi/L pCi/L 2-Sigma Error %Error 2-Sigma Error %Error Flags Nuclide Hlife 8.250E-02 459.9E-02 5574.61 1.01 8.168E-02 TH-228 1.91Y _____ _____ 8.250E-02 Total Activity : 8.168E-02 Grand Total Activity : 8.168E-02 8.250E-02 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

											L28671	11	бof	123
Unid	lentified	Energy Li	nes								Pag	je :	3	
Samp	ole ID : 2	23L28671-1	3R1		Ac	quisi	tior	n date	:	22-MAY	2006 1	LO:5	6:34	
It	Energy	Area	Bkgnd	FWHM	Channel	Left	Ρw	Cts/:	Sec	%Err	%Eff	F	lags	
0	63.01	6	351	1.00	126.13	123	8	5.80E	-04	****	1.03E-	+00		
0	92.51	11	460	1.30	185.06	181	10	1.04E	-03	* * * *	1.93E-	+00		
0	139.55	77	372	1.08	279.06	275	10	7.13E	-03	98.2	2.32E-	+00		
0	198.45	54	163	1.11	396.76	394	6	4.96E	-03	84.8	2.11E-	+00		
0	351.41	22	104	1.20	702.46	1100	14	2.07E	-03 -07	**** 07 E	1.44E-	+00		
0	596.65 1711.85	40 15	78 4	1.47	3424.17	3420	14 8	3.74E 1.39E	-03	97.5 69.3	9.55E- 4.49E-	-01		
Flac	(s: "T" =	Tentative	ly asso	ociate	d									
Summ	narv of Nu	uclide Act	ivity											
							0							
TOU	al number	r OI lines Didentifie	d line	ectrum =			87							
Nun	wher of li	ines tenta	tively	ident	ified by	NID	1		12	.50%				
Nucl	ide Type	: natural												
			Wi	td Mea	n Wt	d Mea	n	Dogo	a	0 7070		-		
Nucl	ide I	Hlife De	UII Cav	nCi/L	led Dec	nCi/I	ΓĽ	2-Sig	y C ma	Error	2-Sigma %Erro	a r Fl	ads	
TH-2	28	1.91Y 1	.01 8	.168E-	02 8.	250E-	02	459	.9E	-02 5	5574.61	4 J	Lugb	
	Tota	al Activit	y: 8	.168E-	02 8.	250E-	02							
C	Irand Tota	al Activit	· v · 8	1688-	0.2 8	2508-	0.2							
C		AI ACCIVIC	.у. о	. 100E-	02 0.	2000-	02							
Flag	gs: "K" = "E" =	Keyline r Manually	not four edited	nd	"M" "A"	= Ma = Nu	nua clio	lly ac de spe	cep cif	ted ic ab	ı. limi	t		
Inte	erference	Report												
No :	Interfere	nce correc	ction p	erform	ed									
Comb	oined Act:	ivity-MDA	Report											
	- Identif:	ied Nuclio	les											
		7	_	70				~				7		<b>N</b> 7N
Nuc	lide	ACTIVITY (pCi/L)	7	ACT	error	(	pCi	A /L)		MDA (	error	A	CC/ML	A
TH-2	228	8.250E-0	)2	4.59	9E+00	8.	276	E+00		0.00	)E+00		0.01	.0
	- Non-Ide:	ntified Nu	uclides											
		Kev-Line	2											
		Activity	/ K.L.	Act	error		MD.	A		MDA (	error	A	ct/ME	A
Nuc:	lide	(pCi/L)	Ided			(	pCi	/L)						
BE-'	7	-6.651E-0	)1	2 22	4E+01	З	982	E+01		0.00	0E+00		-0.01	7
NA-	24	-1.157E-(	)1	9.44	9E-02	Ha	lf-	Life t	00	short				
K-4	0	-1.314E+(	01	3.79	6E+01	8.	006	E+01		0.00	0E+00		-0.16	54
CR-	51	-8.876E+0	00	2.81	7E+01	4.	804	E+01		0.00	0E+00		-0.18	35

## L28671 117 of 123

MN - 54	2.761E-01	2.438E+00	4.378E+00	0.000E+00	0.063
CO = 57	-2.596E+00	2.700E+00	4.343E+00	0.000E+00	-0.598
CO = 58	1.586E+00	2.776E+00	5.022E+00	0.000E+00	0.316
EE 59	3.622E+00	5.627E+00	1.042E+01	0.000E+00	0.348
CO = 60	5.645E-01	2.612E+00	4.791E+00	0.000E+00	0.118
ZN-65	2907E+00	5.663E+00	1.035E+01	0.000E+00	0.281
2N-05 CF 75	-1 350E-01	3.787E+00	6.359E+00	0.000E+00	-0.021
	1 347E+01	3.365E+00	6.695E+00	0.000E+00	2.012
V 00	-2.543E+00	3.064E+00	5.002E+00	0.000E+00	-0.508
1-00 ND 04	-1 423E+00	2.523E+00	4.208E+00	0.000E+00	-0.338
NB-94	8 073E-02	2.916E+00	5.055E+00	0.000E+00	0.016
NB-95	3 9565+00	4.940E+00	9.089E+00	0.000E+00	0.435
ZR-95	$3.930 \pm 00$	2.644E+02	4.902E+02	0.000E+00	0.578
MU-99	$2.052 \pm 02$ 1 0/3 \ \ 00	3.240E+00	5.626E+00	0.000E+00	0.185
RU-103	$2.040 \pm 00$	2 512E+01	4.424E+01	0.000E+00	0.078
RU-106	3.4720+00 1 747E+00	2.597E+00	4.733E+00	0.000E+00	0.369
AG-IIUM	1.74704+00	3.479E+00	5.910E+00	0.000E+00	-0.155
SN-113	4 206E+00	3906E+00	5.195E+00	0.000E+00	-0.829
SB-124	-4.300E+00	7509E+00	1.326E+01	0.000E+00	0.290
SB-125	3.0435+00	3 719E+01	6.331E+01	0.000E+00	-0.048
TE-129M	-3.034E+00	6 696E+00	1.142E+01	0.000E+00	-0.107
	-1.210E+00	4.328E+00	6.352E+00	0.000E+00	0.015
BA-133	9.211E-02	3 204E+00	5.051E+00	0.000E+00	0.528
CS-134	2.667E+00	4 213E+00	7.009E+00	0.000E+00	-0.294
CS-136	-2.062E+00	2944E+00	4.875E+00	0.000E+00	-0.432
CS-137	-2.1066+00	2.772E+0.0	4.643E+00	0.000E+00	-0.350
CE-139	-1.623E+00	1 621E+01	2.764E+01	0.000E+00	-0.272
BA-140	-7.5120+00	4 420E+00	7.316E+00	0.000E+00	-0.386
LA-140		6 375E+00	9.593E+00	0.000E+00	0.401
CE-141	3.040E+00	2.583E+01	3.585E+01	0.000E+00	-0.257
CE-144	-9.2008+00	9.664E+00	1.450E+01	0.000E+00	-0.102
EU-152		5.598E+00	9.023E+00	0.000E+00	-0.551
EU-154	-4.971E+00	6 899E + 01	1.206E+02	0.000E+00	-0.043
RA-226	-5.22/E+00	9.724E+00	1.780E+01	0.000E+00	0.058
AC-228	1.039E+00	9.692E+00	1.774E+01	0.000E+00	0.058
TH-232		$2.052 \pm 00$	3.524E+01	0.000E+00	0.019
U-235		2.35554+01 2 855F±02	4.931E+02	0.000E+00	-0.305
0-238	-1.5036+02	$2.0000 \pm 02$ 1 6/3 E $\pm 01$	2.485E+01	0.000E+00	0.453
AM-241	工.工乙65401	T.0420+0T	2.1000101		

# L28671 118 of 123

A,23L28671	-13R1	,05/22/2006	13:56,05/12/2	006 09:35,	3.240E+00,	L28671-13R1 4	WG
B,23L28671	-13R1	,LIBD	,06/	24/2005 07:5	0 010	1	
C,TH-228	,YES,	8.250E-02,	4.599E+00,	8.276E+00,,	0.010		
C,BE-7	,NO,	-6.651E-01,	2.324E+01,	3.982E+01,,	-0.017		
C,K-40	,NO,	-1.314E+01,	3.796E+01,	8.0068+01,,	-0.164		
C, CR-51	,NO,	-8.876E+00,	2.817E+01,	4.804E+01,,	-0.185		
C.MN-54	, NO ,	2.761E-01,	2.438E+00,	4.378E+00,,	0.063		
$C_{-}C_{0}-57$	.NO .	-2.596E+00,	2.700E+00,	4.343E+00,,	-0.598		
$C_{1}C_{2}-58$	NO .	1.586E+00,	2.776E+00,	5.022E+00,,	0.316		
C FE - 59	NO .	3.622E+00,	5.627E+00,	1.042E+01,,	0.348		
C, CO-60	NO .	5.645E-01,	2.612E+00,	4.791E+00,,	0.118		
$C_{7N-65}$	NO ,	2.907E+00,	5.663E+00,	1.035E+01,,	0.281		
C, 2R = 75	NO ,	-1.350E-01.	3.787E+00,	6.359E+00,,	-0.021		
C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>3</u> <u></u> C, <u>5</u> <u></u> C, <u>C</u> <u></u> <u></u> C, <u>C</u> <u></u> <u></u> <u></u> <u></u> C, <u>C</u> <u></u> C, <u>C</u> <u></u>	NO	1.347E+01.	3.365E+00,	6.695E+00,,	2.012		
$C, BR^{-05}$	NO	-2.543E+00	3.064E+00,	5.002E+00,,	-0.508		
C, I = 00	, NO ,	-1.423E+00	2.523E+00,	4.208E+00,,	-0.338		
C, ND - 94	, NO ,	8 073E-02	2.916E+00,	5.055E+00,,	0.016		
C, NB - 95	, INO ,	3 956E±00	4 940E+00.	9.089E+00,,	0.435		
C, 2R-95	, NO ,	$2.930 \pm 100$	2.644E+02	4.902E+02,	0.578		
C,MO-99	, NO ,	2.032E+02, 1 0/3E+00	3.240E+00.	5,626E+00,	0.185		
C, RU-103	, NO ,	1.043E+00	2.512E+01	4.424E+01.	0.078		
C, RU-106	, NO ,	, 3.472E+00, 1.77E+00	2.5221.02, 2.597E+00	4.733E+00.	0.369		
C, AG-110m	, NO	, 1.7476+00, 0.150701	3 179E+00	5 910E+00,	-0.155		
C, SN-113	, NO	-9.150E-01,	3.4/JE+00,	5.195E+00	-0.829		
C,SB-124	, NO	$, -4.306 \pm 00,$	$5.900 \pm 00,$	1.326E+01.	0.290		
C,SB-125	, NO	, 3.845E+00,	$7.309 \pm 00,$	6.331E+01	-0.048		
C,TE-129M	, NO	, -3.054E+00,	$5.719\pm01,$	1 142E+01	-0.107		
C,I-131	, NO	, -1.218E+00,	$6.090 \pm 00,$	6 352F+00	0.015		
C,BA-133	, NO	, 9.211E-02, 0.00	4.320E+00,	5.051E+00	0.528		
C,CS-134	, NO	, 2.66/E+00,	3.204E+00,	7 009E+00	-0.294		
C,CS-136	, NO	, -2.062E+00,	4.213E+00,	7.009E+00,	-0 432		
C,CS-137	, NO	, -2.106E+00,	2.944E+00,	4.6750+00,	-0.350		
C,CE-139	, NO	, -1.623E+00,	2.772E+00,	4.043E+00,	, 0.330		
C,BA-140	, NO	, -7.512E+00,	1.621E+01,	Z.764E+01,	, -0.386		
C,LA-140	, NO	, -2.827E+00,	4.420E+00,	7.316E+00,	, -0.300		
C,CE-141	, NO	, 3.848E+00,	6.375E+00,	9.593E+00,	, 0.401		
C,CE-144	, NO	, -9.208E+00,	2.583E+01,	3.585E+U1,	, -0.257		
C,EU-152	, NO	, -1.472E+00,	9.664E+00,	1.450E+01,	, -0.102		
C,EU-154	, NO	, -4.971E+00,	5.598E+00,	9.023E+00,	, -0.551		
C, RA-226	, NO	, -5.227E+00,	6.899E+01,	1.206E+02,	, -0.043		
C,AC-228	, NO	, 1.039E+00,	9.724E+00,	1.780E+01,	, 0.058		
C, TH-232	, NO	, 1.036E+00,	9.692E+00,	1.774E+01,	, 0.058		
C,U-235	, NO	, 6.864E-01,	2.393E+01,	3.524E+01,	, 0.019		
C,U-238	, NO	, -1.503E+02,	2.855E+02,	4.931E+02,	, -0.305		
C.AM-241	, NO	, 1.126E+01,	1.643E+01,	2.485E+01,	, 0.453		
-,							

Sec. Review: Analyst: LIMS:

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VAX/ FBE2	VMS 3 03	Teledyne B 017322 HpG	rown Eng. e *******	Labora *** Aqu	tory ( isiti	Gamma Re on Date/	port: 18-M Time: 18-	AY-2006 I MAY-2006	13:20	:35.14
LIMS	No.	, Customer	Name, Cl:	ient II	): WG	L28671-1	4 BRAIDWOO	D		
Samp Samp Quar Star End MDA	le I le T tity Char Cons	D:23 Cype:WG 7:3. Mannel:50 Mnel:40 Stant:0.	L28671-14 32000E+00 Ene: 90 Pk 00 Lib	L rgy To Srch Se rary Us	l : 1 ens: 5 sed: L	.50000 .00000 IBD	Smple Date Geometry BKGFILE Real Time Live time	: 12-MAY- : 2335L09 : 23BG050 : 0 03:00 : 0 03:00	2006 0704 506MT 0:07.4 0:00.0	10:35:00. 6 0
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	66655000000000	34.02* 35.52* 37.96* 42.21* 63.40* 66.07* 92.55* 139.89* 186.00* 238.48* 295.53* 351.82* 582.43* 609.11* 1460.49*	38 7 37 45 67 87 42 59 0 45 79 64 20 73 45	15 65 129 212 320 249 416 352 337 233 194 166 68 83 17	1.32 1.62 1.63 1.55 1.57 1.50 0.90 0.98 1.97 1.91 1.56 0.92 1.04 1.27 1.84	68.20 71.19 76.07 84.56 126.91 132.23 185.15 279.74 371.89 476.76 590.78 703.29 1164.31 1217.64 2920.92	9.73E-02 1.22E-01 1.68E-01 2.68E-01 9.45E-01 1.03E+00 1.69E+00 2.05E+00 1.72E+00 1.50E+00 1.32E+00 8.89E-01 8.59E-01 4.60E-01	3.52E-03 6.77E-043 3.39E-03 4.12E-03 6.23E-03 8.05E-03 3.90E-03 5.50E-03 7.10E-063 4.17E-03 7.36E-03 5.97E-03 1.85E-03 6.72E-03 4.13E-03	45.2 365.6 72.7 55.4 52.6 32.9 95.3 57.4 **** 65.6 39.3 43.6 88.2 29.9 34.0	5.59E+00 2.34E+00
16 17	0 0	1763.95* 1999.81	29 13	10 7	2.32 0.73	3528.51 4000.91	4.01E-01 3.63E-01	2.70E-03 1.23E-03	33.2 50.3	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Type: natura.	1.			Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
$K_{-40}$	1460.81	45	10.67*	4.595E-01	6.850E+01	6.850E+01	68.09
RA = 226	186.21	0	3.28*	1.946E+00	9.055E-02	9.056E-02	96335.83
TH-228	238.63	45	44.60*	1.725E+00	4.414E+00	4.441E+00	131.14
111 000	240.98		3.95	1.714E+00	Li	ne Not Found	1

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Acquisition date : 18-MAY-2006 13:20:35 Sample ID : 23L28671-14 Total number of lines in spectrum 17 13 Number of unidentified lines Number of lines tentatively identified by NID 4 23.53% Nuclide Type : natural UncorrectedDecay CorrDecay Corr2-SigmaNuclideHlifeDecaypCi/LpCi/L2-Sigma Error %Error FlagsK-401.28E+09Y1.006.850E+016.850E+014.664E+0168.09RA-2261600.00Y1.009.055E-029.056E-028724.E-0296335.83TH-2281.91Y1.014.414E+004.441E+005.825E+00131.14 _____ _____ Total Activity : 7.301E+01 7.303E+01 Grand Total Activity : 7.301E+01 7.303E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

L28671 121 of 123

3 Page : Unidentified Energy Lines Acquisition date : 18-MAY-2006 13:20:35 Sample ID : 23L28671-14 Flags Channel Left Pw Cts/Sec %Err %Eff Bkgnd FWHM Area It Energy 9.73E-02 65 24 3.52E-03 90.3 1.32 68.20 38 15 6 34.02 65 24 6.77E-04 **** 1.22E-01 71.19 1.62 7 65 6 35.52 1.68E-01 65 24 3.39E-03 **** 76.07 1.63 37 129 6 37.96 65 24 4.12E-03 **** 2.68E-01 84.56 1.55 6 42.21 45 212 121 15 6.23E-03 **** 9.45E-01 126.91 67 320 1.57 5 63.40 1.03E+00 121 15 8.05E-03 65.8 132.23 249 1.50 87 5 66.07 9 3.90E-03 **** 1.69E+00 181 0.90 185.15 416 42 92.55 0 8 5.50E-03 **** 2.05E+00 279.74 276 0.98 352 59 0 139.89 1.50E+00 590.78 584 13 7.36E-03 78.6 194 1.56 295.53 79 0 703.29 697 12 5.97E-03 87.1 1.32E+00 64 166 0.92 351.82 0 1164.31 1158 11 1.85E-03 **** 8.89E-01 Т 20 68 1.04 582.43 0 1217.64 1211 12 6.72E-03 59.8 8.59E-01 83 1.27 73 609.11 0 3528.51 3522 13 2.70E-03 66.4 4.01E-01 2.32 10 29 1763.95 0 4000.91 3992 14 1.23E-03 **** 3.63E-01 0.73 1999.81 13 7 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 17 Total number of lines in spectrum Number of unidentified lines 13 Number of lines tentatively identified by NID 4 23.53% Nuclide Type : natural Wtd Mean Wtd Mean Decay Corr 2-Sigma Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Hlife Nuclide 68.09 6.850E+01 4.664E+01 1.00 6.850E+01 1.28E+09Y K-40 8724.E-02 96335.83 9.056E-02 9.055E-02 1.00 RA-226 1600.00Y 131.14 5.825E+00 4.441E+00 4.414E+00 1.91Y 1.01 TH-228 ______ ______ 7.301E+01 7.303E+01 Total Activity : 7.303E+01 Grand Total Activity : 7.301E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Activity Act error (pCi/L) (pCi/L) Nuclide

K-40	6.850E+01	4.664E+01	5.301E+01	0.000E+00	1.292
RA-226	9.056E-02	8.724E+01	1.233E+02	0.000E+00	0.001
TH-228	4.441E+00	5.825E+00	9.364E+00	0.000E+00	0.474

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K (pCi/L) I	C.L. Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-1.459E+01	2.601E+01	4.297E+01	0.000E+00	-0.339
NA-24	-1.909E+03	3.022E+03	5.057E+03	0.000E+00	-0.377
CR-51	-1.970E+01	2.968E+01	4.981E+01	0.000E+00	-0.396
MN-54	1.285E+00	3.008E+00	5.459E+00	0.000E+00	0.235
CO-57	1.867E-01	3.217E+00	5.336E+00	0.000E+00	0.035
CO-58	-1.032E+00	3.138E+00	5.277E+00	0.000E+00	-0.196
FE-59	2.610E+00	5.805E+00	1.058E+01	0.000E+00	0.247
CO-60	1.567E+00	3.029E+00	5.666E+00	0.000E+00	0.277
ZN-65	5.898E+00	6.623E+00	1.233E+01	0.000E+00	0.478
SE-75	9.282E-01	4.307E+00	7.284E+00	0.000E+00	0.127
SR-85	1.072E+01	3.683E+00	6.973E+00	0.000E+00	1.538
Y-88	-4.039E-01	3.144E+00	5.635E+00	0.000E+00	-0.072
NB-94	1.118E-01	2.932E+00	5.084E+00	0.000E+00	0.022
NB-95	5.981E-01	3.012E+00	5.286E+00	0.000E+00	0.113
ZR-95	2.106E+00	5.392E+00	9.594E+00	0.000E+00	0.220
MO-99	2.627E+01	1.075E+02	1.889E+02	0.000E+00	0.139
RU-103	-1.157E+00	3.250E+00	5.422E+00	0.000E+00	-0.213
RU-106	-3.838E+00	2.676E+01	4.627E+01	0.000E+00	-0.083
AG-110m	-1.479E+00	2.882E+00	4.843E+00	0.000E+00	-0.305
SN-113	2.787E+00	4.091E+00	7.229E+00	0.000E+00	0.386
SB-124	-5.015E+00	4.257E+00	5.644E+00	0.000E+00	-0.889
SB-125	-8.962E-01	8.394E+00	1.430E+01	0.000E+00	-0.063
TE-129M	-1.032E+01	3.805E+01	6.400E+01	0.000E+00	-0.161
I-131	-1.686E+00	5.082E+00	8.608E+00	0.000E+00	-0.196
BA-133	4.038E+00	4.607E+00	7.148E+00	0.000E+00	0.565
CS-134	3.564E+00	4.128E+00	6.397E+00	0.000E+00	0.557
CS-136	8.069E-01	3.667E+00	6.475E+00	0.000E+00	0.125
CS-137	-1.322E+00	3.127E+00	5.289E+00	0.000E+00	-0.250
CE-139	-4.598E-01	3.093E+00	5.247E+00	0.000E+00	-0.088
BA-140	-1.095E+01	1.338E+01	2.232E+01	0.000E+00	-0.490
LA-140	6.802E-01	4.175E+00	7.623E+00	0.000E+00	0.089
CE-141	-2.634E+00	6.863E+00	9.898E+00	0.000E+00	-0.266
CE-144	-1.064E+01	2.872E+01	3.984E+01	0.000E+00	-0.267
EU-152	-5.868E+00	1.125E+01	1.591E+01	0.000E+00	-0.369
EU-154	3.580E+00	6.750E+00	1.134E+01	0.000E+00	0.316
AC-228	-3.613E+00	1.080E+01	1.911E+01	0.000E+00	-0.189
TH-232	-3.605E+00	1.078E+01	1.907E+01	0.000E+00	-0.189
U-235	-1.089E+01	2.799E+01	4.045E+01	0.000E+00	-0.269
U-238	2.870E+01	3.510E+02	6.287E+02	0.000E+00	0.046
AM-241	2.791E+00	1.782E+01	2.631E+01	0.000E+00	0.106

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# L28671 123 of 123

				/10 /0	000 10.25	3 320E+00.WG	L28671-14 B
1	A,23L28671-	14	,05/18/2006	17:36,05/12/2	006 10:55, 24/2005 07:59	a 23351,090704	
H	,23L28671-	14	,LIBD	,06/	Z4/Z005 07.55	1 292	
(	с.к-40 ,	YES,	6.850E+01,	4.664E+01,	5.3010+01, 1	0 001	
(	T.RA-226 ,	YES,	9.056E-02,	8.724E+01,	1.2336+02,1	0.001	
(	.TH-228	YES,	4.441E+00,	5.825E+00,	9.364E+00,,	-0 339	
(	C.BE-7	NO ,	-1.459E+01,	2.601E+01,	4.297E+01,,	-0.335	
1	C NA-24	NO ,	-1.909E+03,	3.022E+03,	5.057E+03,,	-0.377	
	C CR-51	NO ,	-1.970E+01,	2.968E+01,	4.981E+01,,	-0.390	
	C MN - 54	NO .	1.285E+00,	3.008E+00,	5.459E+00,,	0.235	
	C C C - 57	NO	1.867E-01,	3.217E+00,	5.336E+00,,	0.035	
	C, CO = 58	NO .	-1.032E+00,	3.138E+00,	5.277E+00,,	-0.196	
	$C \overline{F}\overline{F}$	NO .	2.610E+00,	5.805E+00,	1.058E+01,,	0.247	
	C, EE=55	NO .	1.567E+00,	3.029E+00,	5.666E+00,,	0.277	
	C, CO=00	NO ,	5.898E+00,	6.623E+00,	1.233E+01,,	0.478	
	C, ZN = 05	NO	9.282E-01,	4.307E+00,	7.284E+00,,	0.127	
	C, SE = 75	NO	1 072E+01	3.683E+00,	6.973E+00,,	1.538	
	C, SR-85	, NO , NO	-4 039E - 01	3.144E+00,	5.635E+00,,	-0.072	
	C, 1-88	, NO ,	1.118E-01.	2.932E+00,	5.084E+00,,	0.022	
	C, NB-94	, INO , NO	5.981E-01.	3.012E+00,	5.286E+00,,	0.113	
	C, NB-95	, NO ,	3.0010 01	5.392E+00,	9.594E+00,,	0.220	
	C, ZR-95	, NO ,	2.1000+007	1.075E+02,	1.889E+02,,	0.139	
	C, MO-99	, NO ,	2.0270101	3.250E+00,	5.422E+00,,	-0.213	
	C, RU-103	,NO ,	-1.13/1400	2 676E+01,	4.627E+01,,	-0.083	
	C,RU-106	,NO ,	-3.0300+00	2.882E+00.	4.843E+00,,	-0.305	
	C,AG-110m	,NO ,	-1.4795+00,	A 091E+00.	7.229E+00,,	, 0.386	
	C,SN-113	,NO ,	2.787E+00,	4.257E+00	5.644E+00,,	, -0.889	
	C,SB-124	,NO ,	-5.015E+00,	8 394E+00.	1.430E+01,,	, -0.063	
	C,SB-125	,NO,	-8.962E-01,	$2 805F \pm 01$	6.400E+01,	, -0.161	
	C,TE-129M	,NO,	-1.032E+01,	5.00000+01/	8.608E+00,	, -0.196	
	C,I-131	,NO,	-1.686E+00,	4.607E+00	7.148E+00,	0.565	
	C,BA-133	,NO,	4.038E+00,	4.007 <u>0</u> +00,	6 397E+00.	0.557	
	C,CS-134	,NO,	3.564E+00,	4.1200+00,	6 475E+00,	, 0.125	
	C,CS-136	,NO,	8.069E-01,	3.667E+00	5 289E+00.	, -0.250	
	C,CS-137	,NO,	-1.322E+00,	3.12/E+00,	$5.265 \pm 00$	, -0.088	
	C,CE-139	,NO,	-4.598E-01,	3.093E+00,	2.232E+01	-0.490	
	C,BA-140	,NO ,	-1.095E+01,	1.338E+U1,	7.623E+00	0.089	
	C,LA-140	,NO,	6.802E-01,	4.1/5E+00,	$9.898E\pm00$	-0.266	
	C,CE-141	,NO,	-2.634E+00,	6.863E+00,	9.8985+00,	, -0.267	
	C,CE-144	,NO,	-1.064E+01,	2.872E+01,	3.9040+01	-0 369	
	C,EU-152	,NO,	-5.868E+00,	1.125E+01,	1.591E+01, 1.124E+01	, 0.316	
	C.EU-154	,NO,	3.580E+00,	6.750E+00,	1.134E+01,	, 0.0189	
	C,AC-228	, NO ,	-3.613E+00,	1.080E+01,	T. ATTE+OT'	, _0 189	
	C.TH-232	, NO ,	-3.605E+00,	1.078E+01,	1.90/E+U1,	, -0.269	
	C.U-235	, NO ,	-1.089E+01,	, 2.799E+01,	4.0455+01,	, -0.205	
	C, U-238	, NO ,	2.870E+01,	, 3.510E+02,	6.28/E+UZ,	, 0.0106	
	C.AM-241	, NO ,	2.791E+00,	, 1.782E+01,	2.631E+01,	, 0.100	
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 $\lambda$  Teledyne Technologies Company

2508 Quality Lane Knoxville, TN 37931 865-690-6819 (Phone)

# Work Order #: L28784 Exelon

June 8, 2006



Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville CT 06062

## Case Narrative - L28784 EX001-3ESPBRAID-06

06/08/2006 19:20

## Sample Receipt

The following samples were received on May 30, 2006 in good condition, unless otherwise noted.

The collection times on the containers did not match the collection times on the Chain of Custody for all samples. See Sample Receipt Verification/Variance Report for details.

	Cross Reference Ta	ible
Client ID	Laboratory ID	Station ID(if applicable)
SW-BW-051706-MB-101	L28784-1	
SW-BW-051706-MB-102	L28784-2	
SW-BW-051706-MB-103	L28784-3	
SW-BW-051706-MB-104	L28784-4	
SW-BW-051706-MB-105	L28784-5	
SW-BW-051706-MB-106	L28784-6	
WG-BW-051506-MB-050	L28784-7	
WG-BW-051506-MB-052	L28784-8	
WG-BW-051906-MB-054	L28784-9	
WG-BW-051906-MB-055	L28784-10	
WG-BW-052206-MB-056	L28784-11	
WG-BW-052206-MB-057	L28784-12	

#### Analytical Method Cross Reference Table

Radiological Parameter	TBE Knoxville Method	Reference Method	
Gamma Spectrometry	TBE-2007 EPA 901.1		
H-3	TBE-2010	EPA 906.0	
TOTAL SR	TBE-2018	EPA 905.0	

TELEDYNE BROWN ENGINEERING, INC. A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

## Case Narrative - L28784 EX001-3ESPBRAID-06

06/08/2006 19:20

## **Gamma Spectroscopy**

### **Quality Control**

Quality control samples were analyzed as WG4070.

**Duplicate Sample** 

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client IDLaboratory IDQC Sample #SW-BW-051706-MB-L28784-1WG4070-1101

## <u>H-3</u>

#### **Quality Control**

Quality control samples were analyzed as WG4082.

#### Method Blank

All blanks were within acceptance limits, unless otherwise noted.

### Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

#### **Duplicate Sample**

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	QC Sample #
SW-BW-051706-MB-	L28784-1	WG4082-7
101		



**BROWN ENGINEERING, INC.** A Teledyne Technologies Company 2508 Quality Lane Knoxville, TN 37931-3133

## **Case Narrative - L28784** EX001-3ESPBRAID-06

06/08/2006 19:20

## TOTAL SR

#### **Quality Control**

Quality control samples were analyzed as WG4100.

Method Blank

All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

#### **Duplicate Sample**

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID SW-BW-051706-MB-101

Laboratory ID L28784-1

QC Sample # WG4100-3

## Certification

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Charles for K. Jeter Keith Jeter

**Operations Manager** 

# Sample Receipt Summary

05/31,	/06 14:27 SR08645	Tel Sample Receij	edyne Bro pt Verifi	own Engineer cation/Varia	ing L20704 0 Of ance Report
Client:	Exelon	Project #:	EX001-3ESI	PBRAID-06	LIMS #: L28784
Initia Ini	ted By: PMA t Date: 05/3	RSHALL 31/06 Receive Date: 05/31/	<i>'</i> 06		
Person No Noti Notif	Notified: tify Date: fy Method: y Comment:	Notification 5/31/06 lmail Sent with Acknowledgen	on of Var Contacte	riance d By: P.Che	ules
		Client Resp	onse		
Person Res Resp	n Responding esponse Date ponse Method onse Comment	g: 2: d: -			
Cı	riteria		Yes No NA	Comment	
1	Shipping co and intact	ontainer custody seals present	- NA		
2	Sample cont and intact	cainer custody seals present	NA		
3	Sample con condition	tainers received in good	Y		
4	Chain of c	ustody received with samples	Y		
5	All sample received	s listed on chain of custody	Y		
6	Sample con legible.	tainer labels present and	Y		
7	Informatio correspond	n on container labels with chain of custody	N		
	SW-BW-C	51506-MB-52		Sample colle container tim	ct times do not match mes of 09:00
	SW-BW-C	51506-MB-50		Sample colle	ct times do not match mes of 09:00
	SW-BW-(	051706-MB-101		Sample colle	ct times do not match mes of 10:30
	SW-BW-(	)52206-MB-56		Sample colle	ct times do not match mes of 10:30
	SW-BW-(	051906-MB-55		Sample colle container ti	ct times do not match mes of 11:00
	SW-BW-(	)51706-MB-105		Sample colle	ct times do not match mes of 11:15
	SW-BW-(	051906-MB-54		Sample colle container ti	ct times do not match mes of 11:30
	SW-BW-	)51706-MB-102		Sample colle	ct times do not match

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L28784 7 of 141

05/31/06 14:27

## SR #: SR08645

Exelon

Client:

# Teledyne Brown Engineering Sample Receipt Verification/Variance Report

Project #: EX001-3ESPBRAID-06

LIMS #:L28784

Initiated By: PMARSHALL Init Date: 05/31/06 Receive Date: 05/31	/06	
7 Information on container labels correspond with chain of custody	N	
SW-BW-051706-MB-104		Sample collect times do not match container times of 13:00
SW-BW-051706-MB-106		Sample collect times do not match container times of 13:55
SW-BW-051706-MB-103		Sample collect times do not match container times of 14:30
SW-BW-052206-MB-57		no time on container
8 Sample(s) properly preserved and in appropriate container(s)	Y	
		pH at or below 2 on Gamma portion of sample
9 Other (Describe)	N	
Samples 103, 050, 052, 056, 057 Sample 105		Approx 3L received Only received approx 2L

				, ~	DTM # CODICRS: 3
CON	ESTOG 8615 Chic	A-ROVERS & ASSOCIATES 5 W. Bryn Mawr Avenue cago, Illinois 60631	SHIPPED TO (Laboratory Name):		28784
	(773	)380-9933 phone )380-6421 fax	REFERENCE NUMBER: 45/36-20	PROJECT NAME: EXELON - BRAIDW	Dol
	CHAIF	N-OF-CUSIOUY RECORD		2 PARAMETERS	
SIGNA	TURE:	MUNT PON WOMMAN NAME:		A OF	REMARKS
SEQ. No.	DATE	TIME SAMPLE IDENTIFIC	ATION No. SAMPLE	K CONT	
_	5/17/26	1230 SW-BW-051706-MB-	101 W # 15/	× ×	
2	-	1245	107		
~ 4		1215	04	XXXX	
-		1230	05	× 1	
و م	+	1415	90	× ×	
1	5/ 15/06	1600 WG-BW-051506-MB	-050	< ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	
X		AM TOOL TO UT TO UT	- 05 & 54	× × ×	LINNTED WATER
<del>ह</del> .	9016115	1000 WG-DW-05 14100 1011 0		XXX	LIMITED WATER
9	Hacker	1115 + - 141 - 15720 - MB- 6	56	XXX	
10	anhric	0 T 0201	57 4	XXX	
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			TIME:		DATE:
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	low k Jenrod	-Receiving Laboratory Copy -Shipper Copy -Samnler Copy		DATE: 5/30/06 TIME:	1200
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5/31/66

TELEDYNE BROWN ENGINEERING 2508 Quality Lane Knoxville, TN 37931-3133

ACKNOWLEDGEMENT This is not an invoice

May 31, 2006

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville, CT 06062

The following sample(s) were received at Teledyne Brown Engineering Knoxville laboratory on May 30, 2006. The sample(s) have been scheduled for the analyses listed below and the report is scheduled for completion by June 06, 2006. Please review the following login information and pricing. Contact me if anything is incorrect or you have questions about the status of your sample(s).

Thank you for choosing Teledyne Brown Engineering for your analytical needs.

Sincerely, Rebecca Charles Project Manager (865)934-0379

Project ID: EX001-3ESPBRAID-06
 P.O. #: 00411203
Release #:
Contract#: 00411203
Kathy Shaw, FAX#:860-747-1900, larry.walton@exeloncorp.com

Client ID/ Station	Laboratory ID Analysis	Vol/Units Price	Start Collect Date/Time	Bnd Collect Date/Time
SW-BW-051706-MB-101	L28784-1		05/17/06:1230	
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00		
SW-BW-051706-MB-102	L28784-2		05/17/06:1245	
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00		
SW-BW-051706-MB-103	L28784-3		05/17/06:1343	
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00		
SW-BW-051706-MB-104	L28784-4		05/17/06:1315	
WG WG	GELI H-3 SR-90 (FAST)	108.00 108.00 140.00		
SW-BW-051706-MB-105	L28784-5 Page 1		05/17/06:1330	

Client ID/ 1 Station 2	Laboratory ID Analysis	Vol/Units Start Collect End Collect Price Date/Time Date/Time
WG	GELI H-3	108.00 108.00
WG	SR-90 (FAST)	140.00
SW-BW-051706-MB-106	L28784-6	05/17/06:1415
WG	GELI	108.00
WG WG	H-3 SR-90 (FAST)	140.00
WG-BW-051506-MB-050	L28784-7	05/15/06:1000
WG	GELI	108.00
WG WG	H-3 SR-90 (FAST)	108.00 140.00
WG-BW-051506-MB-052	L28784-8	05/15/06:1005
WC	GELT	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051906-MB-054	L28784-9	05/19/06:1000
WG	GELI	108.00
WG	H-3	108.00
WG	SR-90 (FAST)	140.00
WG-BW-051906-MB-055	L28784-10	05/19/06:1115
WG	GELI	108.00
WG	H-3 gp_90 (FAGT)	
WG	1.28784-11	05/22/06:1000
WG-BW-032200-MB-030	112,00+	
WG	GELI	108.00
WG WG	H-3 SR-90 (FAST)	140.00
 WG-BW-052206-MB-057	L28784-12	05/22/06:1030
		100.00
WG	GELL H-3	108.00
wG WG	SR-90 (FAST)	140.00

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# Internal Chain of Custody

L28784 12 of 141 Page: 1 of 606/08/06 19:20 Teledyne Brown Engineering Internal Chain of Custody Containernum 1 Sample # L28784-1 Analyst Prod DW GELI SO н-3 LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb Sample Custodian 030854 06/01/2006 14:27 099999 Lauren Larsen 029728 Donna Webb 030854 06/01/2006 14:28 Sample Custodian 099999 Lauren Larsen 06/01/2006 14:28 029728 Susan Ogletree Sample Custodian 029709 099999 06/03/2006 12:42 Containernum 2 Sample # L28784-1 Analyst Prod DW GELI SO н-З SR-90 (FAST) LCB Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 099999 06/01/2006 14:27 029728 Lauren Larsen Donna Webb 030854 06/01/2006 14:28 Sample # L28784-2 Containernum 1 Analyst Prod GELI DW SO H-3 LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 099999 06/01/2006 14:27 Lauren Larsen 029728 Donna Webb 030854 06/01/2006 14:28 Sample Custodian 099999 Lauren Larsen 06/01/2006 14:28 029728 029709 Susan Ogletree Sample Custodian 06/03/2006 12:42 099999 Containernum 2 Sample # L28784-2 Analyst Prod DW GELI so H-3LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 06/01/2006 14:27 099999 Lauren Larsen Donna Webb 029728 030854 06/01/2006 14:28 Containernum 1 Sample # L28784-3

Prod

Analyst
L28784 13 of 141 Page: 2 of 6

Teledyne Brown Engineering 06/08/06 19:20 Internal Chain of Custody ***** Containernum 1 Sample # L28784-3 DW GELI SO н-3 LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 06/01/2006 14:27 099999 Lauren Larsen 029728 Donna Webb 030854 06/01/2006 14:28 Sample Custodian 099999 Lauren Larsen 029728 06/01/2006 14:28 029709 Susan Ogletree Sample Custodian 06/03/2006 12:42 099999 Containernum 2 Sample # L28784-3 Analyst Prod DW GELI SO н-3 LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 099999 06/01/2006 14:27 Lauren Larsen 029728 Donna Webb 06/01/2006 14:28 030854 Containernum 1 Sample # L28784-4 Analyst Prod DW GELI SO н-3 LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 06/01/2006 14:27 099999 029728 Lauren Larsen Donna Webb 030854 06/01/2006 14:28 Sample Custodian 099999 Lauren Larsen 06/01/2006 14:28 029728 Susan Ogletree 029709 Sample Custodian 06/03/2006 12:42 099999 Containernum 2 Sample # L28784-4 Analyst Prod DW GELI so н-з LCB SR-90 (FAST) Received By Relinquish Date Relinquish By Sample Custodian 099999 05/30/2006 00:00 Donna Webb 030854 Sample Custodian 099999 06/01/2006 14:27 Lauren Larsen Donna Webb 029728 06/01/2006 14:28 030854 Containernum 1 Sample # L28784-5

Analyst

L28784 14 of 141 Page: 3 of 6

06/08/06 19:20	T	eledyne Brown Engineering		Page: 3 of 6
	:	Internal Chain of Custody		
**************************************	*******	**************************************	*****	****
GELI	DW			
н-3	SO			
SR-90 (FAST)	LCB			
Relinquish Date Rel:	inquish By		Received By	
05/30/2006 00:00			099999	Sample Custodian
06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
06/01/2006 14:28	029728	Lauren Larsen	099999	Sample Custodian
06/03/2006 12:42	099999	Sample Custodian	029709	Susan Ogletree
**************************************	******	**************************************	*****	*****
Prod GELI	Anal DW	yst		
н-З	SO			
SR-90 (FAST)	LCB			
Relinquish Date Rel	inquish By		Received By	Sample Custodian
05/30/2006 00:00			099999	Denna Wobb
06/01/2006 14:27	099999	Sample Custodian	030854	Jonna webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
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Analyst

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**************************************	********************* Co	**************************************	*****	****
GELI	DW			
н-3	SO			
SR-90 (FAST)	LCB			
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06/01/2006 14:27	099999	Sample Custodian	030854	Donna webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
06/01/2006 14:28	029728	Lauren Larsen	099999	Sample Custodian
06/03/2006 12:42	099999	Sample Custodian	029709	Susan Ogletree
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06/01/2006 14:28	030854	Donna Webb	029728	Lauren harsen
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06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
06/01/2006 14:28	029728	Lauren Larsen	099999	Sample Custodian
06/03/2006 12:42	099999	Sample Custodian	029709	Susan Ogletree
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Analyst

L28784 16 of 141 Page: 5 of 6

06/08/06 19:20	Tel	edvne Brown Engineering		Page: 5 OI 6
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06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
06/01/2006 14:28	029728	Lauren Larsen	099999	Sample Custodian
06/03/2006 12:42	099999	Sample Custodian	029709	Susan Ogletree
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05/30/2006 00:00			020954	Donna Webb
06/01/2006 14:27	099999	Sample Custodian	020729	Lauren Larsen
06/01/2006 14:28	030854	Donna Webb	029720	Hauren Harben
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SR-90 (FAST)			Received By	
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06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:29	030854	Donna Webb	029728	Lauren Larsen
06/01/2006 14:28	029728	Lauren Larsen	099999	Sample Custodian
06/02/2006 12:42	099999	Sample Custodian	029709	Susan Ogletree
**************************************	****	**************************************	*****	* * * * * * *
Prod	Analy	rst		
GELI	DW			
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SR-90 (FAST)	LCB			
Relinquish Date Re	linquish By		Received By	Sample Custodian
05/30/2006 00:00			099999	Danne Webb
06/01/2006 14:27	099999	Sample Custodian	030854	
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
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Analyst

L28784 17 of 141 Page: 6 of 6

06/08/06 19:20	Tel	edyne Brown Engineering		Page: 6016
	In	ternal Chain of Custody		
**************************************	******************** Cc	**************************************	*****	* * * * *
GELI	DW			
н-3	SO			
SR-90 (FAST)	LCB			
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05/30/2006 00:00			099999	Sample Custodian
06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
06/01/2006 14:28	029728	Lauren Larsen	099999	Sample Custodian
06/03/2006 12:42	099999	Sample Custodian	029709	Susan Ogletree
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05/30/2006 00:00			099999	Sample Custodian
06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen
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н-3	SO			
SR-90 (FAST)	LCB			
Relinquish Date Re	linquish By		Received By	Sample Custodian
05/30/2006 00:00			030953	Donna Webb
06/01/2006 14:27	099999	Sample Custodian	020729	Lauren Larsen
06/01/2006 14:28	030854	Donna Webb	029728	Sample Custodian
06/01/2006 14:28	029728	Lauren Larsen	099999	Susan Ogletree
06/03/2006 12:42	099999	Sample Custodian	029709	Susan Ogreciee
**************************************	*****	**************************************	*****	***
Prod GELI	Analy DW	rst		
н-3	SO			
SR-90 (FAST)	LCB			
Relinquish Date Re	alinquish By		Received By	
05/30/2006 00:00			099999	Sample Custodian
06/01/2006 14:27	099999	Sample Custodian	030854	Donna Webb
06/01/2006 14:28	030854	Donna Webb	029728	Lauren Larsen

### Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

### L28784

BarbonSW-EW-051706-MB-101Process step LoginProdEnalystDateLaginFMARSHALL05/30/06AliquotGELIDW06/01/06AliquotR-90(FAST)LCB06/02/06Count RoomGELIILL06/02/06Count RoomRS-90(FAST)KDJ06/01/06Count RoomSR-90(FAST)KDJ06/01/06Count RoomRS-90(FAST)KDJ06/02/06Count RoomSR-90(FAST)KDJ06/01/06Count RoomSR-90(FAST)Date06/01/06Count RoomSR-90(FAST)Date06/01/06LoginFroess stepProdSAST)DateLoginFNSTLCB06/03/0606/06/06AliquotSR-90(FAST)LCB06/03/06AliquotSR-90(FAST)KPW06/03/06Count RoomR-1KPW06/03/06Count RoomR-2MalystDateIliquotGELIMalystDateProcess stepProdSN-50MalystIliquotGELIKPW06/03/06AliquotSR-90FAST)KPW06/03/06Count RoomR-1KPW06/03/06Count RoomR-3KDJ06/05/06AliquotSR-90FAST)KPW06/03/06Count RoomR-3KDJ06/05/06AliquotSR-90FAST)KPW0	****	******	****	****	* * * * * * * * * * * * * * * * * * * *
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AliquotSR-90 (FAST)LCB $06/06/06$ Count RoomGELIILL $06/02/06$ Count RoomH-3KOJ $06/04/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ INTROM SR-90 (FAST)KPW $06/07/06$ Intro State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State	Aliquot	Н-З		SO	06/03/06
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Count RoomH-3KOJ $06/04/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ L28784-2WGSW-EW-051706-MB-102Process stepProdAnalystDateProcess stepProdMaRSHALL $05/30/06$ AliquotGELIDW $06/01/06$ AliquotSR-90 (FAST)LCB $06/05/06$ AliquotSR-90 (FAST)LCB $06/05/06$ Count RoomGELIKPW $06/05/06$ Count RoomH-3KOJ $06/05/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ Count RoomSR-90 (FAST)KPW $06/01/06$ LoginNGSW-EW-051706-MB-103PMARSHALL $05/30/06$ Process stepProdAnalystPateLoginSO $06/05/06$ $06/05/06$ AliquotGELIDW $06/01/06$ AliquotGELIKPW $06/03/06$ Count RoomR-90 (FAST)KPW $06/07/06$ Count RoomGELIKPW $06/07/06$ Count RoomGELISO $06/05/06$ Count RoomH-3SO $06/05/06$ Count RoomH-3SO $06/05/06$ Count RoomGELIMalystDateL28784-4WGSV-EW-051706-MB-104EVProcess stepProdAnalystDate <t< td=""><td>Count Room</td><td>GELI</td><td></td><td>ILL</td><td>06/02/06</td></t<>	Count Room	GELI		ILL	06/02/06
Count Room         SR-90         (FAST)         KPW         06/07/06           L28784-2         WG         SW-EW-051706-MB-102         Date           Process step         Prod         Analyst         Date           Login         PMARSHALL         05/30/06           Aliquot         GELI         DW         06/01/06           Aliquot         GELI         DW         06/05/06           Aliquot         R-90         (FAST)         LCB         06/06/06           Count Room         GELI         KPW         06/03/06           Count Room         SR-90         (FAST)         KPW         06/03/06           Count Room         R-90         (FAST)         KPW         06/03/06           Count Room         R-90         (FAST)         KPW         06/03/06           Count Room         SR-90         (FAST)         KPW         06/03/06           Count Room         SR-90         (FAST)         KPW         06/03/06           Login         Process step         Prod         Analyst         Date           Login         KPW         06/05/06         O         O           Aliquot         SR-90         (FAST)         KPW         06/0	Count Room	н-3		КОЈ	06/04/06
Justice Holdstrip       WG       SW-EW-051706-MB-102         Process step       Prod       Analyst       Date         Login       PMARSHALL       05/30/06         Aliquot       GELI       DW       06/01/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/05/06         Count Room       GELI       KPW       06/05/06         Count Room       GELI       KPW       06/05/06         Count Room       R-90 (FAST)       KDJ       06/05/06         Count Room       SR-90 (FAST)       KPW       06/07/06         MG       SW-EW-051706-MB-103       E       E         Process step       Prod       Analyst       Date         Login       GELI       DW       06/01/06         Aliquot       GELI       SO       06/05/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/07/06         Aliquot       SR-90 (FAST)       LCB       06/07/06         Count Room       GELI       KPW       06/07/06         Count Room       SW-EW-051706-MB-104       E       <	Count Room	SR-90	(FAST)	KPW	06/07/06
<table-container>L28784-0WeinerbeinderingWeinerbeinderingProcess stepAnalysicBalesBalesAnalysicSoloSoloSoloAnalysicGeneralizationSoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloCount RoomR-9FASTOKPWGoloCount RoomSoloFASTOKPWGoloCount RoomSoloFASTOKPWGoloCount RoomSoloFASTOKPWGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGoloAnalysicSoloGoloGolo<!--</td--><td>*****</td><td>*****</td><td>*****</td><td>*****</td><td>*****</td></table-container>	*****	*****	*****	*****	*****
Process stepProdAnalystDateLoginPMARSHALL05/30/06AliquotGELIDW06/01/06AliquotH-3SO06/05/06AliquotGELIKPW06/03/06Count RoomGELIKPW06/03/06Count RoomSR-90FAST)KDQ06/05/06Count RoomSR-90FAST)KPW06/07/06Process stepSM-EM-051706-MB-10306/05/0606/07/06Process stepSM-EM-051706-MB-103SSProcess stepSM-EM-051706-MB-103SSAliquotGELIN06/01/06AliquotGELISO06/01/06AliquotSN-90(FAST)LCB06/06/06AliquotSN-90(FAST)KPW06/01/06Count RoomSN-90(FAST)KDQ06/05/06Count RoomSN-90(FAST)KPW06/01/06Count RoomSN-90(FAST)KPW06/01/06AliquotSN-90(FAST)KPW06/01/06Count RoomSN-90(FAST)MansHALLSNO(6AliquotSN-90(FAST)MANSHALLSNO(6AliquotSN-90(FAST)KPW06/01/06Count RoomSN-90(FAST)SNO(6MANSHALLAliquotSN-90(FAST)MANSHALLSNO(6AliquotSNOSNO(6SNO(6MANSHALLSNO(6AliquotSNOSNO(6SNO(6 <td>L28784-2</td> <td>WG</td> <td>SW-BW-051706-MB-102</td> <td></td> <td></td>	L28784-2	WG	SW-BW-051706-MB-102		
LoginPMARSHALL $05/30/06$ AliquotGELIDW $06/01/06$ AliquotH-3SO $06/05/06$ AliquotSR-90 (FAST)LCB $06/03/06$ Count RoomGELIKPW $06/03/06$ Count RoomH-3KOJ $06/05/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ Process stepProcess stepProdAnalystLoginDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotSR-90 (FAST)LCB $06/05/06$ AliquotSR-90 (FAST)LCB $06/05/06$ Count RoomGELIKPW $06/03/06$ Count RoomGELIKPW $06/07/06$ AliquotSR-90 (FAST)KPW $06/07/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ Hereoses stepProcess stepProcess stepProdMalystDateDenteePMARSHALL $05/30/06$ Intervent HereoseCount RoomSR-90 (FAST)KPW $06/07/06$ Hereoses stepProdLoginDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELICount Room $06/05/06$ AliquotGELIKPW $06/03/06$ Count RoomGELI<	Process step	Prod		Analyst	Date
Aliquot       GELI       DW $06/01/06$ Aliquot       H-3       SO $06/05/06$ Aliquot       SR-90 (FAST)       LCB $06/06/06$ Count Room       GELI       KPW $06/05/06$ Count Room       H-3       KOJ $06/05/06$ Count Room       H-3       KPW $06/07/06$ Count Room       SR-90 (FAST)       KPW $06/07/06$ Hanalyst       Pate       Pate         Process step       Prod       Analyst       Date         Login       SO $06/05/06$ $06/05/06$ Aliquot       GELI       DW $06/01/06$ Aliquot       SE-90 (FAST)       LCB $06/06/06$ Count Room       GELI       KPW $06/05/06$ Count Room       GELI       KPW $06/05/06$ Count Room       SR-90 (FAST)       KPW $06/07/06$ Process step       Prod       SR-90 (FAST)       KPW $06/07/06$ Process step       Prod       SR-90 (FAST)       KPW $06/07/06$ Aliquot       GELI       Maalyst       Date	Login			PMARSHALL	05/30/06
Aliquot       H-3       SO       06/05/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/03/06         Count Room       H-3       KOJ       06/05/06         Count Room       SR-90 (FAST)       KPW       06/07/06         ************************************	Aliguot	GELI		DW	06/01/06
AliquotSR-90 (FAST)LCB $06/06/06$ Count RoomGELIKPW $06/03/06$ Count RoomH-3KOJ $06/05/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ ***********************************	Aliquot	Н-З		SO	06/05/06
Count RoomGELIKPW $06/03/06$ Count RoomH-3KOJ $06/05/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ <b>L28784-3</b> WGSW-EW-051706-MB-103Process stepProdAnalystDateLoginFMARSHALL $05/30/06$ $06/01/06$ AliquotGELIDW $06/01/06$ AliquotSR-90 (FAST)LCB $06/05/06$ Count RoomGELIKPW $06/03/06$ Count RoomGELIKPW $06/07/06$ L28784-4WGSW-EW-051706-MB-104 $V$ Process stepProdKPW $06/07/06$ HiquotGELIDW $06/01/06$ AliquotSR-90 (FAST)KPW $06/07/06$ HiquotGELIKPW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/05/06$ AliquotSR-90 (FAST)LCB $06/05/06$ AliquotGELIDW $06/05/06$ AliquotSR-90 (FAST)LCB $06/05/06$ AliquotSR-90 (FAST)LCB $06/06/06$ AliquotSR-90 (FAST)LCB $06/06/06$ AliquotSR-90 (FAST)LCB $06/06/06$ Count RoomGELIKPW $06/03/06$ Count RoomGELIKPW $06/05/06$ Count RoomGELIKPW $06/05/06$ AliquotSR-90 (FAST)KP	Aliquot	SR-90	(FAST)	LCB	06/06/06
Count RoomH-3KOJ $06/05/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ ***********************************	Count Room	GELI		KPW	06/03/06
Count RoomSR-90 (FAST)KPW $06/07/06$ L28784-3WGSW-BW-051706-MB-103Process stepProdAnalystDateLoginPMARSHALL $05/30/06$ AliquotGELIDW $06/01/06$ AliquotSR-90 (FAST)LCB $06/06/06$ Count RoomGELIKPW $06/07/06$ Count RoomGELIKPW $06/07/06$ Count RoomSR-90 (FAST)KCJ $06/07/06$ L28784-4WGSW-BW-051706-MB-104 $PMARSHALL$ $05/30/06$ Process stepProdKPW $06/07/06$ LoginSR-90 (FAST)KPW $06/07/06$ AliquotGELIDW $06/07/06$ AliquotSR-90 (FAST)KPW $06/07/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/01/06$ AliquotGELIDW $06/05/06$ AliquotSR-90 (FAST)LCB $06/06/06$ AliquotSR-90 (FAST)LCB $06/06/06$ AliquotSR-90 (FAST)LCB $06/06/06$ Count RoomGELIKPW $06/03/06$ Count RoomGELIKPW $06/03/06$ Count RoomGELIKPW $06/05/06$ Count RoomGELIKPW $06/05/06$ Count RoomGELIKPW $06/05/06$ Count RoomGELIKPW $06/05/06$ Count RoomSR-90 (FAST)KPW $06/05/06$ Count RoomGELIKPW <td>Count Room</td> <td>Н-З</td> <td></td> <td>KOJ</td> <td>06/05/06</td>	Count Room	Н-З		KOJ	06/05/06
Note of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec	Count Room	SR-90	(FAST)	KPW	06/07/06
L28784-3WGSW-BW-051706-MB-102Process stepProdAnalystDateloginPMARSHALL05/30/06AliquotGELIDW06/01/06AliquotH-3S006/05/06AliquotSR-90FAST)LCB06/03/06Count RoomGELIKPW06/05/06Count RoomSR-90FAST)KPW06/07/06Count RoomSR-90FAST)KPW06/07/06Process stepSM-BW-051706-MB-10406/07/06SProcess stepSM-BW-051706-MB-104SSAliquotGELIMalystSAliquotGELISO06/01/06AliquotGELIDW06/01/06AliquotGELISO06/01/06AliquotGELISO06/05/06AliquotGELIKPW06/03/06Count RoomGELIKPW06/03/06Count RoomGELIKPW06/03/06Count RoomS=90(FAST)KDJ06/05/06Count RoomS=90KPW06/05/06Count RoomS=90KPW06/05/06Count RoomS=90KPW06/07/06	****	******	****	*****	* * * * * * * * * * * * * * * * * * * *
Process stepProdAnalystDateLoginPMARSHALL05/30/06AliquotGELIDW06/01/06AliquotH-3SO06/05/06AliquotSR-90 (FAST)LCB06/06/06Count RoomGELIKPW06/03/06Count RoomSR-90 (FAST)KDJ06/07/06ttableSW-BW-051706-MB-10406/07/06Process stepProdAnalystDateLoginFrodDW06/01/06AliquotGELIDW06/01/06AliquotGELIDW06/01/06AliquotGELIDW06/01/06AliquotGELIDW06/01/06AliquotSR-90 (FAST)LCB06/06/06AliquotSR-90 (FAST)LCB06/03/06AliquotSR-90 (FAST)KPW06/03/06Count RoomGELIKPW06/03/06Count RoomH-3KOJ06/05/06Count RoomGELIKPW06/05/06Count RoomH-3KOJ06/05/06Count RoomH-3KPW06/07/06	L28784-3	WG	SW-BW-051706-MB-103		
LoginPMARSHALL $05/30/06$ AliquotGELIDW $06/01/06$ AliquotH-3SO $06/05/06$ AliquotSR-90 (FAST)LCB $06/06/06$ Count RoomGELIKPW $06/03/06$ Count RoomH-3KOJ $06/07/06$ Count RoomSR-90 (FAST)KPW $06/07/06$ ***********************************	Process step	Prod		Analyst	Date
Aliquot       GELI       DW       06/01/06         Aliquot       H-3       SO       06/05/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/03/06         Count Room       H-3       KOJ       06/07/06         Count Room       SR-90 (FAST)       KPW       06/07/06         ***********************************	Login			PMARSHALL	05/30/06
Aliquot       H-3       SO $06/05/06$ Aliquot       SR-90 (FAST)       LCB $06/06/06$ Count Room       GELI       KPW $06/03/06$ Count Room       H-3       KOJ $06/05/06$ Count Room       SR-90 (FAST)       KPW $06/07/06$ Count Room       SR-90 (FAST)       KPW $06/07/06$ ***********************************	Aliquot	GELI		DW	06/01/06
Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/03/06         Count Room       H-3       KOJ       06/05/06         Count Room       SR-90 (FAST)       KPW       06/07/06 <b>L28784-4</b> WG       SW-BW-051706-MB-104       Date         Process step       Prod       Analyst       Date         Login       DW       06/01/06         Aliquot       GELI       DW       06/05/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/03/06         Count Room       GELI       KPW       06/03/06         Count Room       GELI       KPW       06/03/06         Count Room       H-3       KOJ       06/05/06         Count Room       SR-90 (FAST)       KPW <t< td=""><td>Aliquot</td><td>Н-З</td><td></td><td>SO</td><td>06/05/06</td></t<>	Aliquot	Н-З		SO	06/05/06
Count Room       GELI       KPW $06/03/06$ Count Room       H-3       KOJ $06/05/06$ Count Room       SR-90 (FAST)       KPW $06/07/06$ ************************************	Aliquot	SR-90	(FAST)	LCB	06/06/06
Count Room       H-3       KOJ $06/05/06$ Count Room       SR-90 (FAST)       KPW $06/07/06$ ************************************	Count Room	GELI		KPW	06/03/06
Count RoomSR-90 (FAST)KPW $06/07/06$ ***********************************	Count Room	Н-З		KOJ	06/05/06
***********************************	Count Room	SR-90	(FAST)	KPW	06/07/06
L28784-4WGSW-EW-051706-MB-104Process stepProdAnalystDateLoginProdPMARSHALL05/30/06AliquotGELIDW06/01/06AliquotH-3SO06/05/06AliquotSR-90 (FAST)LCB06/03/06Count RoomGELIKPW06/05/06Count RoomH-3KDJ06/05/06Count RoomSR-90 (FAST)KPW06/07/06	****	******	****	*****	*******
Process stepProdAnalystDateLoginPMARSHALL05/30/06AliquotGELIDW06/01/06AliquotH-3SO06/05/06AliquotSR-90 (FAST)LCB06/06/06Count RoomGELIKPW06/03/06Count RoomH-3KOJ06/05/06Count RoomSR-90 (FAST)KPW06/07/06	L28784-4	WG	SW-BW-051706-MB-104		
Login         PMARSHALL         05/30/06           Aliquot         GELI         DW         06/01/06           Aliquot         H-3         SO         06/05/06           Aliquot         SR-90 (FAST)         LCB         06/06/06           Count Room         GELI         KPW         06/03/06           Count Room         H-3         KOJ         06/05/06           Count Room         SR-90 (FAST)         KPW         06/07/06	Process step	Prod		Analyst	Date
Aliquot       GELI       DW       06/01/06         Aliquot       H-3       SO       06/05/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/03/06         Count Room       H-3       KOJ       06/05/06         Count Room       SR-90 (FAST)       KPW       06/07/06	Login			PMARSHALL	05/30/06
Aliquot       H-3       SO       06/05/06         Aliquot       SR-90 (FAST)       LCB       06/06/06         Count Room       GELI       KPW       06/03/06         Count Room       H-3       KOJ       06/05/06         Count Room       SR-90 (FAST)       KPW       06/07/06	Aliquot	GELI		DW	06/01/06
Aliquot         SR-90 (FAST)         LCB         06/06/06           Count Room         GELI         KPW         06/03/06           Count Room         H-3         KOJ         06/05/06           Count Room         SR-90 (FAST)         KPW         06/07/06	Aliquot	Н-З		SO	06/05/06
Count Room         GELI         KPW         06/03/06           Count Room         H-3         KOJ         06/05/06           Count Room         SB-90 (FAST)         KPW         06/07/06	Aliquot	SR-90	(FAST)	LCB	06/06/06
Count Room         H-3         KOJ         06/05/06           Count Room         SR-90 (FAST)         KPW         06/07/06	Count Room	GELI		KPW	06/03/06
Count Room SR-90 (FAST) KPW 06/07/06	Count Room	Н-З		КОЈ	06/05/06
	Count Room	SR-90	(FAST)	KPW	06/07/06
***************************************	*****	******	****	*****	******
L28784-5 WG SW-BW-051706-MB-105	т.28784-5	WG	SW-BW-051706-MB-105	5	
Process step Prod Analyst Date	Process step	Prod		Analyst	Date
Login PMARSHALL 05/30/06	Login			PMARSHALL	05/30/06
Aliquot GELI DW 06/01/06	Aliquot	GELI		DW	06/01/06
Aliguot H-3 SO 06/05/06	Aliquot	Н-З		SO	06/05/06
Aliguot SR-90 (FAST) LCB 06/06/06	Aliquot	SR-90	) (FAST)	LCB	06/06/06
Count Room GELI KOJ 06/04/06	Count Room	GELI		KOJ	06/04/06

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### L28784

L28784-5	WG	SW-BW-051706-MB-105		
Count Room	Н-З		KOJ	06/05/06
Count Room	SR-90	(FAST)	KPW	06/07/06
*****	*****	******	******	*******
L28784-6	WG	SW-BW-051706-MB-106		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/30/06
Aliquot	GELI		DW	06/01/06
Aliquot	Н-З		SO	06/05/06
Aliquot	SR-90	(FAST)	LCB	06/06/06
Count Room	GELI		КОЈ	06/04/06
Count Room	Н-З		КОЈ	06/05/06
Count Room	SR-90	(FAST)	KPW	06/07/06
*******	******	* * * * * * * * * * * * * * * * * * * *	*****	* * * * * * * * * * * * * * * * * * * *
L28784-7	WG	WG-BW-051506-MB-050		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/30/06
Aliquot	GELI		DW	06/01/06
Aliquot	Н-З		SO	06/05/06
Aliquot	SR-90	(FAST)	LCB	06/06/06
Count Room	GELI		KOJ	06/04/06
Count Room	Н-З		KOJ	06/05/06
Count Room	SR-90	(FAST)	KPW	06/07/06
*****	******	****	****	*****
L28784-8	WG	WG-BW-051506-MB-052		
<b>L28784-8</b> Process step	<b>WG</b> Prod	WG-BW-051506-MB-052	Analyst	Date
<b>L28784-8</b> <u>Process step</u> Login	<b>WG</b> Prod	WG-BW-051506-MB-052	<u>Analyst</u> PMARSHALL	Date 05/30/06
<b>L28784-8</b> <u>Process step</u> Login Aliquot	<b>WG</b> <u>Prod</u> GELI	WG-BW-051506-MB-052	<u>Analyst</u> PMARSHALL DW	<u>Date</u> 05/30/06 06/01/06
<b>L28784-8</b> <u>Process step</u> Login Aliquot Aliquot	WG Prod GELI H-3	WG-BW-051506-MB-052	<u>Analyst</u> PMARSHALL DW SO	Date 05/30/06 06/01/06 06/05/06
L28784-8 Process step Login Aliquot Aliquot Aliquot	WG Prod GELI H-3 SR-90	WG-BW-051506-MB-052 (FAST)	<u>Analyst</u> PMARSHALL DW SO LCB	Date 05/30/06 06/01/06 06/05/06 06/06/06
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room	WG Prod GELI H-3 SR-90 GELI	<b>WG-BW-051506-MB-052</b> (FAST)	<u>Analyst</u> PMARSHALL DW SO LCB KOJ	Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room	WG Prod GELI H-3 SR-90 GELI H-3	<b>WG-BW-051506-MB-052</b> (FAST)	<u>Analyst</u> PMARSHALL DW SO LCB KOJ KOJ	Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room	WG Prod GELI H-3 SR-90 GELI H-3 SR-90	<b>WG-BW-051506-MB-052</b> (FAST) (FAST)	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW	Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06 06/07/06
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ******	WG-BW-051506-MB-052 (FAST) (FAST)	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06 06/06/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room <b>***************</b>	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/06/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG <u>Prod</u> GELI H-3 SR-90 GELI H-3 SR-90 ****** WG <u>Prod</u> GELI H-3	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI H-3 SR-90	WG-BW-051506-MB-052 (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI H-3 SR-90 GELI	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 ****** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 WG Prod GELI H-3 SR-90 GELI H-3 SR-90	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 K***** WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90	WG-BW-051506-MB-052 (FAST) (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>
L28784-8 Process step Login Aliquot Aliquot Aliquot Count Room Count Room Count Room ***********************************	WG Prod GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI H-3 SR-90 GELI	WG-BW-051506-MB-052 (FAST) ************************************	Analyst PMARSHALL DW SO LCB KOJ KPW ************************************	<pre>Date 05/30/06 06/01/06 06/05/06 06/06/06 06/04/06 06/07/06 ************************************</pre>

#### Teledyne Brown Engineering Internal Chain of Custody Supplemental Sheet

#### L28784

L28784-10	WG	WG-BW-051906-MB-055		
Aliquot	GELI		DW	06/01/06
Aliquot	H-3		SO	06/05/06
Aliquot	SR-90	(FAST)	LCB	06/06/06
Count Room	GELI		KOJ	06/04/06
Count Room	н-3		KOJ	06/06/06
Count Room	SR-90	(FAST)	KPW	06/07/06
************	******	``, ***********************	****	****

#### T28784-11 WG WG-BW-052206-MB-056

120/04-11	na				
Process step	Prod		Analyst	Date	
Login			PMARSHALL	05/30/06	
Aliquot	GELI		DW	06/01/06	
Aliquot	Н-З		SO	06/05/06	
Aliquot	SR-90	(FAST)	LCB	06/06/06	
Count Room	GELI		KOJ	06/04/06	
Count Room	Н-З		кој	06/06/06	
Count Room	SR-90	(FAST)	KPW	06/07/06	/
000110 110011		• ·			

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L28784-12	WG	WG-BW-052206-MB-057		
Process step	Prod		Analyst	Date
Login			PMARSHALL	05/30/06
Aliquot	GELI		DW	06/01/06
Aliquot	Н-З		SO	06/05/06
Aliquot	SR-90	(FAST)	LCB	06/06/06
Count Room	GELT		KOJ	06/04/06
Count Room	H-3		KOJ	06/06/06
Count Room	SB-90		KPW	06/07/06
Counc Room	510 50	( + + + + )		

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### **Analytical Results Summary**

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Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESP	BRAID-06					4		
Sample ID: SW	-BW-051706-	-MB-101			Collect	t Start: 05	1/17/2006 12:	30		Matrix: Gr	ound Wat	CL		(MG)
Station:					Collec	t Stop:			YV 70	v oturito.				
Description:					Receive	e Date: 05	5/30/2006		M 0/2	loisture.				
LIMS Number: L2	3784-1													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag V	alues
		- 100 U	1 201-102	1 776-00	1/:04		10	lm		06/04/06	60	Z	+	
H-3	2010	3.98E+02	1.295+02	1./JETU2	1.5 1.5		450		05/17/06 12:30	06/07/06	150	M	n I	
TOTAL SR	2018	7.61E-01	5.98E-01	1.07E+00	pCI/L		004	IIII	00.21 00/11/00		10001	000	11	NO
MNI-54	2007	-1.36E+00	2.92E+00	4.63E+00	pCi/L		3531.96	m	05/17/06 12:30	00/7/00	17501	200		140
102 CO	2002	-7 31F+00	3 08F:+00	4.77E+00	pCi/L		3531.96	Ш	05/17/06 12:30	06/02/06	10321	Sec	n	No
CU-30	2002	2 67E-01	7 08F+00	117E+01	nCi/L		3531.96	m	05/17/06 12:30	06/02/06	10321	Sec	n	No
FE-39	1007	1,515100	JOAELON	Z OOFTOD	r	-	3531.96	lm	05/17/06 12:30	06/02/06	10321	Sec	U	No
CO-60	1007	1.715700	2.741.100		1:0-	-	3531 06	lm	05/17/06 12:30	06/02/06	10321	Sec	D	No
ZN-65	2007	2.52E+00	6.29E+00	1.U/E+UI	pur		701020	111	02/12/06 12:20	06/07/06	10321	Sec	11	No
NB-95	2007	1.14E-01	3.41E+00	5.62E+00	pCi/L		06.1666	IIII	00 01 20/11/00		10001	Coo	11	No
78-05	2007	1.06E+00	5.95E+00	9.91E+00	pCi/L		3531.96	ml	05/17/06 12:30	00/70/00	10321	200	- - -	
CC 124	2007	3 56F.+00	4.00E+00	5.83E+00	pCi/L		3531.96	ml	05/17/06 12:30	06/02/06	10321	Sec	D	No
CU-104	2002	1 87F+00	3 12E+00	5.34E+00	pCi/L		3531.96	Ш	05/17/06 12:30	06/02/06	10321	Sec	D	0N
DA 140	2007	-1 00F+01	2.32E+01	3.71E+01	pCi/L		3531.96	m	05/17/06 12:30	06/02/06	10321	Sec		No
1 A-140	2007	9.68E-01	6.46E+00	1.08E+01	pCi/L		3531.96	m	05/17/06 12:30	06/02/06	10321	Sec	- N	No
DCV-1+0														

Flag Values U == + = U U* = High = L C H = =

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

Low recovery High recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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Report of Analysis 06/08/06 19:18

## L28784

Conestoga-Rovers & Associates

## EV001_3ESPRRAID_06

Kathy Shaw					EXO	UI-JESPI	BKAID-00							
Comple ID. CW	T RW 051706	MR-102			Collect	t Start: 05	/17/2006 12:4	5		Matrix: Gr	ound Wate	-	e.	(Ū)
Station: Station:					Collect	t Stop:				'olume:				
Description:					Receive	e Date: 05	/30/2006		70 IVI	onsture:				
LIMS Number: L28	8784-2													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values	
	0100		1 206103		U:Ju		10	lm		06/05/06	60	M	+	
H-3	2010	3.05E+U2	1.205702	1.775742	pc"1			-	05/17/06 17.45	06/07/06	150	Σ		
TOTAL SR	2018	2.92E-01	5.85E-01	1.12E+00	pCi/L		400	III	C+.21 00// 1/CO	00/10/00	0000			
NANI-54	2007	-2.82E-01	1.60E+00	2.64E+00	pCi/L		3704.57	ш	05/17/06 12:45	06/03/06	48000	Sec		
	2002		1 72E+00	2.82E+00	pCi/L		3704.57	m	05/17/06 12:45	06/03/06	48000	Sec	Ž 	
CU-30	1007	10 TETO	3 70F+00	6 74E+00	nCi/l.		3704.57	m	05/17/06 12:45	06/03/06	48000	Sec	n N	0
FE-39	1002	0.101.00	1 67E+00	00-712L C	l/!Ju		3704.57	lm	05/17/06 12:45	06/03/06	48000	Sec	n	
CO-60	1002	0.20E-UI	1.0011201	001207			3704 57	l m	05/17/06 12:45	06/03/06	48000	Sec	N N	0
ZN-65	7007	5.04E+00	4.U/E+UU	0.0414400	11.0	~~~	12:1010	1	05/17/06 12:45	90/20/90	48000	Sec	II N	0
NB-95	2007	1.54E+00	1.84E+00	3.08E+00	pu/l		0/04·0/	IIII	21 21 20 21 20 21 20		00001	Con	N 11	
ZR-95	2007	-4.85E-01	3.34E+00	5.25E+00	pCi/L		3704.57	III	C4:21 0U// 1/CU	00/50/00	40000	200		
CC 134	2007	5.01E+00	3.76E+00	3.03E+00	pCi/L		3704.57	ш	05/17/06 12:45	06/03/06	48000	Sec		0
CU-104	2002	2 03F-01	1 72E+00	2.82E+00	pCi/L		3704.57	m	05/17/06 12:45	06/03/06	48000	Sec	Ž D	0
C3-13/	1007	E USETUU	1 30F+01	2 27E+01	nCi/I.		3704.57	m	05/17/06 12:45	06/03/06	48000	Sec	N N	0
BA-140	7002	00 TCD-0-			1:01		2704 57	E	05/17/06 12:45	06/03/06	48000	Sec	й Л	0
LA-140	2007	4.85E+00	4.46E+UU	7.71E+00	puile	-	0104.01	1111	NU111100	122 122 122				1

Flag Values U =

11 +

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification H

11

11 U* High L H

Low recovery 1

Bolded text indicates reportable value. High recovery 11

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Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted No = Peak not identified in gamma spectrum

MDC - Minimum Detectable Concentration

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EX001-3ESPBRAID-06

(MG) ů No No No No No No å No ů γ Flag Values 5 ρ D  $\square$ D  $\supset$ D D  $\Box$ + Units Sec Sec Sec Sec Count Sec Sec Sec Sec Sec Sec Sec Σ Σ Ground Water 48000 48000 48000 48000 48000 48000 Count 48000 48000 48000 48000 48000 Time 150 60 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/07/06 06/05/06 Count Date Matrix: Volume: % Moisture: 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 05/17/06 13:43 Reference Date Aliquot Units E E ш Ē Е ш E Ē Ξ Ē E E E Collect Start: 05/17/2006 13:43 3435.23 Volume 3435.23 3435.23 Aliquot 3435.23 3435.23 3435.23 3435.23 3435.23 3435.23 3435.23 3435.23 Receive Date: 05/30/2006 450 10 Collect Stop: Run # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 6.69E+00 3.25E+00 3.26E+00 3.12E+00 2.42E+01 7.52E+00 3.13E+00 6.60E+00 5.77E+00 3.06E+00 2.95E+00 1.63E+02 9.57E-01 MDC 4.73E+00 1.91E+00 3.95E+00 1.74E+004.25E+00 1.94E+00 3.46E + 003.55E+00 1.85E+00 I.79E+00 1.46E+01 Uncertainty 1.14E+025.26E-01 2 Sigma -3.46E+00 1.19E+007.78E+00 3.87E+00 1.98E+00 3.66E+00 3.69E+00 2.30E+02 5.65E-01 1.74E+00 5.59E-01 -4.53E-01 4.05E-01 Activity Conc Sample ID: SW-BW-051706-MB-103 2018 2007 2007 2010 2007 2007 2007 2007 2007 2007 2007 2007 2007 SOP# L28784-3 LIMS Number: Station: Description: Radionuclide Kathy Shaw **FOTAL SR** LA-140 CS-134 **BA-140 MN-54** NB-95 CS-137 CO-58 CO-60 ZN-65 ZR-95 FE-59 H-3

Flag Values 11 

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Compound/Analyte not detected or less than 3 sigma 1

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma н

Activity concentration exceeds customer reporting value 11

MDC exceeds customer technical specification 11 U* High Spec

Low recovery 1

Bolded text indicates reportable value. High recovery H

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum



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Report of Analysis

### L28784

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(MG) No å No β °N No ů No å No ů Yes Flag Values ň D  $\square$ Þ þ + D  $\supset$ D D D D  $\square$ Units Count Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Σ Σ Ground Water 48000 48000 48000 48000 48000 48000 48000 48000 48000 48000 48000 48000 Count Time 150 60 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/03/06 06/05/06 06/07/06 Count Date Matrix: Volume: % Moisture: 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 05/17/06 13:15 Reference Date Aliquot Units E Ē Ξ Ш Ш E E E E Ξ Ē E Ē E Collect Start: 05/17/2006 13:15 EX001-3ESPBRAID-06 Volume Aliquot 3735.91 3735.91 3735.91 3735.91 3735.91 3735.91 3735.91 3735.91 3735.91 3735.91 3735.91 Receive Date: 05/30/2006 3735.91 450 10 Collect Stop: Run # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 3.00E+002.55E+00 6.18E+00 2.33E+01 7.62E+00 6.36E+00 3.05E+00 5.41E+00 2.79E+00 1.25E+00 2.69E+00 9.22E+00 1.57E+02 3.03E+00 MDC 3.68E+00 1.84E+00 5.65E+00 .87E+00 1.55E+00 4.25E+00 3.32E+00 1.68E+00 1.40E+01 4.54E+00 Uncertainty 1.04E+021.64E+00 3.80E+00 6.75E-01 2 Sigma 1.33E+00 6.53E+00 1.16E+01 2.27E+00 4.81E+00 -5.38E-02 1.03E+01 I.23E+02 9.16E-02 -5.95E-01 1.28E-01 5.96E-01 7.89E-01 -7.54E-01 Conc Activity SW-BW-051706-MB-104 2010 2007 2007 2007 2007 SOP# 2018 2007 2007 2007 2007 2007 2007 2007 2007 L28784-4 Sample ID: LIMS Number: Station: Description: Radionuclide Kathy Shaw **FOTAL SR** LA-140 CS-137 AC-228 **CS-134** BA-140 **MN-54** CO-58 CO-60 ZN-65 NB-95 ZR-95 FE-59 H-3

Flag Values 11 

Compound/Analyte not detected or less than 3 sigma I

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma 11

Activity concentration exceeds customer reporting value 11 5

MDC exceeds customer technical specification 11 High Spec

Low recovery 11 li コエ

Bolded text indicates reportable value. High recovery

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Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

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Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

(MG) Yes No No Nо No No 2° No No °Z °N N ٥N ĝ Flag Values Spec *⊃ *)  $\supset$ þ  $\square$  $\supset$ Ω D + Γ Units Sec Sec Sec Sec Count Sec Sec Sec Sec Sec Sec Sec Sec Σ Σ Ground Water 15440 15440 15440 15440 15440 15440 15440 5440 15440 15440 15440 15440 Count Time 150 60 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/05/06 06/07/06 Count Date Matrix: Volume: % Moisture: 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 05/17/06 13:30 Reference Date Aliquot Units ш E Ē Ш Ē E E E E ם Щ Ē BB Collect Start: 05/17/2006 13:30 Volume Aliquot 2868.61 2868.61 2868.61 2868.61 2868.61 2868.61 2868.61 2868.61 2868.61 2868.61 Receive Date: 05/30/2006 2868.61 2868.61 450 10 Collect Stop: Run # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 5.33E+00 4.20E+01 5.86E+00 9.82E+00 5.84E+00 5.46E+00 5.21E+00 1.62E+02 4.88E+00 1.37E+01 1.50E+01 1.16E+01 5.13E+01 9.43E-01 MDC 2.96E+00 3.42E+00 6.98E+00 3.16E+00 8.38E+00 3.48E+00 6.12E+00 4.99E+00 3.03E+00 9.57E+00 2.55E+01 1.03E+02 3.89E+01 Uncertainty 4.97E-01 2 Sigma -2.42E+00 -5.75E+00 -1.58E+00 3.22E+00 1.22E+00 1.50E+00 7.88E+00 -1.23E+00 1.66E+01 5.83E-01 2.64E-01 6.20E+01 5.40E-01 5.69E+01 Activity Conc SW-BW-051706-MB-105 2010 2007 2007 2007 SOP# 2018 2007 2007 2007 2007 2007 2007 2007 2007 2007 L28784-5 Sample ID: LIMS Number: Station: Description: Radionuclide Kathy Shaw **FOTAL SR** CS-137 LA-140 CS-134 BA-140 **MN-54** ZN-65 NB-95 ZR-95 CO-58 FE-59 CO-60 K-40 H-3

Flag Values 1 

+

Compound/Analyte not detected or less than 3 sigma 1

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma IF

Activity concentration exceeds customer reporting value li ť

MDC exceeds customer technical specification 11 High Spec

Low recovery 11 د...

High recovery H

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Bolded text indicates reportable value.

2 of ŝ Page

MDC - Minimum Detectable Concentration

**** Results are reported on an as received basis Yes = Peak identified in gamma spectrum unless otherwise noted

No = Peak not identified in gamma spectrum

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Report of Analysis

## L28784

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESPI	BRAID-06							
	CONTRO IN				Collect	Start: 05,	/17/2006 14:	15	[	Matrix: Gr	ound Wate	r		(MG)
Sample IU: SW-B Station:	-90/.TCD-M	001-81M			Collect	t Stop:				olume:				
Description:					Receive	Date: 05	(/30/2006		W %	DISTURE:				
LIMS Number: L2878	14-6								2			-		
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Valı	les
			)		P.0		10	-		06/05/06	60	M	U	
H-3	2010	1.32E+02	1.08E+02	1.63E+02	bCI/F		01	·	21.11.10.11.15	00/00/00	150	W		
TOTAL SR	2018	5.14E-01	5.72E-01	1.06E+00	pCi/L		450	E	CI:+I 00//.I/CO	00// 0/00	OCT.	Z o		ALC.
NAL 54	2007	8 10F-01	2.75E+00	4.58E+00	pCi/L		3821.66	ml	05/17/06 14:15	06/04/06	11763	Sec		001
	2002	1 175+00	3 27E+00	5.22E+00	pCi/L		3821.66	ml	05/17/06 14:15	06/04/06	11763	Sec		No
CU-38	1007	-1.72L-00	6 635+00	1 05F+01	nCi/I.		3821.66	ml	05/17/06 14:15	06/04/06	11763	Sec	n	No
FE-39	1002	2.212.00	0.021200	VOJEJUU			3821.66	ml	05/17/06 14:15	06/04/06	11763	Sec	n	No
CO-60	7007	00+97C77	2.1/ETUU	4.73ET-00	1/2/	-	2871 66	14	05/17/06 14:15	06/04/06	11763	Sec	n	No
ZN-65	2007	9.26E+00	7.84E+00	1.20E+01	bCI/F		00.1200	111	21.11 2011 1120	06/04/06	11763	Sec	11	No
NB-95	2007	2.24E-01	3.25E+00	5.37E+00	pCi/L		3821.00	III	C1.+1 00// 1/C0		11770		- 11	No
78-95	2007	-2.44E-01	5.43E+00	8.91E+00	pCi/L		3821.66	m	05/17/06 14:15	06/04/06	C0/11	200		-140
CC-124	2002	1 14F+01	751E+00	6.53E+00	pCi/L		3821.66	lm	05/17/06 14:15	06/04/06	11763	Sec		NO
CO-134	1007	0 575 01	7 83E+00	A 61 E+00	nCi/I		3821.66	ш	05/17/06 14:15	06/04/06	11763	Sec	n	No
CS-13/	1002	10-770.6-	2.001-00	2 01 E +01	1/1/14	-	3821 66	Ē	05/17/06 14:15	06/04/06	11763	Sec	D	2º
BA-140	7007	-4./0E+UU	2.41ETUI	J.J.TETUI	р		701100		05/17/06 14.15	06/04/06	11763	Sec	1	No
LA-140	2007	3.58E+00	7.98E+00	1.36E+01	pCi/L		3821.00	Ш	C1.+1 UV// 1/CU	001000			-	

Flag Values U = +

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery Page 6 of 12 1

11 U* High L H

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Bolded text indicates reportable value. High recovery ||

L28784 27 of 141

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

MDC - Minimum Detectable Concentration

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rt of A	06/08/06 19:
Repo	•

Conestoga-Rovers & Associates

## EX001-3ESPBRAID-06

Kathy Shaw														
		020 024			Collect	t Start: 05	/15/2006 10:	00		Matrix: Gro	ound Wate	-		(MG)
Sample ID: W Station:	OUCICU-WA-D	ncn-giw-			Collect	t Stop:			>	olume:				
Description:					Receive	Date: 05	//30/2006		% W	oisture:				
LIMS Number: L2	38784-7										•			
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	<b>Reference</b> Date	Count Date	Count	Units	Flag Value	S
	0.00		1 175 1.00	1 61ELN7	٥٠/١		10	lm		06/05/06	60	M	+	
H-3	7010	2.0412+02	1.125702	1.011.04	1.5d		150	1	05/15/06 10:00	06/07/06	150	M	n	
TOTAL SR	2018	2.12E-01	5.18E-01	9.95E-01	pCi/L		420	i	00.01 00/01/00	00/10/00	01510	Car	11	No
MM-54	2007	9.13E-01	2.43E+00	4.10E+00	pCi/L		3068.8	Ē	00:01 00/C1/C0	00/04/00	0/047	320		
02 UU	2002	-1 27F+00	2.84E+00	4.61E+00	pCi/L		3068.8	Ш	05/15/06 10:00	06/04/06	245/0	Sec		0
CU-30	1007	5 N7E-01	5 97F+00	9.70E+00	pCi/L		3068.8	Ē	05/15/06 10:00	06/04/06	24570	Sec		No
FE-39	1002	10-770-6-	0017100	1 725-00	1/!س		3068.8	ml	05/15/06 10:00	06/04/06	24570	Sec		No
CO-60	2007	9.82E-01	2.50E+00	4.436740	hour a.r.		0.0000	14	05/15/06 10:00	06/04/06	24570	Sec	n I	No
ZN-65	2007	5.38E+00	6.35E+00	9.34E+00	pCi/L		3000.0	IIII ·	00.01 00/01/00	00110100	01212	Con		No
NR-95	2007	1.66E+00	3.04E+00	5.07E+00	pCi/L		3068.8	ы	00:01 00/01/00	00/04/00	0/047	200		
ZD 05	2007	1 94F.+00	5.25E+00	8.70E+00	pCi/L		3068.8	ml	05/15/06 10:00	06/04/06	0/C+7	Sec		011
20-72	1002	7 685+00	4 18F+00	4.74E+00	pCi/L		3068.8	ml	05/15/06 10:00	06/04/06	24570	Sec		NO
CS-134	1007	1,000,00	J CJETUU	A 34E+00	nCi/I		3068.8	ml	05/15/06 10:00	06/04/06	24570	Sec	n	No
CS-13/	1002	0.99E-01	7 485-00	A 00F401	nCi/I.	-	3068.8	m	05/15/06 10:00	06/04/06	24570	Sec	D	No
BA-140	1007	-1.416700	101704.7	10.0001	2:0-1		3068.8	E	05/15/06 10:00	06/04/06	24570	Sec	D	No
LA-140	2007	7.59E+00	7.20E+00	1.28E+UI	puir		0.0000							y

Flag Values U =

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11 14 11

High L L H

Low recovery 11 11 11

High recovery

Bolded text indicates reportable value.

12 of Page 7

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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Conestoga-Rovers & Associates

(DMC) No No No No No å No No °Z No å Flag Values Þ D + D Þ D D C D D D Units Count Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Sec Σ Σ Ground Water 24648 24648 Count 24648 24648 24648 24648 24648 24648 24648 24648 24648 Time 150 60 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/04/06 06/06/06 06/07/06 Count Date Volume: Matrix: % Moisture: 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 05/15/06 10:05 Reference Date Aliquot Units Ξ Е Ē E EE E E Ξ Ξ Ē Ē E Collect Start: 05/15/2006 10:05 EX001-3ESPBRAID-06 Aliquot Volume 3119.4 Receive Date: 05/30/2006 3119.4 3119.4 3119.4 3119.4 3119.4 3119.4 3119.4 3119.4 3119.4 3119.4 450 10 Collect Stop: Run # Units pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L pCi/L 4.56E+00 3.85E+00 4.37E+00 4.13E+00 9.58E+00 4.50E+00 7.87E+00 4.11E+001.32E+01 1.19E+00 1.03E+01 3.91E+01 1.60E+02 MDC 2.43E+00 6.26E+00 2.68E+00 4.82E+00 4.66E+00 2.48E+00 2.31E+01 8.08E+00 2.66E+00 6.07E+00 1.11E+02 2.31E+00 Uncertainty 5.78E-01 2 Sigma -1.27E+00 7.47E+00 -1.71E+00 6.29E+00 1.21E+00 6.19E-01 1.25E+01 2.00E+02 -4.54E-01 4.91E+00 6.32E-01 -2.40E-01 2.90E-01 Activity Conc Sample ID: WG-BW-051506-MB-052 2010 2018 2007 2007 2007 2007 2007 2007 2007 2007 2007 2007 SOP# 2007 L28784-8 LIMS Number: Station: Description: Radionuclide Kathy Shaw **FOTAL SR** CS-134 CS-137 **BA-140 MN-54** LA-140 CO-60 ZN-65 NB-95 ZR-95 FE-59 CO-58 H-3

Flag Values 11

Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Compound/Analyte not detected or less than 3 sigma 11 + 

11

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

U* High Spec

Low recovery

High recovery 1 ц н

Bolded text indicates reportable value.

12 of Page 8

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum



Conestoga-Rovers & Associates

### **C11**

Kathy Shaw					EX0(	01-3ESP	BRAID-06							
						50 .totto	J-UL 2000/01/	9		Vatrix: Gro	und Wate	L		(DA)
Sample ID: WG-	BW-051906	-MB-054			Collect		N-NI NNN71611	2	· >	olume:				
Station: Description:					Lonect	t Stop: 2 Date: 05	6/30/2006		% W0	oisture:				
LIMS Number: L287	'84-9													
Radionnelide	SOP#	Activity Cone	Uncertainty 2 Sioma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Val	ues
			D				10	1		06/06/06	60	M	<u>U</u>	
H-3	2010	1.40E+02	1.07E+02	1.60E+02	pCi/L		10	1111			150	14		
TOTALSR	2018	9.29E-01	5.27E-01	9.20E-01	pCi/L		450	Ē	02/19/06 10:00	00/0/00	001	N C		NIC
MAL 54	2007	1 57F+00	2.86E+00	4.84E+00	pCi/L		3554.3	ml	05/19/06 10:00	06/04/06	17071	Sec		NO -
	2002	-3 06F+00	3 05E+00	4.64E+00	pCi/L		3554.3	m	05/19/06 10:00	06/04/06	12077	Sec		No
CU-38	1002	A 76F+00	6 45E+00	1.12E+01	pCi/L		3554.3	ml	05/19/06 10:00	06/04/06	12077	Sec	n	No
FE-39	1007	00-707-100	7 92ETO	1016400	nCi/I.		3554.3	ml	05/19/06 10:00	06/04/06	12077	Sec	n	No
CO-60	/007	2.0357.00	2.0012100	1115-01	hour d		555A 7	lm	05/19/06 10:00	06/04/06	12077	Sec	U	No
ZN-65	2007	9.20E+00	6.99E+UU	1.11E+UI	bci/r		2554 3	ulu ulu	05/19/06 10:00	06/04/06	12077	Sec	Ω	No
NB-95	2007	5.30E+00	3.46E+UU	0.101-100	built -		25542	14	05/19/06 10:00	06/04/06	12077	Sec	N	No
ZR-95	2007	-4.09E+00	5.84E+00	9.17E+00	bCI/T		0.4000	i i	00.01 00 10.01	90/10/20	12077	Cor	*11	No
CS-134	2007	7.40E+00	4.42E+00	5.73E+00	pCi/L		3554.3	Ш	00:01 00/61/C0	00/04/00	11071	220		No
US-137	2007	3.33E+00	3.10E+00	5.29E+00	pCi/L		3554.3	m	05/19/06 10:00	06/04/06	17071	Sec	- - ;	
DA 140	2002	3 45E+00	2.28E+01	3.73E+01	pCi/L		3554.3	ml	05/19/06 10:00	06/04/06	12077	Sec		NO
DA-140	2002	-4 35E+00	7.19E+00	1.11E+01	pCi/L		3554.3	m	05/19/06 10:00	06/04/06	12077	Sec	D	No
TU 228	2002	8 75E+00	5.46E+00	8.18E+00	pCi/L		3554.3	m	05/19/06 10:00	06/04/06	12077	Sec	+	Yes
077-111	1004	>>	->		Α									

Flag Values 11

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11 11 D +

U* High L H

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High recovery 11 ||

Bolded text indicates reportable value.

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, INC. A Teledyne Technologies Company

port of Analysis	06/08/06 19:18
Report	00

Conestoga-Rovers & Associates

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Kathy Shaw					EXO	01-3ESP	BRAID-06							
Samule ID: WG-B	W-051906	-MB-055			Collect	t Start: 05	5/19/2006 11:1	15	1	Matrix: Gro	ound Wate	Ŀ		(MC)
Station:					Collect	t Stop:				/olume:				
Description:					Receive	e Date: 05	5/30/2006		IVI 07	Oisture.				
LIMS Number: L28784	4-10													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Units	Flag Val	les
	00100	2 000-101	1 1/11/07	1 QEE-TU)	nCi/I		10	ml		06/06/06	60	Σ	U	
H-3	2010	2.69E+UI	7 05F 01	1.010101		-	450	i.	05/19/06 11:15	06/07/06	150	Μ	n	
TOTAL SR	2012	0.81E-01	10-301/	0012101			3573 33	u lu	05/19/06 11:15	06/04/06	24675	Sec	n	No
MN-54	/007	3.3UE-UI	2.405+00	2 04E-100			3573 33	Ē	05/19/06 11:15	06/04/06	24675	Sec	n	No
CO-58	7007	-3.8/E+00	2.00ET00	0.715-00			3573 33	I I	05/19/06 11:15	06/04/06	24675	Sec	n l	No
FE-59	7007	10.726-00	0.00ETU0	2 00F-100		-	3573 33	u lu	05/19/06 11:15	06/04/06	24675	Sec	n	No
CO-60	/.007	2.125-01	2.41E+00	0.735400			3573 33	I E	05/19/06 11:15	06/04/06	24675	Sec	U*	No
ZN-65	1002	7 776+00	0.09ET00	4.45E+00	pCi/L		3573.33	E	05/19/06 11:15	06/04/06	24675	Sec	U	No
NB-93	1002	-6 30F-01	4 69E+00	7.65E+00	pCi/L		3573.33	ml	05/19/06 11:15	06/04/06	24675	Sec	U 	No
LK-73	2002	3 09E+00	5 86E+00	4.32E+00	pCi/L		3573.33	ml	05/19/06 11:15	06/04/06	24675	Sec	n	No
C3-134 CS 137	2007	-4 89E-01	2.42E+00	3.97E+00	pCi/L		3573.33	ml	05/19/06 11:15	06/04/06	24675	Sec	n	No
BA-140	2007	2.66E+00	1.94E+01	<b>3.19E+01</b>	pCi/L		3573.33	ml	05/19/06 11:15	06/04/06	24675	Sec	n :	No
I.A-140	2007	4.29E+00	5.91E+00	1.03E+01	pCi/L		3573.33	m	05/19/06 11:15	06/04/06	24675	Sec		No

Flag Values

I U + U High L Spec

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11 11

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11 11

Low recovery High recovery

Bolded text indicates reportable value.

12 Page 10 of

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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## Report of Analysis

## L28784

Conestoga-Rovers & Associates EX001-3ESPBRAID-06

Kathy Shaw

Comple ID: WC	RW-052206-	.MB-056			Collec	t Start: 05	5/22/2006 10:	00		Matrix: Gi	ound Wat	er	×)	5
Station: WG					Collec	t Stop:				Volume:				
Description:					Receiv	e Date: 0:	5/30/2006		M 0/	loistui c.				
LIMS Number: L287	784-11													T
Radionuclide	#dOS	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values	
	0100	0 565101	1 07F+07	1 58E+02	nCi/I.		10	m		90/90/90	60	W	U	
Н-Ј тот г сп	2010	7 57E 01	7 305-01	1 41 1 +00	nCi/l.		450	la	05/22/06 10:00	06/07/06	150	M	n	
TUTAL SK	20102	-181F+00	2 90F±00	4.59E+00	pCi/L		3596.81	m	05/22/06 10:00	06/04/06	24769	Sec	U No	
MIN-74	2002	1 39F+00	3 03F+00	5.07E+00	pCi/L		3596.81	m	05/22/06 10:00	06/04/06	24769	Sec	No No	
CO-J0 EE 60	2002	4 87F+00	6 23E+00	1.07E+01	pCi/L		3596.81	m	05/22/06 10:00	06/04/06	24769	Sec	N	
re-J9 CO 60	2007	-5.41F-01	2 87E+00	4.63E+00	pCi/L		3596.81	m	05/22/06 10:00	06/04/06	24769	Sec	No No	_
TNI 65	2002	8 48F+00	7 34E+00	1.11E+01	pCi/L		3596.81	ш	05/22/06 10:00	06/04/06	24769	Sec	No No	
VID 05	2007	2.91E+00	3.13E+00	5.35E+00	pCi/L		3596.81	m	05/22/06 10:00	06/04/06	24769	Sec	N No	
72.05	2007	-6.85E-01	5.61E+00	9.14E+00	pCi/L		3596.81	ml	05/22/06 10:00	06/04/06	24769	Sec	N NO	
VE 13V	2002	1.23E+01	6.05E+00	5.35E+00	pCi/L		3596.81	ш	05/22/06 10:00	06/04/06	24769	Sec	0%   No	_
137	2002	-6 81E-01	2.97E+00	4.84E+00	pCi/L		3596.81	ml	05/22/06 10:00	06/04/06	24769	Sec	N NO	
RA-140	2007	-1.17E+01	2.03E+01	3.29E+01	pCi/L		3596.81	Ш	05/22/06 10:00	06/04/06	24769	Sec	N N	
1 A 140	2007	-1.98E+00	6.42E+00	1.04E+01	pCi/L		3596.81	m	05/22/06 10:00	06/04/06	24769	Sec	No	_

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery

High recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

TELEDYNE BROWN ENGINEERING, INC.	A Teledyne Technologies Company
8	

Report of Analysis 06/08/06 19:18

## L28784

Conestoga-Rovers & Associates

athy Shaw					FVO		M-MANG							
		1710 OCT			Collect	Start: 05	/22/2006 10:	30		Matrix: Gr	ound Wat	er	M)	g
Sample IU: WG Station:	0077C0-M9-	/ cn-911/-			Collect	t Stop:				Volume:				
Description:					Receive	Date: 05	5/30/2006		%0 IV	loisture:				
LIMS Number: L28	784-12									-		-		
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count	<b>Units</b>	Flag Values	
and and a second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s			001.000 1		I/:J*	-	10	lm		06/06/06	60	Σ	U	
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DTAI SR	2018	-7.11E-02	4.65E-01	9.35E-01	pCi/L		450	m	05:01 00/22/00	00/1/00	001	Z C		
INI SA	2002	2 18F+00	2.56E+00	4.72E+00	pCi/L		3246.14	ш	05/22/06 10:30	06/04/06	12060	Sec		
VIIV-J4	1007	1 58F_01	2 88F+00	≤ 02E+00	pCi/L		3246.14	m	05/22/06 10:30	06/04/06	12060	Sec		
0-38	1007	10-710-1	E OUETOU	1 001-01	<u>ال ال</u>		3246.14	m	05/22/06 10:30	06/04/06	12060	Sec	n	_
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00-60	2007	5.98E-01	2.44E+00	4.44E+00	pCi/L		3246.14	E	00:01 00/77/C0	00/140/00	00001	200		
ZN-65	2007	4.83E+00	6.54E+00	1.05E+01	pCi/L		3246.14	ml	05/22/06 10:30	06/04/06	12000	Sec		
20-M2	2002	1 78E+00	3.06E+00	5.49E+00	pCi/L		3246.14	ml	05/22/06 10:30	06/04/06	12060	Sec		
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CS-134	7007	I./UE+UU	0.22ETUU	001-700-0		-	274614	le le	05/22/06 10:30	06/04/06	12060	Sec	N N	0
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BA-140	2007	-4.15E+00	2.07E+01	3.48E+01	pCi/L		3240.14	E .	00.01 00/22/00	00/1-0/00	10000	200	N III	
I A 140	2007	2.81E+00	5.60E+00	1.06E+01	pCi/L		3246.14	m	06:01 00/22/00	00/04/00	12000	200		-

Flag Valucs U =

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Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification 11

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High recovery Low recovery li  $\|$ 

Bolded text indicates reportable value.

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Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

MDC - Minimum Detectable Concentration

No = Peak not identified in gamma spectrum

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### QC Results Summary

QC Summ	ary Report 06 7:19:32PA	V	for L28784			No. of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	A TELEDYN BROWN ENGI A Teledyne Technologie	NEERING Seampeny		
				Н-3						ļ
				Method Blank Sumn	aary					
<u>TBE Sample ID</u> WG4082-1	<u>Radionuclide</u> H-3	<u>Matrix</u> WO	Count Date/Time 06/04/2006 10:37		Blank Result < 1.710E+00	<u>Units</u> pCi/Total		9	U U	P P
				LCS Sample Summ	ary					
<u>TBE Sample ID</u> WG4082-2	<u>Radionuclide</u> H-3	<u>Matrix</u> WO	Count Date/Time 06/04/2006 11:41	Spike Value 5.05E+002	LCS Result 4.990E+02	<u>Units</u> pCi/Total	<u>Spike Recovery</u> 98.9	Range <u>O</u> 1 70-130	+	P P
Spike ID: 3H-041 Spike conc: 5.05E ⁺ Spike Vol: 1.00E ⁺ <b>WG4082-3</b>	706-1 +002 -000	OM	06/04/2006 11:59	5.05E+002	4.990E+02	pCi/Total	98.9	70-130	+	d
Spike ID: 3H-041 Spike conc: 5.05E- Spike Vol: 1.00E+ <b>WG4082-4</b>	1706-1 +002 +000	OM	06/04/2006 12:18	5.05E+002	4.420E+02	pCi/Total	87.6	70-130	+	م
Spike ID: 3H-041 Spike conc: 5.05E- Spike Vol: 1.00E4 WG4082-5	1706-1 +002 +000	OM	06/04/2006 12:38	5.05E+002	4.940E+02	pCi/Total	97.9	70-130	+	<b>d</b>
Spike ID: 3H-04 Spike conc: 5.05E Spike Vol: 1.00E- WG4082-6	1706-1 +002 +000	OM	06/04/2006 12:58	5.05E+002	4.720E+02	pCi/Total	93.5	70-130	+	4
Spike ID: 3H-04 Spike conc: 5.05E Spike Vol: 1.00E-	1706-1 +002 +000									
+ Positiv( U Compo * < 5 tim	e Result sund/analyte was analy tes the MDC are not ev e not detected	zed, peak r aluated	not identified and/or n	ot detected above MDC				Page	-	L28784
*** Spiking P Pass F	g level < 5 times activit	λ.								35 of
NE NOI CV	/aluated									141

NE SINEERING gies Company	Range Qualifier <u>P/F</u> <30 * NE		Page: 2
A TELEDY BROWN ENC A Teledyne Technolo	RPD		
R	<u>Units</u> pCi/L		
	y <u>DUP Result</u> 4.160E+02		
п 3	Duplicate Summar Original Result 3.980E+02		stected above MDC
for L28784	tatrix Count Date/Time /G 06/04/2006 13:17	4082 LLENTID W-BW-051706-MB-101 W-BW-051706-MB-101 W-BW-051706-MB-102 W-BW-051706-MB-103 W-BW-051706-MB-105 W-BW-051706-MB-105 G-BW-051706-MB-050 /G-BW-051506-MB-050 /G-BW-051906-MB-055 /G-BW-052206-MB-056	, peak not identified and/or not de
QC Summary Report 6/8/2006 7:19:32PM	TBE Sample ID     Radionuclide     M       WG4082-7     H-3     W	L28784       H-3         L28784       H-3         Associated Samples for       WG         Samples for       WG         L28784-1       S         L28784-3       S         L28784-4       S         L28784-5       S         L28784-6       W         L28784-6       W         L28784-6       W         L28784-6       W         L28784-6       W         L28784-6       W         L28784-7       W         L28784-9       W         L28784-9       W         L28784-10       W         L28784-10       W	<ul> <li>+ Positive Result</li> <li>U Compound/analyte was analyzed</li> <li>U Compound/analyte was analyzed</li> <li>** Nuclide not detected</li> <li>*** Spiking level &lt; 5 times activity</li> <li>P Pass</li> <li>F Fail</li> <li>Not evaluated</li> </ul>

									L28784 37 of 141
NE SINEERING Reies Company			<u>Qualifier</u> <u>P/F</u> U P		RangeQualifierP/F70-130+P			Range Qualifier P/F <30 ** NE	Page: 3
BROWN ENC A Teledyne Technolo					<u>Spike Recovery</u> I 110.2			<u>RPD</u>	
£.			<u>Units</u> pCi/Total		<u>Units</u> pCi/Tota			<u>Units</u> pCi/L	
		ary	Blank Result < 7.520E-01	ury	LCS Result 6.430E+01		y.	DUP Result < 1.240E+00	
	TOTAL SR	Method Blank Summ		LCS Sample Summa	Spike Value 5.84E+001		Duplicate Summar	<u>Original Result</u> < 1.070E+00	t detected above MDC
for L28784			Count Date/Time 06/06/2006 16:48		<u>Count Date/Time</u> 06/07/2006 13:54			Count Date/Time 06/07/2006 13:54	ot identified and/or no
2 T			<u>Matrix</u> WO		<u>Matrix</u> WO			<u>Matrix</u> WG	zed, peak n aluated ty
QC Summary Report 6/8/2006 7:19:32PN			TBE Sample IDRadionuclideWG4100-1TOTAL SR		TBE Sample IDRadionuclideWG4100-2TOTAL SR	Spike ID: 90SR-011905 Spike conc: 2.34E+002 Spike Vol: 2.50E-001		TBE Sample IDRadionuclideWG4100-3TOTAL SRL28784-1	<ul> <li>+</li> <li>Positive Result</li> <li>+</li> <li>Positive Result</li> <li>U</li> <li>Compound/analyte was analy:</li> <li>&lt; 5 times the MDC are not ev</li> <li>**</li> <li>Nuclide not detected</li> <li>***</li> <li>Spiking level &lt; 5 times activit</li> <li>Pass</li> <li>F</li> <li>Fail</li> <li>Not evaluated</li> </ul>

# QC Summary Report

L28784

for

7:19:32PM 6/8/2006

## SR-90 (FAST) L28784

Associated Samples for

WG4100

<b>SAMPLENUM</b>	CLIENTID
L28784-1	SW-BW-051706-MB-101
L28784-2	SW-BW-051706-MB-102
L28784-3	SW-BW-051706-MB-103
L28784-4	SW-BW-051706-MB-104
L28784-5	SW-BW-051706-MB-105
L28784-6	SW-BW-051706-MB-106
L28784-7	WG-BW-051506-MB-050
L28784-8	WG-BW-051506-MB-052
L28784-9	WG-BW-051906-MB-054
L28784-10	WG-BW-051906-MB-055
L28784-11	WG-BW-052206-MB-056
L28784-12	WG-BW-052206-MB-057



Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated

Nuclide not detected

Spiking level < 5 times activity Pass

Fail



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### Raw Data

Raw Data Sheet (rawdata) Jun 08 2006, 05:17 pm

Customer: Exelon Work Order: <u>128784</u>

	Analyst	гсв		LCB			LCB			LCB			LCB			LCB				LCB			LCB			LCB			LCB			LCB			
сау &	growth ctor	.999		666.			.999			.999		-	.999			999				.998			.998			.999			.999			666.			
De	ff. In Fa	.346		.343			.354			.344			.354			345				.344			.343			.335			.343			.345			
	3kg E (min)	400		400			400			400			400			400	5			400			400			400			400			400			
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	r Tota	15		-	-		13			14			-								i			Ĩ		F	•						1		
	Counte:	XIA		1	<b>4</b> 1 <b>y</b>		x1C			XID			4CA	47V			XZB			70X	4		101	777		45X			402	4		JEA	104		
	Count	07-jun-06	13:53		0./-101-00	CC:CT	07 - 411 - 06	13.53	CC:01	07-jun-06	12.52	CC:CT	90 L0	00-mm[-/0	CC:CT		07 - jun - 06	13:53		0.7 - 4111 - 06	0.7 - Jum-vu 12.52			01-Jun-06	CC:CT	0	00-mp[-/0		20 00	0/-Juur-vv 13.53	nn: 11		0/-Jum-00 13.53	) ) ) 1	
	•	Recovery	90.05			9T.67			01.04			67.8/			92.74			88.98				74.14			8T.43			£/·/TT			TB.C/		06 67	07.10	
	Mount	Weight 0	5		0			5		c	>			0			0			•	þ			o			5			Э			0		
]	Milking	Date/time			16	~		)6	0		9	0		36	0		06	, ,	2		06	0		06	0		06	0		06	0		06	0	
SPBRAID-06	Scavenge	Date/time	08:30		07 - jun - C	08:30		07 - jun- (	08:30	-	- mn[ - / n	08:3(		07 - jun - (	08:30		) - aui - 70				- mn 70	08:3		- <del>- uni - 2</del> 0	08:3		- nui - 70	08:3		- nn - 70	08:3		- mn - 70	08:3	
roject : <u>EX001-3E</u>	Volume/	Aliquot	6 450 ml	MDC: 1.07E+00 *	6	450 ml	MDC: 1.12E+00 *	6	450 ml	MDC: 9.57E-01 *	6	450 ml	MDC: 1.25E+00 *	6	450 ml	MDC: 9.43E-01 *	4			MUC: 1.065+00 -	9	450 ml	MDC: 9.95E-01 *	6	450 ml	MDC: 1.19E+00 *	16	450 ml.	MDC: 9.2E-01	)6	450 ml	MDC: 1.31E+00 *	)6	450 ml	MDC: 1.41E+00 *
L ¹	Reference	Date/time	t 17-may-U( 12:30	5.98E-01	t 17-may-0	12:45	5.85E-01	R 17-may-0	13:43	5.26E-01	R 17-may-0	13:15	6.75E-01	R 17-may-0	13:30	4.97E-01	0 - 1	к т/-шау-о	<b>T4:1</b>	5.72E-01	R 15-may-0	10:00	5.18E-01	R 15-may-0	10:05	5.78E-01	к 19-тау-О	10:00	5.27E-01	R 19-may-C	11:15	7.05E-01	R 22-may-C	10:00	7.3E-01
r.)	ilvsis		TOTAL SI	Error:	TOTAL SI		Error:	TOTAL SI		Error:	TOTAL S		Error:	TOTAL S.		RTTOTE	L FRECE	S TRIOL		Error:	TOTAL S.	_	Error:	TOTAL S		Error:	TOTAL S		* Error:	TOTAL S		Error:	TOTAL S	5	Error:
50 (FAS'	Run Ané	#	-MB-101	61E-01		-MB-102	92E-01		-MB-103	65E-01		-MB-104	96E-01		(-MB-105	64E-01			5-MB-106	14E-01		5-MB-050	12E-01		5-MB-052	2.4E-01		5-MB-054	.29E-01		5-MB-055	.81E-01		6-MB-056	.52E-01
lde: <u>SR-</u>	EL e	it ID	8784-1 4-051706	ritv: 7.	3784-2	W-051706	vity: 2.	8784-3	W-051706	vity: 5.	8784-4	W-051706	vity: 5.	8784-5	W-051706	witter 2		8784-6	W-051706	vity: 5.	8784-7	W-051506	vitv: 2.	8784-8	W-051506	vity: -2	8784-9	W-051906	vity: 9.	8784-10	W-05190	vity: 5.	8784-11	3W-052201	Lvity: 2
Nucli	Lumes	Clier	L21 SW-BV	1414	L21	SW-B	Activ		IE-WS	Acti	L2	SW-B	Acti	L.2	SW-B			L2	SW-B	Acti	L2	MG-B	Acti	1.2	MG-B	Acti	E1	MG-B	Acti	17 	HG-E	Acti	L2	MG-E	Acti

Page: 2

		/				L28784	41	of	141
Sec. Review:	Analyst:	LIMS:					, · · · ·		
VAX/VMS Teledy TBE07 P-10768F	yne Brown Eng 3 HpGe *****	g. Laboratory **** Aquisit	Gamma Re ion Date	eport: 2-J Time: 2-JU	UN-2006 1 N-2006 08	1:44:28 3:52:17.	3.11 14		-
LIMS No., Cust	tomer Name, (	Client ID: L2	8784-1 WC	G EXELON/BF	RAID				
Sample ID Sample Type Quantity Start Channel End Channel MDA Constant	: 07L28784-1 : WG : 3.53200E+( : 40 En : 4090 Pl : 0.00 L:	L DO L nergy Tol : & Srch Sens: ibrary Used:	1.00000 5.00000 LIBD	Smple Date Geometry BKGFILE Real Time Live time	2: 17-MAY- : 0735L09 : 07BG050 : 0 02:52 : 0 02:52	2006 12 0904 0506MT 2:03.29 2:01.17	2:30:	:00.	<b>.</b>
Pk It Energ	gy Area	Bkgnd FWHM	I Channel	%Eff	Cts/Sec	%Err	Fit	t	
1 1 198. 2 1 352. 3 1 609.	54* 98 09* 54 30* 50	195 1.25 102 2.04 90 1.61	398.05 705.35 1220.03	1.98E+00 1.43E+00 9.81E-01	9.51E-03 5.19E-03 4.82E-03	28.3 1 41.2 1 45.6 1	93E- 99E- 48E-	+00 +00 +00	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

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Summary of Nuclide Activity Sample ID : 07L28784-1 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

3 Page : Unidentified Energy Lines Acquisition date : 2-JUN-2006 08:52:17 Sample ID : 07L28784-1 %Eff Flags Channel Left Pw Cts/Sec %Err FWHM Area Bkgnd It Energy 1.98E+00 398.05 393 9 9.51E-03 56.6 1.25 98 195 198.54 1 701 10 5.19E-03 82.5 1.43E+00 705.35 2.04 102 54 1 352.09 1220.03 1215 13 4.82E-03 91.1 9.81E-01 1.61 90 1 609.30 50 Flags: "T" = Tentatively associated Summary of Nuclide Activity 3 Total number of lines in spectrum 3 Number of unidentified lines 0.00% Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA K.L. Act error Activity (pCi/L)(pCi/L)Ided Nuclide -0.206 0.000E+00 4.704E+01 2.902E+01 -9.691E+00 BE-7 Half-Life too short 6.762E+01 -4.081E+01 NA-24 -0.040 0.000E+00 7.163E+01 3.724E+01 -2.846E+00 K-40 -0.332 5.872E+01 0.000E+00 3.665E+01 CR-51 -1.950E+01 0.000E+00 -0.293 4.629E+00 2.922E+00 -1.357E+00 MN-54 -0.390 4.709E+00 0.000E+00 -1.837E+00 2.909E+00 CO-57 -0.485 0.000E+00 3.077E+00 4.768E+00 -2.314E+00 CO-58 0.031 0.000E+00 7.076E+00 1.169E+01 3.665E-01 FE-59 0.296 0.000E+00 2.942E+00 5.094E+00 1.508E+00 CO-60 0.237 1.065E+01 0.000E+00 2.521E+00 6.285E+00 ZN-65 -0.239 0.000E+00 6.682E+00 4.106E+00 -1.595E+00 SE-75 2.882 0.000E+00 7.927E+00 3.993E+00 2.284E+01 SR-85 -0.053 0.000E+00 5.856E+00 3.579E+00 -3.113E-01 Y-88 -0.326 0.000E+00 4.506E+00 2.811E+00 -1.469E+00 NB-94 0.020 0.000E+00 5.621E+00 1.143E-01 3.408E+00 NB-95 0.000E+00 0.106 9.906E+00 5.948E+00 1.055E+00 ZR-95 -0.073 0.000E+00 1.857E+03 1.135E+03 MO-99 -1.351E+02 0.473 0.000E+00 6.560E+00 3.831E+00 3.105E+00 RU-103 0.077 0.000E+00 4.178E+01 2.548E+01 3.228E+00 RU-106 0.131 0.000E+00 4.955E+00 2.948E+00 6.505E-01 AG-110m -0.506 0.000E+00 6.441E+00 4.130E+00 -3.258E+00 SN-113 0.000E+00 -0.8844.467E+00 5.566E+00 -4.921E+00 SB-124 -0.935 0.000E+00 1.263E+018.201E+00 SB-125 -1.181E+01 0.047 0.000E+00 7.182E+01 4.329E+01 TE-129M 3.359E+00 0.306 0.000E+00 1.864E+01 5.696E+00 1.118E+01 I-131

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BA-133	4.266E+00	4.896E+00	7.106E+00	0.000E+00	0.600
CS-134	3.557E+00	4.004E+00	5.826E+00	0.000E+00	0.610
CS-136	1.115E+00	5.994E+00	9.960E+00	0.000E+00	0.112
CS-137	1.824E+00	3.115E+00	5.343E+00	0.000E+00	0.341
CE-139	1.670E+00	3.075E+00	5.111E+00	0.000E+00	0.327
BA-140	-1.003E+01	2.323E+01	3.713E+01	0.000E+00	-0.270
LA-140	9.684E-01	6.457E+00	1.076E+01	0.000E+00	0.090
CE-141	-7.726E+00	6.999E+00	1.111E+01	0.000E+00	-0.696
CE-144	-3.480E+01	2.304E+01	3.618E+01	0.000E+00	-0.962
EU-152	-1.164E+01	1.126E+01	1.445E+01	0.000E+00	-0.805
EU-154	-3.402E+00	5.908E+00	9.580E+00	0.000E+00	-0.355
RA-226	-5.415E+01	7.134E+01	1.154E+02	0.000E+00	-0.469
AC-228	1.323E+01	1.149E+01	2.073E+01	0.000E+00	0.638
TH-228	3.504E+00	5.397E+00	9.400E+00	0.000E+00	0.373
TH-232	1.316E+01	1.143E+01	2.062E+01	0.000E+00	0.638
U-235	1.358E+01	2.291E+01	3.814E+01	0.000E+00	0.356
U-238	8.565E+01	3.110E+02	5.265E+02	0.000E+00	0.163
AM-241	-5.061E+01	2.884E+01	4.442E+01	0.000E+00	-1.139

A,07L28784-1	,06/02/2006	11:44,05/17/	2006 12:30,	3.532E+00,L	28784-1 WG EX
B,07L28784-1	,LIBD	,06	/02/2006 08:24	1,0735L09090	4
C,BE-7,NO	, -9.691E+00,	2.902E+01,	4.704E+01,,	-0.206	
C,K-40 ,NO	, -2.846E+00,	3.724E+01,	7.163E+01,,	-0.040	
C,CR-51 ,NO	, -1.950E+01,	3.665E+01,	5.872E+01,,	-0.332	
C,MN-54 ,NO	, -1.357E+00,	2.922E+00,	4.629E+00,,	-0.293	
C,CO-57 ,NO	, -1.837E+00,	2.909E+00,	4.709E+00,,	-0.390	
C,CO-58,NO	, -2.314E+00,	3.077E+00,	4.768E+00,,	-0.485	
C,FE-59,NO	, 3.665E-01,	7.076E+00,	1.169E+01,,	0.031	
C,CO-60 ,NO	, 1.508E+00,	2.942E+00,	5.094E+00,,	0.296	
C,ZN-65,NO	, 2.521E+00,	6.285E+00,	1.065E+01,,	0.237	
C,SE-75 ,NO	, -1.595E+00,	4.106E+00,	6.682E+00,,	-0.239	
C,SR-85 ,NO	, 2.284E+01,	3.993E+00,	7.927E+00,,	2.882	
C,Y-88 ,NO	, -3.113E-01,	3.579E+00,	5.856E+00,,	-0.053	
C,NB-94 ,NO	, -1.469E+00,	2.811E+00,	4.506E+00,,	-0.326	
C,NB-95 ,NO	, 1.143E-01,	3.408E+00,	5.621E+00,,	0.020	
C.ZR-95 .NO	. 1.055E+00,	5.948E+00,	9.906E+00,,	0.106	
C.MO-99 ,NO	1.351E+02,	1.135E+03,	1.857E+03,,	-0.073	
C.RU-103 .NO	. 3.105E+00,	3.831E+00,	6.560E+00,,	0.473	
C.RU-106 ,NO	. <u>3.228E+00</u> ,	2.548E+01,	4.178E+01,,	0.077	
C.AG-110m .NO	6.505E-01.	2.948E+00,	4.955E+00,,	0.131	
C. SN-113 .NO	-3.258E+00,	4.130E+00,	6.441E+00,,	-0.506	
C.SB-124 .NO	-4.921E+00.	4.467E+00,	5.566E+00,,	-0.884	
C.SB-125 .NO	1.181E+01.	8.201E+00,	1.263E+01,,	-0.935	
C TE-129M .NO	3.359E+00.	4.329E+01,	7.182E+01,,	0.047	
C. I-131 .NO	. 5.696E+00,	1.118E+01,	1.864E+01,,	0.306	
C BA-133 .NO	4.266E+00.	4.896E+00,	7.106E+00,,	0.600	
C CS-134 NO	3.557E+00.	4.004E+00,	5.826E+00,,	0.610	
C CS-136 NO	1,115E+00	5.994E+00.	9.960E+00,,	0.112	
C CS = 137 NO	1 824E+00	3.115E+00.	5.343E+00.	0.341	
C CE-139 NO	1.670E+00	3.075E+00,	5.111E+00,,	0.327	
C BA = 140 NO	-1.003E+01	2.323E+01.	3.713E+01,,	-0.270	
C I A = 140 NO	9684E-01	6.457E+00.	1.076E+01.	0.090	
C CE = 141 NO	-7 726E+00	6.999E+00.	1.111E+01	-0.696	
C CE 141 NO	-3 480E+01	2 304E+01	3.618E+01.	-0.962	
$C \overline{FII}_{152} NO$	-1 164E+01	1 126E+01	1.445E+01.	-0.805	
C FII_15/ NO	-3 402E+00	5.908E+00	9 580E+00.	-0.355	
C, EO = 134, NO	$-5  415 \pm 01$	7 134E+01	1.154E+02	-0.469	
$C_{NC} = 228$ NO	, 3.4150101, 1 323E+01	1.149E+01	2.073E+01	0.638	
C TTU 220 NO	, 1.5250+01, 3.504E+00	5 397E+00	9.400E+00	0.373	
C, IH - 220, NO	$, 3.304\pm00, 1.316\pm01$	$1 143E \pm 01$	2.062E+01	0.638	
	, I.SIOETUL, 1.250EL01	1.14JUTUL/	$3.814E\pm01$	0.356	
	$\beta = 1.550 \pm 101$	3 110F±02,	5 2658+02	0 163	
C, U-238 , NO	, 0.505E+01, E 0.61E+01	2.1100702	$A AA2F_102,$	-1 139	
C, AM-Z4I , NO	, - <u>5.0016</u> +01,	Z.OOTHTUI,	LITUI//		

							=======================================		=====	========
===== VAX/\ TBE1(	======================================									
LIMS	LIMS No., Customer Name, Client ID: WG L28784-2 BRAIDWOOD									
Samp Samp Quan Star End MDA	Sample ID       : 10L28784-2       Smple Date: 17-MAY-2006 12:45:00.         Sample Type       : WG       Geometry : 1035L091004         Quantity       : 3.70460E+00 L       BKGFILE : 10BG060306MT         Start Channel       : 80       Energy Tol : 1.00000       Real Time : 0 13:20:07.75         End Channel       : 4090       Pk Srch Sens: 5.00000       Live time : 0 13:20:00.00         MDA Constant       : 0.00       Library Used: LIBD									
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	1 1 1 1 1 1 1 1 1 1 1 1 1	66.25* 139.77 185.82* 198.27* 238.44* 294.97 351.58* 583.21* 595.94 609.11* 768.37 890.51 910.49* 1120.15* 1377.53	392 386 53 314 92 78 34 36 179 294 43 31 24 18 36 54	1636 1288 1455 1046 1054 573 677 308 310 359 173 131 130 119 68 54	$\begin{array}{c} 1.54\\ 1.31\\ 1.87\\ 1.82\\ 1.33\\ 1.19\\ 1.57\\ 2.24\\ 1.47\\ 2.12\\ 1.69\\ 1.52\\ 2.62\\ 1.56\\ 2.06\\ 9.80 \end{array}$	131.80 278.97 371.16 396.07 476.50 589.67 703.00 1166.72 1192.22 1218.60 1537.45 1782.02 1822.01 2241.84 2757.24 3997.43	6.32E-01 1.68E+00 1.59E+00 1.55E+00 1.40E+00 1.21E+00 1.07E+00 7.18E-01 7.06E-01 6.94E-01 5.79E-01 5.16E-01 5.16E-01 4.33E-01 4.33E-01 3.71E-01 2.91E-01	8.18E-03 $8.05E-03$ $1.11E-033$ $6.55E-03$ $1.91E-03$ $1.62E-03$ $7.02E-04$ $3.74E-03$ $6.13E-03$ $8.91E-04$ $6.37E-04$ $4.94E-04$ $3.76E-04$ $1.12E-03$	21.0 16.8 166.0 23.5 79.7 51.2 186.0 125.7 20.3 18.6 56.6 69.1 128.9 152.7 45.2 33.6	1.24E+00 1.55E+00 4.16E-01 3.14E+00 1.65E+00 2.63E+00 4.29E+00 1.60E+00 1.13E+00 1.56E+00 7.54E+00 1.30E+00 1.41E+00 2.85E+00 2.52E+00

Flag: "*" = Peak area was modified by background subtraction

LIMS:

Nuclide Line Activity Report

Nuclide Type: natural

Sec. Review: Analyst:

Nuclide '	Type: natura	al			Uncorrected Deca	y Corr	2-Sigma
Nuclide RA-226 AC-228	Energy 186.21 835.50 911.07	Area 53  24	%Abn 3.28* 1.75 27.70*	%Eff 1.594E+00 5.422E-01 5.072E-01	pCi/L p 1.551E+01 1.5 Line No 2.563E+00 2.5	Ci/L 51E+01 ot Found 578E+00	*Error 331.91  257.87 159.49
TH-228	238.63 240.98	92	44.60* 3.95	1.401E+00 1.392E+00	2.232E+00 2.2	t Found	251.40
TH-232	583.14 911.07 969.11	36 24	30.25 27.70* 16.60	7.183E-01 5.072E-01 4.834E-01	2.541E+00 2.5 2.563E+00 2.5 Line No	563E+00 ot Found	257.87
U-235	143.76 163.35 185.71 205.31	53	10.50* 4.70 54.00 4.70	1.683E+00 1.659E+00 1.594E+00 1.524E+00	Line No 9.422E-01 9.4	ot Found 122E-01 ot Found	331.91

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Page : 2 Summary of Nuclide Activity Acquisition date : 3-JUN-2006 16:39:39 Sample ID : 10L28784-2 16 Total number of lines in spectrum 12 Number of unidentified lines Number of lines tentatively identified by NID 4 25.00% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pCi/L pCi/L Hlife Decay Nuclide 5.149E+01 331.91 1.551E+01 1.00 1.551E+01 1600.00Y RA-226 257.87 6.648E+00 1.01 2.563E+00 2.578E+00 AC-228 5.75Y 3.622E+00 159.49 2.271E+00 1.02 2.232E+00 1.91Y TH-228 6.609E+00 257.87 2.563E+00 1.00 2.563E+00 31.27E-01 331.91 K TH-232 1.41E+10Y 9.422E-01 U-235 7.04E+08Y 1.00 9.422E-01 _____ 2.387E+01 Total Activity : 2.381E+01 Grand Total Activity : 2.381E+01 2.387E+01

Flags: "K" = Keyline not found "E" = Manually edited "M" = Manually accepted "A" = Nuclide specific abn. limit

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3

Flags

Page :

%Eff

6.32E-01

1.68E+00

1.55E+00

1.21E+00

1.07E+00

7.06E-01

6.94E-01

5.79E-01

5.16E-01

4.33E-01

3.71E-01

7 1.62E-03 ****

25.00%

16

12

Unidentified Energy Lines Acquisition date : 3-JUN-2006 16:39:39 Sample ID : 10L28784-2 Channel Left Pw Cts/Sec %Err Bkgnd FWHM Area Energy It 128 9 8.18E-03 42.0 131.80 1.54 1636 392 275 8 8.05E-03 33.7 1 66.25 1.31 278.97 1288 386 139.77 391 9 6.55E-03 46.9 1 396.07 1046 1.82 314 198.27 1 589.67 587 1.19 573 78 294.97 697 12 7.02E-04 **** 1 703.00 677 1.57 34 351.58 1192.22 1188 11 3.74E-03 40.7 1 1.47 310 179 1218.60 1211 17 6.13E-03 37.2 595.94 1 359 2.12 294 1537.45 1534 9 8.91E-04 **** 609.11 1 173 1.69 43 1782.02 1777 9 6.37E-04 **** 768.37 1 1.52 131 31 2241.84 2237 9 3.76E-04 **** 890.51 1 119 1.56 18 1120.15 2757.24 2753 9 7.53E-04 90.4 1 2.06 68 3997.43 3989 17 1.12E-03 67.3 2.91E-01 36 1377.53 1 9.80 54 54 1996.76 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 4 Nuclide Type : natural -----Wtd Mean

Nuclide RA-226 AC-228 TH-228 TH-232	Hlife 1600.00Y 5.75Y 1.91Y 1.41E+10Y Total Acti	Decay 1.00 1.01 1.02 1.00	Wtd Mean Uncorrected pCi/L 1.551E+01 2.258E-02 2.232E+00 2.541E+00  2.031E+01	Decay Corr pCi/L 1.551E+01 2.271E-02 2.271E+00 2.541E+00  2.035E+01	Decay Corr 2-Sigma 2-Sigma Error %Error 5.149E+01 331.91 924.4E-02 40700.37 3.622E+00 159.49 6.387E+00 251.40	Flags
Gran	d Total Act	ivity :	2.031E+01	2.035E+01		

<b>11</b>	11 17 11		Kewline not found	"M" = Manually accepted	
Flags:	" K."		Reyline nee louis	$u_{N}u = Nuclide specific abn. 11$	ミュレ
0	нĘп	==	Manually edited	"A" - NUCLIUC SPOOL	

Interference Report

Interfe	ring	Interfered			
Nuclide	Line	Nuclide	Line		
TH-232	911.07	AC-228	911.07		

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
NUCTICE	(P = - / = /				0 250
RA-226	1.551E+01	5.149E+01	6.207E+01	0.0008+00	0.250
AC-228	2.271E-02	9.244E+00	9.231E+00	0.000E+00	0.002
--------	-----------	-----------	-----------	-----------	-------
TH-228	2.271E+00	3.622E+00	4.624E+00	0.000E+00	0.491
TH-232	2.541E+00	6.387E+00	9.667E+00	0.000E+00	0.263

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L. (pCi/L) Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
Nucriae			2 CARELO1	0.000E+00	0.239
BE-7	6.339E+00	1.575E+01	2.6496+01	short	
NA - 24	-7.460E+01	2.379E+02	$A  0 \in 2\mathbb{R} + 01$	0.000E+00	-0.155
K = 40	-6.318E+00	2.5878+01	4.0055+01	0.000E+00	-0.969
CR = 51	-3.124E+01	2.020E+01	3.223E+01	0.000E+00	-0.107
MN-54	-2.820E-01	1.601E+00	$2.838\pm00$	0.000E+00	-0.437
CO - 57	-1.181E+00	1.651E+00	2.702E+00	0.000E+00	-0.221
CO = 58	-6.225E-01	1.721E+00	2.8212+00	0.000E+00	0.446
EE-59	2.783E+00	3.697E+00	0.239E+00	0.000E+00	0.303
CO = 60	8.283E-01	1.615E+00	2.733E+00	0.000E+00	0.838
ZN-65	5.040E+00	4.072E+00	5.01/E+00	0.000E+00	-0.194
SE-75	-7.401E-01	2.307E+00	3.8088+00	0.000E+00	4.509
SR-85	1.832E+01	2.087E+00	4.0826+00	0.000E+00	-0.067
V-88	-2.097E-01	1.913E+00	3.13/8+00	0.000E+00	0.508
NB-94	1.293E+00	1.516E+00	$2.940 \pm 00$	0.000E+00	0.500
NB-95	1.541E+00	1.841E+00	5.084 <u>5</u> +00	0.000E+00	-0.092
ZR - 95	-4.847E-01	3.337E+00	5.255E+00	0.000E+00	0.133
MO-99	2.054E+02	9.375E+02	1.5400+05	0.000E+00	1.070
RU-103	3.886E+00	2.086E+00	2.0310+00	0.000E+00	-0.300
RU-106	-7.019E+00	1.535E+01	$2.330 \pm 01$	0.000E+00	0.038
AG-110m	9.969E-02	1.591E+00	2.6136+00	0.000E+00	0.000
SN-113	-1.332E-03	2.224E+00	3.6365+00	0.000E+00	-0.465
SB-124	-1.381E+00	4.402E+00	2.975E+00	0.000E+00	-0.166
SB-125	-1.211E+00	4.511E+00	7.295E+00	0.000E+00	0.415
TE-129M	1.761E+01	2.569E+01	4.2475+01	0.000E+00	-0.198
T-131	-2.299E+00	7.129E+00	1.100E+01	0.000E+00	1.236
BA-133	4.795E+00	2.6458+00	2.000E+00	0.000E+00	1.652
CS-134	5.010E+00	3.757E+00	$5.055 \pm 00$	0.000E+00	-0.612
CS-136	-3.547E+00	3.623E+00	3.7940+00 2.824E+00	0.000E+00	0.072
CS-137	2.030E-01	1.716E+00	2.8241100	0.000E+00	0.324
CE-139	9.282E-01	1.735E+00	2.0041100 2.265E+01	0.000E+00	-0.267
BA-140	-6.051E+00	1.386E+U1	7 712E+00	0.000E+00	0.628
LA-140	4.845E+00	4.459E+00	C 159E+00	0.000E+00	0.695
CE-141	4.487E+00	4.535E+00	2.4950+00	0.000E+00	0.167
CE - 144	3.513E+00	1.500E+01	2.100E+01	0.000E+00	-0.659
EU-152	-5.289E+00	5.948E+00	$5.025\pm00$	0.000E+00	-0.196
EU-154	-1.082E+00	3.351E+00	5.512BT00 5.198F±01	0.000E+00	1.431
U-235	3.045E+01	1.462E+01	2.120HTV1 2.010Ft02	0.000E+00	0.288
U-238	8.122E+01	1.683E+02	2.0196702 2.06F+01	0.000E+00	-0.564
AM-241	-1.238E+01	1.616E+01	2.IJOH+01	~ ~	

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			1	2 2 2 2	7058+00 WG	T-28784-2	BR
A 10128784-	-2	,06/04/2006	05:59,05/17/20	$106 \pm 2:45, 5$	10351.091004		
B 101,28784-	-2	,LIBD	,06/0	)2/2006 08:22,	T032T02T00T		
C RA = 226	YES.	1.551E+01,	5.149E+01,	6.207E+01,,	0.200		
C, NC = 228	YES.	2.271E-02,	9.244E+00,	9.231E+00,,	0.002		
C, AC-220	VES	2.271E+00,	3.622E+00,	4.624E+00,,	0.491		
$C, 1H^{-220}$	VEC	2.541E+00,	6.387E+00,	9.667E+00,,	0.263		
C, TH-232	, 100, 100, 100, 100, 100, 100, 100, 10	5.339E+00.	1.575E+01,	2.649E+01,,	0.239		
C, BE-/	, INO , NO	-6.318E+00	2.587E+01,	4.063E+01,,	-0.155		
C, K-40	, INO ,	-3.124E+01.	2.020E+01,	3.223E+01,,	-0.969		
C, CR-51	, INO ,	-3.1240+01	1.601E+00,	2.638E+00,,	-0.107		
C,MN-54	, NO ,	-2.020H 01/	1.651E+00,	2.702E+00,,	-0.437		
C, CO-57	,NO ,	-1.1010+00,	1 721E+00	2.821E+00,,	-0.221		
C,CO-58	,NO ,	$-6.220 \pm 01$	3.697E+00	6.239E+00,,	0.446		
C,FE-59	,NO,	$2.783 \pm 00,$	1.615E+00.	2.733E+00,,	0.303		
C,CO-60	,NO,	8.283E-UI,	1.072E+00	6.017E+00,,	0.838		
C,ZN-65	,NO,	5.040E+00,	2.307E+00	3.808E+00,,	-0.194		
C,SE-75	,NO,	-7.401E-01,	2.307E+00	4.062E+00,,	4.509		
C,SR-85	,NO,	1.832E+01,	2.007E+00, 1 913E+00	3.137E+00,,	-0.067		
C,Y-88	,NO,	-2.09/E-01,	1.516F+00	2.546E+00,	0.508		
C,NB-94	,NO,	1.293E+00,	$1.010\pm00$	3 084E+00,	0.500		
C,NB-95	,NO,	1.541E+00,	1.0410+00,	5 253E+00.	-0.092		
C,ZR-95	,NO,	-4.847E-01,	3.337E+00,	1.540E+03.	0.133		
C,MO-99	,NO,	2.054E+02,	9.375E+02,	3.631E+00.7	1.070		
C,RU-103	,NO ,	3.886E+00,	2.086E+00,	2.338E+01.	-0.300		
C,RU-106	,NO,	-7.019E+00,	1.535E+01,	2.550E+00,	0.038		
C, AG-110m	,NO,	9.969E-02,	1.591E+00,	2.636E+00	0.000		
C, SN-113	,NO,	-1.332E-03,	2.224E+00,	2.030E+00,	-0.465		
C,SB-124	,NO,	-1.381E+00,	4.402E+00,	7.295E+00	-0.166		
C,SB-125	,NO,	-1.211E+00,	4.511E+00,	1.200E+01	0.415		
C,TE-129M	,NO,	1.761E+01,	2.569E+01,	4.2470101777777777777777777777777777777777	-0.198		
C,I-131	,NO,	-2.299E+00,	7.129E+00,	1.100 <u>0</u> +01//	1.236		
C, BA-133	,NO,	4.795E+00,	2.645E+00,	3.033E+00	1.652		
C,CS-134	,NO,	5.010E+00,	3.757E+00,	5.055 <u>5</u> +00 <b>//</b>	-0.612		
C,CS-136	,NO,	-3.547E+00,	3.623E+00,	2.7940+00,7	0.072		
C.CS-137	,NO,	2.030E-01,	1.716E+00,	2.024E+00;;	0 324		
C.CE-139	, NO ,	9.282E-01,	1.735E+00,	2.864E+00,,	-0.267		
C.BA-140	, NO ,	-6.051E+00,	1.386E+01,	Z.Z05E+01,	0.628		
C.TA-140	, NO ,	4.845E+00,	4.459E+00,	/./12E+00,,	0.625		
$C_{1}CE = 141$	, NO ,	4.487E+00,	4.535E+00,	6.459E+00,,	0.055		
C, CE - 144	, NO ,	3.513E+00,	1.500E+01,	2.109E+01,,	-0 659		
$C_{EII} = 152$	NO .	-5.289E+00,	5.948E+00,	8.023E+00,,	-0.055		
C E I - 154	, NO .	-1.082E+00,	3.351E+00,	5.512E+00,,	- 0.190		
$C_{11} = 235$	, NO .	3.045E+01,	1.462E+01,	2.1288+01,,	1.431 0 200		
$C_{11} = 238$	. NO .	8.122E+01,	1.683E+02,	2.819E+02,,	0.200		
$C \Delta M_{-}241$	NO .	-1.238E+01,	1.616E+01,	2.1968+01,,	-0.304		
	, ,						

4

Sec. Revie	w: Analy	yst: L	IMS: <u> </u>	/				, 
======================================	======================================	======= own Eng. ******	====== Labora *** Aqu	tory Ga isitio	amma Rep n Date/5		UN-2006 06:0 N-2006 16:39	0:03.48 :41.04
LIMS No. /	Customer	Name, Cl	ient ID	): WG L	28784-3	BRAIDWOOD		
Sample ID Sample Typ Quantity Start Chan End Channe MDA Consta	: 11L oe : WG : 3.4 nnel : 40 el : 409 ant : 0.0	28784-3 3520E+00 Ene 0 Pk 00 Lil	) L ergy Tol Srch Se orary Us	l : 1. ens: 5. sed: LI	00000 00000 BD	Smple Date Geometry BKGFILE Real Time Live time	: 17-MAY-200 : 1135L09020 : 11BG060306 : 0 13:20:16 : 0 13:20:00	6 13:43:00. 4 MT .82 .00
Pk It H	Energy	Area	Bkgnd	FWHM C	Channel	%Eff	Cts/Sec %Er	rr Fit
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	66.34 139.79* 174.85 198.23 238.41* 295.41* 337.96 351.92* 595.65 609.02* 910.04* .119.59* .460.24*	347 175 120 289 40 232 138 224 212 215 3 11 51 121	2707 971 821 910 826 951 448 683 249 381 177 169 113 67	1.85 1.17 0.93 1.02 1.22 1.37 1.50 1.38 1.31 1.36 1.35 1.56 2.44 1.26	132.02 279.53 349.94 396.87 477.55 591.94 677.33 705.35 1194.13 1220.94 1823.94 2243.29 2924.25 3524.30	$\begin{array}{c} 6.03E-01\\ 1.69E+00\\ 1.65E+00\\ 1.57E+00\\ 1.42E+00\\ 1.23E+00\\ 1.11E+00\\ 1.08E+00\\ 7.15E-01\\ 7.02E-01\\ 5.14E-01\\ 4.37E-01\\ 3.54E-01\\ 3.05E-01\\ \end{array}$	7.22E-03 26. 3.65E-03 37. 2.50E-03 40. 6.02E-03 19. 8.28E-04179. 4.83E-03 32. 2.87E-03 29. 4.68E-03 30. 4.42E-03 15. 4.48E-03 24. 5.53E-05***. 2.20E-04300. 1.05E-03 72. 2.51E-03 18.	.6 .7 .6 .0 .8 .1 .0 .6 .5 .4 ** .9 .5 .1

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natural				Uncorrected	Decay Corr	2-Sigma
Nuclide K-40 TH-228	Energy 1460.81 238.63 240.98 -	Area 51 40	%Abn 10.67* 44.60* 3.95	%Eff 3.540E-01 1.422E+00 1.413E+00	pCi/L 2.194E+01 1.027E+00 Li	pCi/L 2.194E+01 1.045E+00 ne Not Found	%Error 145.06 359.54

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Page : 2 Summary of Nuclide Activity Sample ID : 11L28784-3 Acquisition date : 3-JUN-2006 16:39:41 14 Total number of lines in spectrum 12 Number of unidentified lines Number of lines tentatively identified by NID 2 14.29% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr pCi/L 2-Sigma Error %Error Flags Hlife Decay pCi/L 1.00 2.194E+01 2.194E+01 3.183E+01 145.06 1.02 1.027E+00 1.045E+00 3.757E+00 359.54 Nuclide K-40 1.28E+09Y 1.91Y TH-228 _____ ______ 2.299E+01 Total Activity : 2.297E+01 Grand Total Activity : 2.297E+01 2.299E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 3-JUN-2006 16:39:41 Sample ID : 11L28784-3 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM Area Ιt Energy 128 8 7.22E-03 53.1 6.03E-01 1.85 132.02 347 2707 66.34 0 1.69E+00 7 3.65E-03 75.3 276 279.53 971 1.17 175 139.79 0 347 7 2.50E-03 81.2 1.65E+00 349.94 821 0.93 120 174.85 0 393 8 6.02E-03 38.1 1.57E+00 1.02 396.87 910 289 198.23 0 1.23E+00 585 14 4.83E-03 64.2 591.94 1.37 951 232 295.41 0 9 2.87E-03 58.0 1.11E+00 677.33 673 1.50 448 337.96 138 0 705.35 698 14 4.68E-03 61.2 1.08E+00 683 1.38 224 351.92 0 1194.13 1190 10 4.42E-03 30.9 7.15E-01 249 1.31 212 595.65 1220.94 1214 15 4.48E-03 48.9 0 7.02E-01 381 1.36 215 609.02 0 177 1.35 1823.94 1818 14 5.53E-05 **** 5.14E-01 3 910.04 0 2243.29 2239 15 2.20E-04 **** 4.37E-01 169 1.56 11 1119.59 0 3524.30 3516 17 2.51E-03 36.2 3.05E-01 1.26 67 121 1760.79 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 14 Number of unidentified lines 12 Number of lines tentatively identified by NID 2 14.29% Nuclide Type : natural Wtd Mean Wtd Mean 2-Siqma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Hlife Nuclide 3.183E+01 145.06 2.194E+01 2.194E+01 1.00 1.28E+09Y K-40 359.54 3.757E+00 1.045E+00 1.027E+00 1.02 1.91Y TH-228 ______ _____ 2.299E+01 2.297E+01 Total Activity : Grand Total Activity : 2.297E+01 2.299E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L) (pCi/L) Nuclide 0.800 0.000E+00 2.745E+01 3.183E+01 2.194E+01 K-40 0.216 0.000E+00 4.844E+00 3.757E+00 1.045E+00 TH-228

---- Non-Identified Nuclides ----

Nuclide	Activity K.I (pCi/L) Ide	L. Act error ed	MDA (pCi/L)	MDA error	Act/MDA
BE-7	6.968E+00	1.675E+01	2.815E+01	0.000E+00	0.248
MN = 24	-1.707E+02	2.143E+02	Half-Life t	oo short	0 0 2 7
$CP_{51}$	-2.877E+01	2.144E+01	3.437E+01	0.000E+00	-0.837
MN = 54	1.742E+00	1.792E+00	3.058E+00	0.000E+00	0.570
CO = 57	-8.710E-01	1.684E+00	2.771E+00	0.000E+00	-0.314
CO = 58	-4.529E-01	1.908E+00	3.133E+00	0.000E+00	-0.145
CO-50 FF-59	3.689E+00	3.950E+00	6.691E+00	0.000E+00	0.551
CO = 60	1.188E+00	1.739E+00	2.953E+00	0.000E+00	1 1 9 0
2N = 65	7.784E+00	4.249E+00	6.598E+00	0.000E+00	1.180
SF - 75	-1.562E+00	2.346E+00	3.851E+00	0.000E+00	-0.406
GD-85	1.934E+01	2.330E+00	4.473E+00	0.000E+00	4.324
A-88	-4.666E-01	2.168E+00	3.511E+00	0.000E+00	-0.133
NB = 94	-2.397E-01	1.637E+00	2.655E+00	0.000E+00	-0.090
NB-95	5.591E-01	1.937E+00	3.248E+00	0.000E+00	0.172
ND-95	4.046E-01	3.459E+00	5.773E+00	0.000E+00	0.070
MO-99	-5.500E+02	1.014E+03	1.617E+03	0.000E+00	-0.340
MO-22	1.184E+00	2.265E+00	3.809E+00	0.000E+00	0.311
RU-105	5.453E+00	1.632E+01	2.635E+01	0.000E+00	0.207
AG-110m	3.921E-01	1.736E+00	2.861E+00	0.000E+00	0.137
SN-113	-1.181E+00	2.353E+00	3.798E+00	0.000E+00	-0.311
SB-124	-3.096E+00	4.970E+00	3.219E+00	0.000E+00	-0.982
SB-125	-3.257E+00	4.864E+00	7.777E+00	0.000E+00	-0.419
TE-129M	1.568E+01	2.645E+01	4.360E+01	0.000E+00	0.300
T-131	3.208E-01	7.326E+00	1.203E+01	0.000E+00	1 619
BA-133	6.492E+00	2.675E+00	4.009E+00	0.000E+00	1 188
CS-134	3.873E+00	3.550E+00	3.260E+00	0.000E+00	1.100
CS-136	-2.891E+00	3.966E+00	6.389E+00	0.000E+00	-0.432
CS-137	1.976E+00	1.845E+00	3.120E+00	0.000E+00	-0.075
CE-139	-2.130E-01	1.790E+00	2.833E+00	0.000E+00	0.151
BA-140	3.660E+00	1.456E+01	2.4248+01	0.000E+00	-0.460
LA-140	-3.458E+00	4.732E+00	7.515E+00	0.000E+00	0.214
CE-141	1.362E+00	4.508E+00	6.356E+00	0.000E+00	_0 484
CE-144	-1.000E+01	1.493E+01	2.066E+01	0.000E+00	_0 159
EU-152	-1.304E+00	1.129E+01	8.211E+00	0.000E+00	-0.207
EU-154	-1.158E+00	3.397E+00	5.604E+00	0.000E+00	-0.073
RA-226	-4.911E+00	4.764E+01	6.684E+01	0.000E+00	-0.607
AC-228	-6.707E+00	9.148E+00	1.105E+01	0.000E+00	-0.607
TH-232	-6.668E+00	9.096E+00	1.099E+01	$0.000 \pm 00$	0.007 N 387
U-235	8.100E+00	1.475E+01	2.091E+01		0.007
U-238	5.808E+01	1.864E+02	3.088E+02	$0.000 \pm 00$	-0 306
AM-241	-1.046E+01	2.472E+01	3.4168+01	0.0006400	0.000

				000 12 42 3	2 135 FLOO WG	1,28784-3	BR
A,11L28784	-3	,06/04/2006	06:00,05/1//2	(006 IS:43,	11351.090204		
B,11L28784	-3	,LIBD	,06/	02/2006 00:22,	0 800		
C,K-40	,YES,	2.194E+01,	3.183E+01,	2.745E+01,	0.000		
C,TH-228	,YES,	1.045E+00,	3.757E+00,	4.844E+00,,	0.210		
C,BE-7	,NO,	6.968E+00,	1.675E+01,	2.815E+01,,	0.248		
C, CR-51	,NO,	-2.877E+01,	2.144E+01,	3.437E+01,,	-0.837		
C.MN-54	,NO,	1.742E+00,	1.792E+00,	3.058E+00,,	0.570		
$C_{-}C_{0}-57$	.NO .	-8.710E-01,	1.684E+00,	2.771E+00,,	-0.314		
C C C - 58	NO .	-4.529E-01,	1.908E+00,	3.133E+00,,	-0.145		
$C FE_{-59}$	NO .	3.689E+00,	3.950E+00,	6.691E+00,,	0.551		
C, CO = 60	NO .	1.188E+00,	1.739E+00,	2.953E+00,,	0.402		
$C_{7N-65}$	NO ,	7.784E+00	4.249E+00,	6.598E+00,,	1.180		
C, 2R = 75	NO /	-1.562E+00.	2.346E+00,	3.851E+00,,	-0.406		
	NO	1.934E+01.	2.330E+00,	4.473E+00,,	4.324		
$C, SK^{-0}$	, NO ,	-4.666E-01.	2.168E+00,	3.511E+00,,	-0.133		
C, I = 00	, NO ,	-2.397E-01	1.637E+00	2.655E+00,,	-0.090		
C, NB - 94	, NO ,	5.591E - 01	1.937E+00.	3.248E+00,,	0.172		
C, NB-95	, NO ,	3.3910 01,	3.459E+00.	5.773E+00,,	0.070		
C, 2R-95	, NO ,	4.040B-01,	1 014E+03.	1.617E+03,,	-0.340		
C,MO-99	, INO ,	-3.300E+02, 1 104E+00	2.265E+00.	3.809E+00,,	0.311		
C, RU-103	, NO ,	I.IO4E+00,	1.632E+01.	2.635E+01,,	0.207		
C, RU-106	, NO ,	$5.455 \pm 00$	1.736E+00	2.861E+00,	0.137		
C, AG-110m	, NO ,	3.9210-01, 1 101E,00	2.353E+00	3.798E+00,,	-0.311		
C, SN-113	, NO ,	-1.101E+00,	2.333E+00, 4 970E+00	3.219E+00.	-0.962		
C,SB-124	, NO ,	-3.090E+00,	4.864F±00	7 777E+00.	-0.419		
C,SB-125	, NO ,	-3.25/E+00,	4.0040+00,	4 360E+01.	0.360		
C, TE-129M	, NO ,	1.300E+01	2.040101,	1.203E+01	0.027		
C,I-131	, NO	3.208E-01,	7.5200+00,	4 009E+00.	1.619		
C,BA-133	, NO	6.492E+00,	2.0750+00,	3.260E+00	1.188		
C,CS-134	, NO	3.8/3E+00,	3.330E+00,	$5.200\pm00,$	-0.452		
C,CS-136	, NO	-2.891E+00,	3.900E+00,	3 120E+00	0.633		
C,CS-137	, NO	1.976E+00,	1.845E+00,	2 833E+00	-0.075		
C,CE-139	, NO	, -2.130E-01,	1.790E+00,	$2.000 \pm 00,,$ $2.000 \pm 01$	0 151		
C,BA-140	, NO	, 3.660E+00,	1.456E+UL,	Z.4Z4B+01,, 7 515F+00	-0.460		
C,LA-140	, NO	, -3.458E+00,	4.73ZE+00,	(256F)00,	0 214		
C,CE-141	, NO	, 1.362E+00,	4.508E+00,	$0.330 \pm 00, $	-0 484		
C,CE-144	, NO	, -1.000E+01,	1.493E+01,	2.000E+01,,	-0 159		
C,EU-152	, NO	, -1.304E+00,	1.129E+01,	8.211E+00,,	-0.139		
C,EU-154	, NO	, -1.158E+00,	3.397E+00,	5.604E+00,,	-0.207		
C,RA-226	, NO	, -4.911E+00,	4.764E+01,	6.684E+U1,,	-0.073		
C,AC-228	, NO	, -6.707E+00,	9.148E+00,	1.105E+01,,	-0.607		
C,TH-232	, NO	, -6.668E+00,	9.096E+00,	1.0998+01,,			
C,U-235	, NO	, 8.100E+00,	1.475E+01,	2.091E+01,,	0.387		
C,U-238	, NO	, 5.808E+01,	1.864E+02,	3.0888+02,,	0.100		
C,AM-241	, NO	, -1.046E+01,	2.472E+01,	3.416比+01,,	-0.306		

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Sec. Review: Analyst: LIMS: ____

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 8-JUN-2006 19:28:44.40 TBE14 P-10933A HpGe ******** Aquisition Date/Time: 3-JUN-2006 16:39:46.74 

LIMS No., Customer Name, Client ID: WG L28784-4 BRAIDWOOD

Sample ID : 14L28784-4 Sample Type : WG Quantity : 3.73590E+00 L Start Channel : 90 Energy Tol : 1.00000 End Channel : 4090 Pk Srch Sens: 5.00000 MDA Constant : 0.00 Library Used: LIBD	<pre>Smple Date: 17-MAY-2006 13:15:00. Geometry : 1435L091304 BKGFILE : 14BG060306MT Real Time : 0 13:20:07.73 Live time : 0 13:20:00.00</pre>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	Fit
1 2 3	1 1 1	66.15 92.62* 140.10	713 223 313	2356 1684 1635	2.43 2.10 1.46	133.28 186.38 281.57 374 11	4.48E-01 1.15E+00 1.67E+00 1.64E+00	1.49E-02 14.5 4.65E-03 41.6 6.53E-03 24.8 1.12E-03153.4	2.51E+00 6.92E-01 4.08E-01 1.35E+00
4 5	1	198.69*	239	1176	1.27	398.98	1.60E+00 1 47E+00	4.97E-03 30.7 1.16E-03125.5	1.86E+00 1.24E+00
6 7	1 1	239.04* 295.34	56 166	982 671	1.31	592.57	1.29E+00 1.14E+00	3.46E-03 27.8 2.75E-03 51.3	3.09E+00 1.63E+00
8 9	1	352.42*	225	390 434	1.81	1194.74 1220 57	7.78E-01 7.66E-01	4.69E-03 19.3 6.32E-03 19.4	1.84E+00 1.61E+00
10	1	609.42* 709.84	96 120	434 485 171	4.73	1421.04 1824.16	6.83E-01 5.64E-01	2.00E-03 57.5 2.50E-03 24.3	1.88E+00 1.85E+00
12	1	912.02 1120.80*	61 54	154 160	3.32	2239.74	4.81E-01 4.45E-01	1.26E-03 59.2 1.13E-03 49.8	1.58E+00 6.89E-01
⊥4 15	1 1	1461.83*	10	138	2.61	2917.08	3.93E-01	2.08E-04427.6	2.96E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide T	ype: natura	3 L			Uncorrected Decay Corr	2-Sigma
Nuclide RA-226	Energy 186.21	Area 54	%Abn 3.28*	%Eff 1.639E+00	pCi/L pCi/L 1.506E+01 1.506E+01	%Error 306.80
AC-228	835.50 911.07	120	1.75 27.70*	6.034E-01 5.641E-01	1.158E+01 1.164E+01	48.55
TH-228	238.63 240.98	56	44.60* 3.95	1.467E+00 1.461E+00	1.279E+00 1.301E+00 Line Not Found	250.97
U-235	143.76 163.35 185.71	 54	10.50* 4.70 54.00	1.680E+00 1.685E+00 1.639E+00	Line Not Found Line Not Found 9.149E-01 9.149E-01 Line Not Found	306.80
	205.31		4.70	T.302E+00		

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Page : 2 Summary of Nuclide Activity Acquisition date : 3-JUN-2006 16:39:46 Sample ID : 14L28784-4 15 Total number of lines in spectrum 12 Number of unidentified lines Number of lines tentatively identified by NID 3 20.00% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pĊi/L pCi/L Hlife Decay Nuclide 306.80 1.506E+01 4.621E+01 1.00 1.506E+01 1600.00Y RA-226 48.55 0.565E+01 1.164E+01 1.01 1.158E+01 5.75Y AC-228 250.97 3.266E+00 1.301E+00 1.02 1.279E+00 1.91Y TH-228 28.07E-01 306.80 K 9.149E-01 U-235 7.04E+08Y 1.00 9.149E-01 _____ ____ Total Activity : 2.883E+01 2.892E+01 2.892E+01 Grand Total Activity : 2.883E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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0.000E+00

0.285

Page : 3 Unidentified Energy Lines Acquisition date : 3-JUN-2006 16:39:46 Sample ID : 14L28784-4 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM It Energy Area 127 13 1.49E-02 29.1 4.48E-01 2.43 133.28 713 2356 66.15 1 181 11 4.65E-03 83.2 1.15E+00 186.38 2.10 1684 223 92.62 1 277 10 6.53E-03 49.6 1.67E+00 1.46 281.57 1635 313 1 140.10 9 4.97E-03 61.5 1.60E+00 398.98 395 1176 1.27 239 1 198.69 1.29E+00 8 3.46E-03 55.5 592.57 589 1.31 295.34 166 671 1 702 12 2.75E-03 **** 1.14E+00 706.81 2.22 132 689 352.42 1 1194.74 1188 13 4.69E-03 38.7 7.78E-01 390 1.81 225 596.48 1 7.66E-01 1220.57 1213 15 6.32E-03 38.8 2.31 434 303 1 609.42 6.83E-01 1421.04 1409 20 2.00E-03 **** 4.73 485 96 1 709.84 2239.74 2231 15 1.26E-03 **** 4.81E-01 3.32 154 1120.80 61 1 2473.80 2467 13 1.13E-03 99.6 4.45E-01 1.57 54 160 1238.54 1 2917.08 2907 22 2.08E-04 **** 3.93E-01 10 138 2.61 1461.83 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 15 Total number of lines in spectrum Number of unidentified lines 12 20.00% Number of lines tentatively identified by NID 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Siqma Uncorrected Decay Corr Decay Corr %Error Flags pCi/L 2-Sigma Error pCi/L Nuclide Hlife Decay 306.80 1.506E+01 4.621E+01 1.506E+01 1600.00Y 1.00 RA-226 48.55 0.565E+01 1.164E+01 1.01 1.158E+01 5.75Y AC-228 250.97 3.266E+00 1.301E+00 1.02 1.279E+00 1.91Y TH-228 ______ 2.792E+01 2.801E+01 Total Activity : 2.801E+01 Grand Total Activity : 2.792E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA MDA error Act error Activity (pCi/L) (pCi/L)Nuclide 0.244 0.000E+00 6.167E+01 4.621E+01 RA-226 1.506E+01 1.263 9.220E+00 0.000E+00 5.653E+00 1.164E+01 AC-228

3.266E+00

4.564E+00

---- Non-Identified Nuclides ----

TH-228

1.301E+00

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-3.028E+00		1.622E+01	2.660E+01	0.000E+00	-0.114
NA-24	-7.112E+02		2.066E+02	Half-Life too	short	
K-40	-1.140E+01		2.641E+01	4.125E+01	0.000E+00	-0.276
CR = 51	-2.495E+01		2.013E+01	3.219E+01	0.000E+00	-0.775
MN = 54	9 156E-02		1.643E+00	2.685E+00	0.000E+00	0.034
$CO_{-57}$	-4 643E-01		1.641E+00	2.713E+00	0.000E+00	-0.171
CO = 58	-5.947E-01		1.871E+00	3.026E+00	0.000E+00	-0.197
CU-38 FF-59	2.274E+00		3.803E+00	6.363E+00	0.000E+00	0.357
FE=33	_5 383E-02		1.553E+00	2.552E+00	0.000E+00	-0.021
	4 813E+00		4.247E+00	6.176E+00	0.000E+00	0.779
ZN-85	-7 $123E-01$		2.314E+00	3.808E+00	0.000E+00	-0.195
	-7.425001		2.125E+00	4.113E+00	0.000E+00	5.073
SK-OS	-2.000E+01		1.910E+00	3.092E+00	0.000E+00	-0.128
1-88 ND 04	$-3.9400^{\circ}01$		1.807E+00	2.549E+00	0.000E+00	0.277
NB-94 ND OF	$7.000 \pm 01$		1.835E+00	3.050E+00	0.000E+00	0.259
NB-95	-7 535F - 01		3 321E+00	5.413E+00	0.000E+00	-0.139
ZR-95	-7.555E-01		9.149E+02	1.473E+03	0.000E+00	-0.400
MU-99	-3.648E+00		2 132E+00	3.647E+00	0.000E+00	1.000
RU-103	5.040E+00		1.523E+01	2.437E+01	0.000E+00	0.274
RU-106	$1 772 \overline{F}_{-} 01$		1.579E+00	2.622E+00	0.000E+00	0.068
AG-IIUII	1.7720-01		2.247E+00	3.656E+00	0.000E+00	0.079
SN-113	Z.09/E-UI		4.018E+00	3.137E+00	0.000E+00	1.479
SB-124	4.0305+00		4.570E+00	7.509E+00	0.000E+00	-0.236
SB-125	-1.//2E+00		2.577E+01	4.317E+01	0.000E+00	0.389
TE-129M			7.204E+00	1.144E+01	0.000E+00	-0.289
	-3.301E+00		7.2040+00 2.619E+00	3.907E+00	0.000E+00	1.885
BA-133	7.365E+00		2.019H+00 3.675E+00	2998E+00	0.000E+00	2.178
CS-134	6.531E+00		3.8735+00	6 191E+00	0.000E+00	-0.248
CS-136	-1.004E+00		1 681F±00	2788E+00	0.000E+00	0.046
CS-137	1.282E-UI		1 713F+00	2.844E+00	0.000E+00	0.535
CE-139	1.020101		1 3995+00	2.334E+01	0.000E+00	0.441
BA-140	1.028E+01		1.3995+01 1.3995+01	7 623E+00	0.000E+00	0.175
LA-140	1.333E+00		4.5435+00	6 288E+00	0.000E+00	0.058
CE-141	3.64/E-UI		4.405E+00 1 /00E+01	2.060E+01	0.000E+00	-0.557
CE-144	-1.146E+U1	•	1.4090+01	7959E+00	0.000E+00	-0.944
EU-152	-7.511E+00		0.000E+00	5.506E+00	0.000E+00	-0.129
EU-154	-7.0986-01		5.520E+00	9 738E+00	0.000E+00	1.189
TH-232	1.158E+01	. +		2 082F100	0.000E+00	0.956
U-235	1.990E+01	-		2.002DT01 0.757T102	0.000E+00	0.105
U-238	2.895E+01	-	1.003E+UZ	2.757E+02 2.466F+01	0.000E+00	-0.507
AM-241	-1.756E+01	-	∠.5118+01	3.4006+01	0.0001000	0.007

		00/00/0000	10.00 05/17/20	06 13.15	3 736E+00.WG	L28784-4	BR
A,14L28784-4		,06/08/2006	19:28,05/1//20	$100 \pm 3.13$	1435L091304		
B,14L28784-4		,LIBD	,00/0	C 167E+01	0 244		
C,RA-226 ,Y	ΈS,	1.506E+01,	4.621E+01,	0.10/E+01,	1 263		
C,AC-228,Y	ΈS,	1.164E+01,	5.653E+00,	9.2200+00,,	0 285		
C,TH-228,Y	ΈS,	1.301E+00,	3.266E+00,	4.564E+00,,	0.205		
C,BE-7,N	ío, -	3.028E+00,	1.622E+01,	2.660E+01,,	-0.114		
C,K-40 ,N	io , -	1.140E+01,	2.641E+01,	4.125E+01,,	-0.276		
C.CR-51 ,N	10, -	2.495E+01,	2.013E+01,	3.219E+01,,	-0.775		
C.MN-54 ,N	10,	9.156E-02,	1.643E+00,	2.685E+00,,	0.034		
C.CO-57 ,N	10, -	4.643E-01,	1.641E+00,	2.713E+00,,	-0.171		
C.CO-58 .N	, oi	-5.947E-01,	1.871E+00,	3.026E+00,,	-0.197		
C FE-59 .N	JO .	2.274E+00,	3.803E+00,	6.363E+00,,	0.357		
C $CO-60$ $N$	JO , -	-5.383E-02,	1.553E+00,	2.552E+00,,	-0.021		
C ZN = 65 N	IO .	4.813E+00,	4.247E+00,	6.176E+00,,	0.779		
C SE 75 N	JO -	-7.423E-01,	2.314E+00,	3.808E+00,,	-0.195		
$C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0}$ $C_{0$	NO /	2.086E+01.	2.125E+00,	4.113E+00,,	5.073		
	NO ,	-3.948E-01.	1.910E+00,	3.092E+00,,	-0.128		
C, I = 00		7.068E-01.	1.807E+00,	2.549E+00,,	0.277		
C, ND = 94		7.887E-01	1.835E+00,	3.050E+00,,	0.259		
$C, ND - 95$ , $\Gamma$		-7.535E-01.	3.321E+00.	5.413E+00,,	-0.139		
$C, \Delta R = 95$ , I		-5 895E+02	9.149E+02.	1.473E+03,,	-0.400		
C,MU-99 ,I		3 648E±00	2 132E+00	3.647E+00,,	1.000		
C, RU-105 ,1		5.640E+00,	1.523E+01.	2.437E+01,,	0.274		
C, RU-106 ,1		1.772F = 01	1.579E+00.	2.622E+00,,	0.068		
C, AG-11011 ,1		$2.997E_{-01}$	2.247E+00.	3.656E+00,,	0.079		
C, SN-113, I		2.09/E-01,	4.018E+00.	3.137E+00,,	1.479		
C, SB-124 ,1	NO,	4.0305+00, 1.772E,00	4.570E+00	7.509E+00,	-0.236		
C, SB-125 ,1	NO,	-1.7725+00,	2.577E+01	4.317E+01,,	0.389		
C,TE-IZ9M ,	NO,	1.070E+01,	7.204E+00	1.144E+01.	-0.289		
C,1-131 ,	NO,	-3.301E+00,	7.204D100, 2 619F+00	3 907E+00.	1.885		
C,BA-133 ,	NO,	7.365E+00,	$2.010\pm00$	2 998E+00.	2.178		
C,CS-134 ,	NO,	6.531E+00,		6 191E+00.	-0.248		
C,CS-136 ,	NO,	-1.534E+00,	3.0425700,	2.788E+00	0.046		
C,CS-137 ,	NO,	1.282E-U1,	1.0010+00	$2.700\pm00,7$ $2.844\pm00$	0.535		
C,CE-139 ,	NO,	1.521E+00,	1.713E+00,	2.0440+00,,	0 441		
C,BA-140 ,	NO,	1.028E+01,	1.399E+01,	2.3340+01,	0 175		
C,LA-140 ,	NO,	1.333E+00,	4.543E+00,	7.023E+00,,	0.179		
C,CE-141 ,	NO,	3.647E-01,	4.483E+00,	0.200E+00,	-0.557		
C,CE-144 ,	NO,	-1.146E+01,	1.489E+01,	2.060E+01,	-0.944		
C,EU-152 ,	NO,	-7.511E+00,	6.008E+00,	7.959E+00,,	, -0.944		
C,EU-154 ,	NO,	-7.098E-01,	3.3288+00,	5.5U0E+UU,	, -0.127 1 1 Q Q		
C,TH-232 ,	NO,	1.158E+01,	5.620E+00,	9.738E+00,	, 1.109		
C,U-235 ,	NO,	1.990E+01,	1.446E+01,		, 0.950 A 1AE		
C,U-238 ,	NO,	2.895E+01,	1.663E+02,	2./5/E+U2,	, 0.105		
C,AM-241 ,	NO,	-1.756E+01,	2.511E+01,	3.466E+UL,	, -0.507		

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# Sec. Review: Analyst: LIMS: 🧹

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 13:48:50.80 TBE04 P-40312B HpGe ******** Aquisition Date/Time: 4-JUN-2006 09:31:20.10 LIMS No., Customer Name, Client ID: WG L28784-5 EX BRAID

Sample ID	:	04L28784-5		Smple Date:	17-MAY-2006 13:30:00.
Sample Type	:	WG		Geometry :	043L082004
Quantity	:	2.86860E+00 L		BKGFILE :	04BG060305MT
Start Channel	:	90 Energy Tol :	1.00000	Real Time :	0 04:17:22.30
End Channel	:	4090 Pk Srch Sens:	5.00000	Live time :	0 04:17:19.63
MDA Constant	:	0.00 Library Used:	LIBD		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.12*	167	488	1.86	132.69	6.56E-01	1.08E-02	26.6	1.27E+00
2	1	140.21*	78	393	1.84	280.86	2.04E+00	5.07E-03	48.6	1.81E+00
3	1	198.48*	83	383	1.31	397.37	1.86E+00	5.40E-03	48.1	2.21E+00
4	1	238.76*	28	223	1.14	477.94	1.68E+00	1.81E-031	01.6	1.01E+00
5	1	295.31*	5	198	0.87	591.02	1.45E+00	3.51E-044	87.3	7.40E-01
6	1	352.05*	64	177	1.30	704.47	1.28E+00	4.14E-03	47.7	7.05E-01
7	1	583.22*	41	67	1.67	1166.68	8.77E-01	2.69E-03	47.2	1.42E+00
8	1	596.15	61	107	1.66	1192.53	8.63E-01	3.98E-03	35.0	8.69E-01
9	1	609.18*	58	94	1.38	1218.58	8.49E-01	3.78E-03	41.2	1.92E+00
10	1	1120.01*	28	44	1.71	2239.79	5.27E-01	1.81E-03	54.1	3.65E-01
11	1	1380.28	33	38	0.98	2760.03	4.48E-01	2.15E-03	47.6	7.41E+00
12	1	1460.92*	47	6	3.82	2921.21	4.30E-01	3.02E-03	31.3	1.91E+00
13	1	1764.50*	32	9	2.68	3527.92	3.77E-01	2.07E-03	35.7	7.73E-01

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

	- 1				Uncorrecte	ed Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
K-40	1460.81	47	10.67*	4.295E-01	6.201E+01	L 6.201E+01	62.69
TH-228	238.63	28	44.60*	1.679E+00	2.274E+00	) 2.315E+00	203.26
	240.98		3.95	1.669E+00	I	Line Not Found	

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Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 09:31:20 Sample ID : 04L28784-5 13 Total number of lines in spectrum Number of unidentified lines 10 Number of lines tentatively identified by NID 3 23.08% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma NuclideHlifeDecaypCi/LpCi/L2-Sigma Error%Error FlagsK-401.28E+09Y1.006.201E+016.201E+013.887E+0162.69TH-2281.91Y1.022.274E+002.315E+004.705E+00203.26 _____ _____ Total Activity : 6.428E+01 6.432E+01 Grand Total Activity : 6.428E+01 6.432E+01 "M" = Manually accepted "A" = Nuclide specific abn. limit Flags: "K" = Keyline not found "E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 09:31:20 Sample ID : 04L28784-5 Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags Area It Energy 128 10 1.08E-02 53.2 6.56E-01 1.86 488 132.69 167 66.12 1 277 9 5.07E-03 97.1 2.04E+00 280.86 78 393 1.84 140.21 1 1.86E+00 391 11 5.40E-03 96.1 397.37 1.31 383 83 198.48 1 8 3.51E-04 **** 1.45E+00 588 591.02 0.87 198 5 1 295.31 1.28E+00 704.47 699 11 4.14E-03 95.4 1.30 177 1 352.05 64 8.77E-01 1166.68 1162 11 2.69E-03 94.5 Т 1.67 41 67 1 583.22 1192.53 1186 11 3.98E-03 70.0 8.63E-01 1.66 61 107 596.15 1 1218.58 1213 11 3.78E-03 82.5 8.49E-01 1.38 58 94 609.18 1 2239.79 2236 10 1.81E-03 **** 5.27E-01 44 1.71 28 1 1120.01 2760.03 2752 19 2.15E-03 95.2 4.48E-01 0.98 38 1 1380.28 33 3.77E-01 3527.92 3519 18 2.07E-03 71.5 9 2.68 1764.50 32 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 13 Total number of lines in spectrum Number of unidentified lines 10 Number of lines tentatively identified by NID 3 23.08% Nuclide Type : natural Wtd Mean Wtd Mean Decay Corr 2-Sigma Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Nuclide Hlife 62.69 6.201E+01 3.887E+01 6.201E+01 1.00 K-40 1.28E+09Y 4.705E+00 203.26 2.274E+00 2.315E+00 1.91Y 1.02 TH-228 _____ 6.428E+01 6.432E+01 Total Activity : 6.432E+01 Grand Total Activity : 6.428E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA MDA error Activity Act error (pCi/L)Nuclide (pCi/L) 1.209 0.000E+00 5.129E+01 3.887E+01 6.201E+01 K-40 0.284 8.137E+00 0.000E+00 4.705E+00 2.315E+00 TH-228 ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error Activity K.L. Act error MDA

Nuclide	(pCi/L) ]	[ded	(pCi/L)		
BE-7	-1.487E+01	2.910E+01	4.688E+01	0.000E+00	-0.317
NA-24	2.061E+02	7.705E+02	Half-Life	too short	0 001
CR-51	-4.697E+01	3.660E+01	5.720E+01	0.000E+00	-0.821
MN-54	5.402E-01	2.958E+00	4.884E+00	0.000E+00	0.111
CO-57	1.633E+00	2.648E+00	4.506E+00	0.000E+00	0.362
CO-58	-1.233E+00	3.419E+00	5.459E+00	0.000E+00	-0.226
FE-59	1.218E+00	6.978E+00	1.157E+01	0.000E+00	0.105
CO-60	-1.579E+00	3.161E+00	5.210E+00	0.000E+00	-0.303
ZN-65	1.655E+01	8.379E+00	1.370E+01	0.000E+00	1.208
SE-75	-3.589E+00	3.947E+00	6.358E+00	0.000E+00	-0.564
SR-85	2.125E+01	4.053E+00	7.884E+00	0.000E+00	2.696
Y-88	3.170E-02	3.660E+00	5.990E+00	0.000E+00	0.005
NB-94	-8.942E-01	2.915E+00	4.737E+00	0.000E+00	-0.189
NB-95	1.504E+00	3.480E+00	5.861E+00	0.000E+00	0.257
ZR-95	-2.416E+00	6.124E+00	9.820E+00	0.000E+00	-0.246
MO-99	-1.318E+03	1.980E+03	3.127E+03	0.000E+00	-0.422
RU-103	1.846E+00	3.785E+00	6.390E+00	0.000E+00	0.289
RU-106	-7.731E+00	2.859E+01	4.568E+01	0.000E+00	-0.169
AG-110m	-1.872E-01	2.895E+00	4.788E+00	0.000E+00	-0.039
SN-113	1.761E+00	4.113E+00	6.813E+00	0.000E+00	0.258
SB-124	4.822E-01	7.718E+00	5.645E+00	0.000E+00	0.085
SB-125	3.514E+00	8.398E+00	1.423E+01	0.000E+00	0.247
TE-129M	-1.346E+01	4.491E+01	7.336E+01	0.000E+00	-0.184
I-131	6.111E+00	1.374E+01	2.285E+01	0.000E+00	0.267
BA-133	8.578E+00	4.925E+00	7.496E+00	0.000E+00	1.144
CS-134	7.881E+00	4.989E+00	5.839E+00	0.000E+00	1.350
CS-136	3.599E+00	7.330E+00	1.235E+01	0.000E+00	0.291
CS-137	3.217E+00	3.033E+00	5.329E+00	0.000E+00	0.604
CE-139	4.145E-01	2.825E+00	4.683E+00	0.000E+00	0.089
BA-140	5.834E-01	2.554E+01	4.195E+01	0.000E+00	0.014
LA-140	-5.752E+00	9.573E+00	1.501E+01	0.000E+00	-0.383
CE-141	3.477E+00	7.141E+00	1.035E+01	0.000E+00	0.336
CE-144	2.007E+00	2.316E+01	3.438E+01	0.000E+00	0.058
EU-152	-3.722E+00	1.074E+01	1.461E+01	0.000E+00	-0.255
EU-154	4.279E+00	5.391E+00	9.209E+00	0.000E+00	0.465
RA-226	1.236E+01	6.777E+01	1.120E+02	0.000E+00	0.110
AC-228	-1.058E+00	1.167E+01	1.972E+01	0.000E+00	-0.054
TH-232	-1.051E+00	1.160E+01	1.961E+01	0.000E+00	-0.054
U-235	1.360E+00	2.322E+01	3.303E+01	0.000E+00	0.041
U-238	-1.885E+02	3.076E+02	4.834E+02	0.000E+00	-0.390
AM-241	-1.562E+01	3.029E+01	4.412E+01	0.000E+00	-0.354

A.04128784	-5		,06/04/2006	13:48,05/17/2	2006 13:30,	2.869E+00,WG	L28784-5	ΕX
B.04L28784	-5		,LIBD	,06/	/02/2006 09:04	4,043L082004		
C K - 40	YES.		, 6.201E+01,	3.887E+01,	5.129E+01,,	1.209		
C TH-228	YES.		2.315E+00,	4.705E+00,	8.137E+00,,	0.284		
C BE - 7	NO .	, 	-1.487E+01.	2.910E+01,	4.688E+01,,	-0.317		
C CR = 51	NO .		-4.697E+01.	3.660E+01,	5.720E+01,,	-0.821		
C MN = 54	NO,	,	5.402E-01.	2.958E+00,	4.884E+00,,	0.111		
$C_{1}C_{1}C_{1}C_{2}C_{2}C_{2}C_{2}C_{2}C_{2}C_{2}C_{2$	, NO ,	,	1 633E+00.	2.648E+00,	4.506E+00,,	0.362		
$C_{1}CO_{-58}$	, NO ,	,	-1 233E+00.	3.419E+00,	5.459E+00,,	-0.226		
$C_{\rm FF} = 59$	, NO	,	1.218E+00	6.978E+00,	1.157E+01,,	0.105		
C, CO=60	NO	'	-1.579E+00.	3.161E+00.	5.210E+00,,	-0.303		
C, CO = 00	, NO	,	1.655E+01	8.379E+00.	1.370E+01,,	1.208		
$C, \Delta N = 05$	, NO	,	-3.589E+00.	3.947E+00,	6.358E+00,,	-0.564		
C, SE = 75		1	2.125E+01	4.053E+00.	7.884E+00,,	2.696		
C, SR=05	, NO	'	3 170E - 02	3.660E+00.	5.990E+00,,	0.005		
C, I = 00	, NO	,	-8 9/2F - 01	2.915E+00	4.737E+00,,	-0.189		
C, NB - 94	, NO	'	-0.942001	3.480E+00	5.861E+00,	0.257		
C, NB - 95	, NO	'	1.0040+00	6.124E+00	9.820E+00.	-0.246		
C, ZR-95	, NO	'	-2.4100+00,	1.980E+03	3.127E+03.	-0.422		
C,MO-99	, NO	1	-1.310E+0.00	1.0001100	6 390E+00.	0.289		
C, RU-103	, NO	1	1.040E+00,	$3.705 \pm 00,$ $2.859 \pm 01$	4.568E+01	-0.169		
C, RU-106	, NO	'	-7.7310+00,	2.859E+01, 2.895E+00	4 788E+00	-0.039		
C, AG-110m	, NO	'	-1.872E-01,	$2.095 \pm 00$	4.7000100,	0.258		
C, SN-113	, NO	'	1.761E+00,	4.1130+00, 7 719E,00	5 645E+00	0.085		
C, SB-124	, NO	1	4.822E-01,	7.710E+00	1 /23E+00,	0.247		
C,SB-125	, NO	1	3.514E+00, 1.24CE+01	0.390E+00,	7 336F±01	-0 184		
C,TE-129M	, NO	'	-1.346E+01,	4.491E+01, 1.274E+01	7.3300+01,	0.267		
C,1-131	, NO	'	6.111E+00,	1.3746+01,	2.2050+01,	1 144		
C,BA-133	, NO	1	8.578E+00,	4.925E+00,	7.490E+00,,	1 350		
C,CS-134	, NO	1	7.881E+00,	4.989E+00,	1 0059E+00,,	0 291		
C,CS-136	, NO	'	3.599E+00,	7.330E+00,	1.235E+UL,,	0.201		
C,CS-137	, NO	1	3.217E+00,	3.033E+00,	5.329E+00,,	0.004		
C,CE-139	, NO	'	4.145E-01,	2.825E+00,	4.6836+00,,	0.009		
C,BA-140	, NO	1	5.834E-01,	2.5548+01,	4.195E+U1,,	0.014		
C,LA-140	, NO	1	-5.752E+00,	9.573E+00,	1.501E+01,,	-0.303		
C,CE-141	, NO	,	3.477E+00,	7.141E+00,	1.035E+01,	0.330		
C,CE-144	, NO	,	2.007E+00,	2.316E+01,	3.438E+UI,,	0.050		
C,EU-152	, NO	,	-3.722E+00,	1.074E+01,	1.461E+01,,	-0.255		
C,EU-154	, NO	,	4.279E+00,	5.391E+00,	9.209E+00,,	0.465		
C,RA-226	, NO	,	1.236E+01,	6.777E+01,	1.120E+02,,	0.110		
C,AC-228	, NO	,	-1.058E+00,	1.167E+01,	1.972E+01,,	-0.054		
C,TH-232	, NO	,	-1.051E+00,	1.160E+01,	1.961E+01,,	, -0.054		
C,U-235	, NO	,	1.360E+00,	2.322E+01,	3.303E+01,,	, 0.041		
C,U-238	, NO	,	-1.885E+02,	3.076E+02,	4.834E+02,,	, -0.390		
C,AM-241	, NO	,	-1.562E+01,	3.029E+01,	4.412E+01,,	, -0.354		

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Sec. Review: Analyst: LIMS:

					= = = = = =			========	====	========	
VAX/ TBEC	VMS 7 P-	Teledyne B 10768B HpG	rown Eng. e ******	Labora	atory lisiti	Gamma Re on Date/	port: 4-J Time: 4-JU	UN-2006 1 N-2006 09	2:47: :31:3	41.07 1.52 	
LIMS	IMS No., Customer Name, Client ID: WG L28784-6 EX BRAID										
Samp Samp Quar Star End MDA	ole J ntity ct Ch Char Cons	D : 07 Type : WG ( : 3. nannel : 40 nnel : 40 stant : 0.	7L28784-6 3 82170E+00 ) Ene 90 Pk .00 Lil	) L ergy To Srch Se orary Us	l : 1 ens: 5 sed: L	.00000 .00000 IBD	Smple Date Geometry BKGFILE Real Time Live time	: 17-MAY- : 074L092 : 07BG060 : 0 03:16 : 0 03:16	2006 204 306MT :05.1 :02.7	14:15:00. 2 3	
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit	
1 2 3	1 1 1	33.66 66.14* 198.53* 295.03*	58 76 74 70	221 353 242 226	0.92 1.76 0.97 1.30	68.04 133.05 398.04 591.17	4.71E-03 6.42E-01 1.66E+00 1.37E+00	4.93E-03 6.44E-03 6.29E-03 5.91E-03	43.6 46.6 43.5 44.3	2.58E+00 1.06E+00 1.91E+00 8.64E-01	
4 5 6 7 8	1 1 1 1	351.91* 595.73 609.18* 1120.05*	100 46 185 36	154 98 121 42	1.32 2.17 1.60 1.99	705.00 1192.88 1219.80 2241.76	1.24E+00 9.03E-01 8.90E-01 5.73E-01	8.48E-03 3.95E-03 1.57E-02 3.08E-03	29.3 44.4 15.7 40.6	1.97E+00 1.00E+00 1.07E+00 2.31E-01	
9	1	1764.82*	44	13	3.42	3531.02	#.T40-01	5.718-05	20.7	0.001 01	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

#### L28784 67 of 141

Summary of Nuclide Activity Sample ID : 07L28784-6 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

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Paqe : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 09:31:31 Sample ID : 07L28784-6 Channel Left Pw Cts/Sec %Err %Eff Flaqs Bkgnd FWHM Ιt Energy Area 4.71E-03 7 4.93E-03 87.3 66 221 0.92 68.04 58 33.66 1 6.42E-01 8 6.44E-03 93.2 133.05 130 1.76 353 76 66.14 1 9 6.29E-03 87.0 1.66E+00 394 0.97 398.04 242 74 198.53 1 587 10 5.91E-03 88.5 1.37E+00 591.17 1.30 226 70 1 295.03 1.24E+00 700 11 8.48E-03 58.6 705.00 1.32 154 1 351.91 100 1192.88 1189 12 3.95E-03 88.8 9.03E-01 2.17 46 98 1 595.73 1219.80 1213 14 1.57E-02 31.4 8.90E-01 1.60 121 185 609.18 1 2241.76 2237 10 3.08E-03 81.1 5.73E-01 1.99 42 36 1 1120.05 3531.02 3525 15 3.71E-03 53.3 4.14E-01 3.42 13 1 1764.82 44 Flags: "T" = Tentatively associated Summary of Nuclide Activity 9 Total number of lines in spectrum 9 Number of unidentified lines Number of lines tentatively identified by NID 0.00% 0 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA K.L. Act error Activity (pCi/L)(pCi/L)Ided Nuclide 0.000E+00 0.142 4.671E+01 6.656E+00 2.799E+01 BE-7 Half-Life too short 6.349E+02 -4.559E+02 NA-24 -0.334 0.000E+00 6.410E+01 3.712E+01 -2.144E+01 K-40 -0.284 0.000E+00 6.375E+01 3.961E+01 -1.813E+01 CR-51 0.177 0.000E+00 4.582E+00 8.104E-01 2.746E+00 MN-54 0.000E+00 -0.1504.893E+00 2.984E+00 -7.361E-01 CO-57 -0.273 0.000E+00 5.219E+00 3.270E+00 -1.424E+00 CO-58 -0.306 0.000E+00 1.051E+016.625E+00 -3.211E+00 FE-59 0.512 0.000E+00 4.929E+00 2.769E+00 2.524E+00 CO-60 0.769 0.000E+00 1.204E+01 7.844E+00 9.260E+00 ZN-65 0.218 0.000E+00 7.054E+00 4.216E+00 1.539E+00 SE-75 3.020 0.000E+00 7.850E+00 3.974E+00 2.371E+01 SR-85 -0.577 0.000E+00 4.830E+00 3.224E+00 Y-88 -2.785E+00 -0.797 4.034E+00 0.000E+00 2.623E+00 -3.215E+00 NB-94 0.042 0.000E+00 5.366E+00 3.247E+00 2.243E-01 NB-95 0.000E+00 -0.027 5.427E+00 8.914E+00 -2.440E-01 ZR-95 0.525 0.000E+00 3.086E+03 1.776E+03 1.619E+03MO-99 0.739 0.000E+00 6.655E+00 3.815E+00 4.919E+00 RU-103 0.032

2.595E+01

1.305E+00

RU-106

4.119E+01

0.000E+00

## L28784 69 of 141

AG-110m	6.417E-01	2.753E+00	4.629E+00	0.000E+00	0.139
SN-113	-1.310E+00	4.077E+00	6.516E+00	0.0008+00	-0.201
SB-124	-2.739E+00	8.716E+00	5.619E+00	0.000E+00	-0.407
SB-125	8.166E+00	8.244E+00	1.425E+01	0.000E+00	0.575
TE-129M	-2.472E-01	4.664E+01	7.706E+01	0.000E+00	-0.003
I-131	6.800E+00	1.294E+01	2.157E+01	0.000E+00	1 620
BA-133	1.249E+01	4.852E+00	7.667E+00	0.000E+00	1.029
CS-134	1.143E+01	7.513E+00	6.527E+00	0.000E+00	1.751
CS-136	1.397E+00	6.516E+00	1.083E+01	0.000E+00	0.129
CS-137	-9.516E-01	2.834E+00	4.612E+00	0.000E+00	-0.206
CE-139	2.352E+00	3.238E+00	5.402E+00	0.000E+00	0.435
BA-140	-4.761E+00	2.411E+01	3.909E+01	0.000E+00	-0.122
LA = 140	3.578E+00	7.975E+00	1.360E+01	0.000E+00	0.263
CE - 141	-7.567E+00	7.370E+00	1.175E+01	0.000E+00	-0.644
CE - 144	-2.312E+01	2.369E+01	3.793E+01	0.000E+00	-0.610
EII-152	-5.786E+00	1.098E+01	1.462E+01	0.000E+00	-0.396
EU-154	-5.883E-01	6.052E+00	9.963E+00	0.000E+00	-0.059
BD 101 BD-226	-6.146E+00	7.963E+01	1.298E+02	0.000E+00	-0.047
AC-228	-8.218E+00	1.128E+01	1.744E+01	0.000E+00	-0.471
TU-220	9.386E+00	6.132E+00	1.064E+01	0.000E+00	0.882
TH 220	-8.170E+00	1.122E+01	1.733E+01	0.000E+00	-0.471
TT_225	2.254E+01	2.280E+01	3.846E+01	0.000E+00	0.586
U-235	2.199E+02	3.013E+02	5.227E+02	0.000E+00	0.421
AM-241	-3.121E+01	3.071E+01	4.230E+01	0.000E+00	-0.738

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						· r	
A 071,28784	-6	.06/04/2006	12:47,05/17/2	006 14:15,	3.822E+00,WG	L28784-6	ΕX
B 071.28784	-6	. LIBD	,06/	02/2006 08:24	1,074L092204		
C BE = 7	NO .	6.656E+00,	2.799E+01,	4.671E+01,,	0.142		
C K = 40	NO .	-2.144E+01,	3.712E+01,	6.410E+01,,	-0.334		
C $CR = 51$	NO .	-1.813E+01,	3.961E+01,	6.375E+01,,	-0.284		
$C MN_{-54}$	NO ,	8.104E-01,	2.746E+00,	4.582E+00,,	0.177		
C, CO = 57	NO .	-7.361E-01,	2.984E+00,	4.893E+00,,	-0.150		
$C_{1}CO_{-58}$	NO ,	-1.424E+00,	3.270E+00,	5.219E+00,,	-0.273		
C, CO-50	, NO ,	-3.211E+00,	6.625E+00,	1.051E+01,,	-0.306		
C, E = 55	, NO , NO	2.524E+00.	2.769E+00,	4.929E+00,,	0.512		
$C_{7}C_{-65}$	, NO ,	9 260E+00.	7.844E+00,	1.204E+01,,	0.769		
$C, \Delta N = 05$	NO	1 539E+00	4.216E+00,	7.054E+00,,	0.218		
C, SE = 75	NO	2.371E+01.	3.974E+00,	7.850E+00,,	3.020		
$C, SK^{-0S}$	, NO ,	-2.785E+00.	3.224E+00,	4.830E+00,,	-0.577		
C, I = 00	, NO	-3.215E+00.	2.623E+00,	4.034E+00,,	-0.797		
C, ND - 94	, NO , NO	2.243E-01	3.247E+00,	5.366E+00,,	0.042		
C, ND = 95	, NO , NO	-2.440E-01	5.427E+00,	8.914E+00,,	-0.027		
$C, \Delta R = 95$	, INO ,	1.619E+03	1.776E+03,	3.086E+03,,	0.525		
C, MO = 99	, INO ,	4.919E+00	3.815E+00,	6.655E+00,,	0.739		
C, RU=103		, 4.9190, 1 305R+00	2.595E+01.	4.119E+01,,	0.032		
C, RU = 106	, NO	5.417E-01	2.753E+00,	4.629E+00,,	0.139		
C, AG-IIU		-1 310E+00	4.077E+00,	6.516E+00,,	-0.201		
C, SN-113	, INO	-2.739 F + 00	8716E+00.	5.619E+00,,	-0.487		
C, SB - 124	, NO	, - <u>2.7550100</u> , 8 166F±00	8 244E+00,	1.425E+01,,	0.573		
C,SB-125	, NO	-2.472 F = 01	4 664E+01,	7.706E+01,,	-0.003		
C, TE-129M	, NO	, - <u>2.4</u> 720 01, 6 800F+00	1.294E+01.	2.157E+01,,	0.315		
C, I - I 3 I	, NO	$1 2/9E \pm 01$	4 852E+00.	7.667E+00,,	1.629		
C, BA - 133	, NO	, 1.2490+01, 1.143E+01	7513E+00.	6.527E+00,,	1.751		
C, CS = 134	, NO	, 1.397F±00	6.516E+00.	1.083E+01,,	0.129		
C, CS - 136	, NO	1.397E+00,	2.834E+00	4.612E+00,,	-0.206		
C, CS-137	, NO	, -9.510E-01,	3.238E+00.	5.402E+00,,	0.435		
C, CE = 139	, NO	$, 2.352 \pm 00, $	2.411E+01	3.909E+01,,	-0.122		
C, BA - 140	, NO	, -4.7010+00,	7.975E+00.	1.360E+01,,	0.263		
C, LA - 140	, NO	, 5.5700+00, 7.567E+00	7.370E+00	1.175E+01,,	-0.644		
C, CE-141	, NO	, -7.507E+00,	2.369E+01	3.793E+01.	-0.610		
C, CE-144	, NO	-2.5120+01,	1.098E+01	1.462E+01,	-0.396		
C,EU-152	, NO	$-5.700\pm00,$	$f_{052E+00}$	9.963E+00.	-0.059		
C,EU-154	, NO	, -5.005E-01,	7.963E+01	1.298E+02.	-0.047		
C,RA-226	, NO	, -6.146E+00, 0.010E+00	1 128F±01	1.744E+01.	-0.471		
C,AC-228	, NO	, -0.210E+00,	5 130E+01,	1.064E+01	0.882		
C, TH-228	, NO	, 9.300E+UU,	1 100EL01	1.733E+01	-0.471		
C,TH-232	, NO	, -0.1/UE+UU,	エ・エムムロエマエ <i>ィ</i> つ つ80〒エ01	3.846E+01	0.586		
C,U-235	, NO	, ∠.∠54±+U⊥,	2.2005+01, 3.013F±02	5.227E+02	0.421		
C,U-238	, NO	$, \qquad \angle \cdot \bot \forall \forall \exists \pm \forall \angle , \\ 2 1 2 1 \exists \pm 0 1 \end{bmatrix}$	3.0130702	4 230E+01	-0.738		
C,AM-241	, NO	, -3.121E+UI,	$\mathbf{J} \cdot \mathbf{U} \mathbf{T} \mathbf{U} \mathbf{T} \mathbf{U} \mathbf{T} \mathbf{U} \mathbf{T} \mathbf{I}$	1.20021011	,		

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LIMS: Analyst: Sec. Review:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 16:21:26.26 TBE10 12892256 HpGe ******** Aquisition Date/Time: 4-JUN-2006 09:31:46.37 ______ _____

LIMS No., Customer Name, Client ID: WG L28784-7 EX BRAID

Sample ID : 10L28784-7 Sample Type : WG Quantity : 3.06880E+00 L Start Channel : 80 Energy Tol : 1.00000 End Channel : 4090 Pk Srch Sens: 5.00000 MDA Constant : 0.00 Library Used: LIBD	<pre>Smple Date: 15-MAY-2006 10:00:00. Geometry : 103L083004 BKGFILE : 10BG060306MT Real Time : 0 06:49:33.96 Live time : 0 06:49:29.92</pre>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec %Err	Fit
1	1	66.46*	167	863	1.23	132.22	7.32E-01	6.78E-03 34.3	8.76E-01
2	1	139.80	220	776	1.71	279.03	1.91E+00	8.94E-03 24.6	4.30E-01
3	1	186.54*	18	653	2.24	372.59	1.77E+00	7.20E-04304.6	2.32E+00
4	1	198.21*	148	709	1.61	395.96	1.72E+00	6.01E-03 40.1	1.25E+00
5	1	238.58*	60	399	1.46	476.78	1.54E+00	2.45E-03 70.1	2.47E+00
5	1	294 95	52	349	1.27	589.62	1.33E+00	2.13E-03 62.6	9.81E-01
7	1	352 02*	124	301	2.05	703.87	1.17E+00	5.06E-03 34.1	2.64E+00
, Q	1	595 57	86	174	1.43	1191.48	7.86E-01	3.51E-03 32.1	2.68E+00
0 0	1	609 15*	126	175	1.29	1218.67	7.73E-01	5.11E-03 26.0	2.15E+00
10		1120 01*	17	73	1.74	2241.56	4.79E-01	6.88E-04118.8	1.21E+00
11	⊥ 1	$1460.01^{*}$	10	42	2.36	2922.52	3.89E-01	4.11E-04226.9	2.16E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural Uncorrected Decay Corr 2-Sigma %Error pCi/L %Abn %Eff pCi/L Area Nuclide Energy 453.87 8.724E+00 8.724E+00 10.67* 3.888E-01 10 K-40 1460.81 609.15 1.093E+01 1.093E+01 1.768E+00 3.28* 18 186.21 RA-226 3.145E+00 3.208E+00 140.15 44.60* 1.538E+00 60 238.63 TH-228 Line Not Found _ _ _ _ _ _ _ _ _ _ _ _ _ _ 3.95 1.529E+00 240.98 _____ _ _ _ _ _ _ _ Line Not Found _____ 1.905E+00 _____ 10.50* 143.76 U-235 _____ ----- Line Not Found 1.860E+00 4.70 163.35 _____ 609.15 6.640E-01 6.640E-01 1.768E+00 54.00 18 185.71 ----- Line Not Found 4.70 1.684E+00 205.31 _____

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Page: 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 09:31:46 Sample ID : 10L28784-7 11 Total number of lines in spectrum 8 Number of unidentified lines Number of lines tentatively identified by NID 27.27% 3 Nuclide Type : natural 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Nuclide Hlife 453.87 39.59E+00 8.724E+00 1.00 8.724E+00 K-40 1.28E+09Y 6.659E+01 609.15 1.093E+01 1.00 1.093E+01 RA-226 1600.00Y 140.15 4.496E+00 3.208E+00 1.02 3.145E+00 1.91Y TH-228 40.45E-01 609.15 K 6.640E-01 1.00 6.640E-01 7.04E+08Y U-235 _____ ______ 2.353E+01 2.346E+01 Total Activity : 2.353E+01 Grand Total Activity : 2.346E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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3 Page : Unidentified Energy Lines Acquisition date :  $4 - JUN - 2006 \quad 09:31:46$ Sample ID : 10L28784-7 %Eff Flags Cts/Sec %Err Channel Left Pw Bkgnd FWHM Energy Area It 7.32E-01 127 9 6.78E-03 68.7 132.22 1.23 167 863 66.46 1 274 10 8.94E-03 49.2 1.91E+00279.03 1.71776 139.80 220 1 391 12 6.01E-03 80.2 1.72E+00 395.96 709 1.61 148 198.21 1 1.33E+00 8 2.13E-03 **** 587 589.62 1.27 349 52 294.95 1 1.17E+00 697 13 5.06E-03 68.3 703.87 2.05 301 124352.02 1191.48 1185 12 3.51E-03 64.2 1 7.86E-01 1.43 17486 595.57 1 1218.67 1213 12 5.11E-03 52.1 7.73E-01 1.29 126 175 609.15 1 2241.56 2236 12 6.88E-04 **** 4.79E-01 73 1.7417 1120.01 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 11 Total number of lines in spectrum 8 Number of unidentified lines 27.27% Number of lines tentatively identified by NID 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr %Error Flags 2-Sigma Error pCi/L pCi/L Hlife Decay Nuclide 453.87 39.59E+00 8.724E+00 8.724E+00 1.28E+09Y 1.00 K-40 609.15 6.659E+01 1.093E+01 1.093E+01 1.00 1600.00Y RA-226 140.15 3.208E+00 4.496E+00 3.145E+00 1.02 1.91Y TH-228 -----______ 2.280E+01 2.286E+01 Total Activity : Grand Total Activity : 2.280E+01 2.286E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)(pCi/L)Nuclide 0.264 0.000E+00 3.301E+01 8.724E+00 3.959E+01 K-40 0.114 0.000E+00 9.573E+01 6.659E+01 1.093E+01 RA-226 0.437 0.000E+00 7.335E+00 4.496E+00 3.208E+00 TH-228 ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA Act error K.L. Activity (pCi/L) Ided

(pCi/L)

Nuclide

<b>DE 7</b>	1 546E+01	2.585E+01	4.392E+01	0.000E+00	0.352
BE-/	-1 022E+04	6.469E+03	Half-Life too	o short	0.005
NA-24 CD E1	-1 461E+01	3.383E+01	5.509E+01	0.000E+00	-0.265
CR-SL	9 132E - 01	2.425E+00	4.095E+00	0.000E+00	0.223
MIN-54	A = 568E - 01	2.421E+00	4.015E+00	0.000E+00	0.114
CO-57	4.000001	2.835E+00	4.607E+00	0.000E+00	-0.275
CO-58	$=1.200 \pm 00$	5.968E+00	9.698E+00	0.000E+00	-0.052
FE-59	-3.015E-01	2.499E+00	4.234E+00	0.000E+00	0.232
CO-60	9.010E-U1	6.348E+00	9.343E+00	0.000E+00	0.576
ZN-65	$5.302\pm00$	3599E+00	5.951E+00	0.000E+00	-0.096
SE-75	-5.735E-01	3 370E+00	6.555E+00	0.000E+00	3.306
SR-85	2.1676+01	2 884E+00	4.609E+00	0.000E+00	-0.230
Y-88	-1.059E+00	2.388E+00	3.816E+00	0.000E+00	-0.305
NB-94	-1.1628+00	$2.300\pm00$	5.065E+00	0.000E+00	0.328
NB-95	1.662E+00	5.0500+00	8.699E+00	0.000E+00	0.223
ZR-95	1.938E+00	2.2312+00	4 480E+03	0.000E+00	0.055
MO-99	2.463E+U2	2.737E+00	5 669E+00	0.000E+00	0.154
RU-103	8.729E-01	3.301E+00	3,906E+01	0.000E+00	-0.115
RU-106	-4.505E+00	2.4268+01	$3.900 \pm 101$	0.000E+00	-0.447
AG-110m	-1.774E+00	2.5028+00	$5.970 \pm 00$	0.000E+00	-0.033
SN-113	-1.924E-01	3.57/E+00	J.037E+00	0.000E+00	-0.287
SB-124	-1.313E+00	6.752E+00	4.5010+00	0.000E+00	0.035
SB-125	4.153E-01	7.311E+00	1.193E+01	0.000E+00	-0.501
TE-129M	-3.257E+01	4.125E+01	6.496E+01	0.000E+00	0.151
I-131	3.457E+00	1.384E+01	Z.288E+UI	0.000E+00	1.125
BA-133	6.625E+00	3.943E+00	5.8888400	0.000E+00	1.620
CS-134	7.676E+00	4.180E+00	4.739E+00	$0.000 \pm 00$	-0.124
CS-136	-1.284E+00	6.290E+00	1.033E+01	$0.000 \pm 00$	0 161
CS-137	6.990E-01	2.619E+00	4.344E+00	0.000E+00	0.101
CE-139	2.938E+00	2.655E+00	4.4458+00	0.000E+00	-0.034
BA-140	-1.406E+00	2.475E+01	4.087E+01	0.000E+00	0.031
LA - 140	7.589E+00	7.202E+00	1.280E+01	0.000E+00	0.295
CE - 141	2.929E+00	7.225E+00	1.020E+01	0.000E+00	-0.283
CE = 144	-8.541E+00	2.180E+01	3.016E+01	0.000E+00	-0.285
EII-152	-6.851E+00	9.377E+00	1.260E+01	0.000E+00	-0.544
FU-154	1.697E+00	4.890E+00	8.132E+00	0.000E+00	0.209
DC-228	8.716E+00	9.498E+00	1.526E+01	0.000E+00	0.571
TU_220	8.659E+00	9.435E+00	1.516E+01	0.000E+00	0.5/1
10-202 11 005	1 775E+01	2.193E+01	3.132E+01	0.000E+00	0.567
U-200	8 088E+01	2.410E+02	4.039E+02	0.000E+00	0.200
U-230	-9.105E+00	2.486E+01	3.399E+01	0.000E+00	-0.268
AM-241	-2.IO2E+00	2.2002.02			

				000 10.00	3 069E+00.WG	L28784-7	ΕX
A.10L28784-	-7	,06/04/2006	16:21,05/15/20	$006 \pm 0.00$	1031.083004		
B.10L28784	-7	,LIBD	,06/	02/2006 $00:22$	,1001000001		
C.K-40	,YES,	8.724E+00,	3.959E+01,	3.3018+01,,	0.204		
C.RA-226	,YES,	1.093E+01,	6.659E+01,	9.573E+01,,	0.117		
C TH-228	YES.	3.208E+00,	4.496E+00,	7.335E+00,,	0.437		
$C PF_7$	NO .	1.546E+01,	2.585E+01,	4.392E+01,,	0.352		
C, DE, C	NO	-1.461E+01,	3.383E+01,	5.509E+01,,	-0.265		
C, CR = 51	NO	9.132E-01,	2.425E+00,	4.095E+00,,	0.223		
C, MN = 54	NO	4 568E-01,	2.421E+00,	4.015E+00,,	0.114		
C, CO = 57	, NO ,	-1.268E+00	2.835E+00,	4.607E+00,,	-0.275		
C, CO-58	, INO ,	-1.2000+00,	5,968E+00,	9.698E+00,,	-0.052		
C, FE-59	, NO ,	-5.015001,	2499E+00	4.234E+00,,	0.232		
C, CO-60	,NO ,	9.010E-01	6.348E+00	9.343E+00,,	0.576		
C,ZN-65	,NO ,	5.302E+00	3.599E+00	5.951E+00,,	-0.096		
C,SE-75	,NO ,	-5.733E-01	3.370E+00	6.555E+00,,	3.306		
C,SR-85	,NO,	2.16/E+01,	$3.370 \pm 00,$	4 609E+00,	-0.230		
C,Y-88	,NO,	-1.059E+00,	2.0040+00	3 816E+00.	-0.305		
C,NB-94	,NO ,	-1.162E+00,	$2.300 \pm 00$	5.065E+00	0.328		
C,NB-95	,NO,	1.662E+00,	3.0360+00,	8 699E+00.	0.223		
C,ZR-95	,NO,	1.938E+00,	5.251E+00,	4.480E+03	0.055		
C,MO-99	,NO,	2.463E+02,	2.737E+03	4.400日100 <b>,</b> ,	0.154		
C,RU-103	,NO,	8.729E-01,	3.381E+00,	2.005E+00,7	-0.115		
C,RU-106	,NO,	, -4.505E+00,	2.426E+01,	3.900E+01,	-0 447		
C,AG-110m	,NO,	, -1.774E+00,	2.502E+00,	5.9700+00,	-0.033		
C, SN-113	,NO,	, -1.924E-01,	3.577E+00,	5.0371700,	-0.287		
C,SB-124	,NO	, -1.313E+00,	6.752E+00,	4.501E+00,,	0.035		
C,SB-125	, NO	, 4.153E-01,	7.311E+00,	1.193E+01,	-0.501		
C, TE-129M	, NO	, -3.257E+01,	4.125E+01,	6.496E+01,,	0.151		
C,I-131	, NO	, 3.457E+00,	1.384E+01,	2.288E+01,	1 125		
C.BA-133	, NO	, 6.625E+00,	3.943E+00,	5.888E+00,,	1 620		
C.CS-134	, NO	, 7.676E+00,	4.180E+00,	4.739E+00,,	1.020		
C.CS-136	, NO	, -1.284E+00,	6.290E+00,	1.033E+01,,	-0.124		
C.CS-137	, NO	, 6.990E-01,	2.619E+00,	4.344E+00,,	0.101		
C CE - 139	, NO	, 2.938E+00,	2.655E+00,	4.445E+00,,	0.001		
C BA - 140	. NO	-1.406E+00,	2.475E+01,	4.087E+01,,	-0.034		
$C_{1}\Delta - 140$	, NO	, 7.589E+00,	7.202E+00,	1.280E+01,,	0.593		
C, CF = 141	NO	, 2.929E+00,	7.225E+00,	1.020E+01,,	0.287		
C, CE = 144	NO	-8.541E+00,	2.180E+01,	3.016E+01,,	-0.283		
$C_{r}CLI = 144$		-6.851E+00,	9.377E+00,	1.260E+01,,	-0.544		
C, EU = 152		1 697E+00,	4.890E+00,	8.132E+00,,	0.209		
C, EU - 104		, <u>2.00, 2.00</u> , 8 716E+00.	9.498E+00,	1.526E+01,,	0.571		
C, AC-ZZ8	, NO	, 0.,101,00, 8 659E+00	9.435E+00,	1.516E+01,,	0.571		
C, TH-232	, INO	1 775E+01	2.193E+01.	3.132E+01,,	0.567		
C, U-235	, NU	, <u>Γ</u> . () <u>Π</u> +ΟΙ ( <u>Α</u> <u>Λ</u> ΩΩ <u>Π</u> +ΟΙ (	2.410E+02.	4.039E+02,,	0.200		
C,U-238	, NO		2 486E+01	3.399E+01,,	-0.268		
C,AM-241	, NO	, -y.105E+00,	2.4000101)				

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 16:23:01.74 TBE11 P-20610B HpGe ******** Aquisition Date/Time: 4-JUN-2006 09:32:03.00
LIMS No., Customer Name, Client ID: WG L28784-8 EX BRAID

Sample ID : Sample Type : Quantity : Start Channel : End Channel : MDA Constant :	11L28784-8 WG 3.11940E+00 L 40 Energy Tol : 1.00000 4090 Pk Srch Sens: 5.00000 0.00 Library Used: LIBD	Smple Date: Geometry : BKGFILE : Real Time : Live time :	15-MAY-2006 10:05:00. 113L082304 11BG060306MT 0 06:50:56.78 0 06:50:48.07
MDA Constant :	0.00 Library Used: LIBD		

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	0	139.76*	86	579	1.07	279.47	1.90E+00	3.49E-03	55.4	
2	0	185.72*	63	654	1.34	371.75	1.80E+00	2.55E-03	88.7	
3	0	198.30	125	535	1.56	397.02	1.75E+00	5.07E-03	34.5	
4	0	238.48*	63	640	1.39	477.67	1.58E+00	2.57E-03	92.6	
5	0	295.62*	59	499	1.27	592.38	1.37E+00	2.39E-03	84.4	
6	0	338.28	103	224	1.12	677.97	1.24E+00	4.17E-03	29.0	
7	Ō	351.97*	37	301	1.21	705.44	1.20E+00	1.50E-031	.04.8	
8	0	499.31	41	150	1.31	1000.99	9.21E-01	1.65E-03	54.6	
9	0	595.58	46	183	1.21	1193.99	8.04E-01	1.88E-03	58.3	
10	Ō	609.16*	153	166	1.78	1221.22	7.90E-01	6.21E-03	21.5	
11	0	911.30*	8	50	1.76	1826.47	5.74E-01	3.29E-042	257.2	
$12^{$	Õ	1120.78*	25	96	2.19	2245.66	4.86E-01	1.00E-03	94.5	
13	0	1460.60*	27	77	2.50	2924.96	3.92E-01	1.10E-03	89.6	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al					
	-15-				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
K-40	1460.81	27	10.67*	3.919E-01	2.287E+01	2.287E+01	179.25
RA-226	186.21	63	3.28*	1.799E+00	3.743E+01	3.743E+01	177.36
AC-228	835.50		1.75	6.158E-01	Li	ne Not Found	
110 220	911.07	8	27.70*	5.744E-01	1.790E+00	1.802E+00	514.45
ТН-228	238.63	63	44.60*	1.577E+00	3.169E+00	3.232E+00	185.29
111 220	240.98		3.95	1.567E+00	Li	ne Not Found	
11-235	143.76		10.50*	1.906E+00	Li	ne Not Found	
0 200	163 35		4.70	1.876E+00	Li	ne Not Found	
	185 71	63	54.00	1.799E+00	2.274E+00	2.274E+00	177.36
	205.31		4.70	1.718E+00	Li	ne Not Found	

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Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 09:32:03 Sample ID : 11L28784-8 13 Total number of lines in spectrum 9 Number of unidentified lines Number of lines tentatively identified by NID 4 30.77% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags NuclideHlifeDecaypCi/LpCi/L2-Sigma Error%Error FlK-401.28E+09Y1.002.287E+012.287E+014.100E+01179.25RA-2261600.00Y1.003.743E+013.743E+016.639E+01177.36AC-2285.75Y1.011.790E+001.802E+009.270E+00514.45TH-2281.91Y1.023.169E+003.232E+005.989E+00185.29U-2357.04E+08Y1.002.274E+002.274E+004.033E+00177.36 pCi/L pCi/L _____ _____ Total Activity : 6.754E+01 6.761E+01 Grand Total Activity : 6.754E+01 6.761E+01 "M" = Manually accepted "A" = Nuclide specific abn. limit Flags: "K" = Keyline not found "E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 09:32:03 Sample ID : 11L28784-8 Channel Left Pw Cts/Sec %Err Flaqs %Eff Bkgnd FWHM Ιt Energy Area 8 3.49E-03 **** 1.90E+00 276 579 1.07 279.47 86 139.76 0 9 5.07E-03 69.1 1.75E+00 397.02 393 535 1.56 125 198.30 0 586 13 2.39E-03 **** 1.37E+00 592.38 1.27 499 59 0 295.62 1.24E+00 673 10 4.17E-03 58.0 677.97 1.12 224 103 0 338.28 701 10 1.50E-03 **** 1.20E+00 705.44 1.21 351.97 37 301 0 8 1.65E-03 **** 9.21E-01 999 1.31, 1000.99 150 41 υÒ 499.31 1193.99 1189 11 1.88E-03 **** 8.04E-01 1.21 183 595.58 46 0 1221.22 1214 13 6.21E-03 43.1 7.90E-01 166 1.78 153 0 609.16 2245.66 2240 15 1.00E-03 **** 4.86E-01 2.19 96 25 1120.78 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 13 Total number of lines in spectrum Number of unidentified lines 9 Number of lines tentatively identified by NID 30.77% 4 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Decay Corr Uncorrected %Error Flags pCi/L 2-Sigma Error Decay pCi/L Hlife Nuclide 179.25 4.100E+01 2.287E+01 2.287E+01 1.00 1.28E+09Y K-40 177.36 3.743E+01 6.639E+01 3.743E+01 1.00 1600.00Y RA-226 9.270E+00 514.45 1.802E+00 1.790E+00 1.01 5.75Y AC-228 185.29 5.989E+00 3.232E+00 3.169E+00 1.91Y 1.02 TH-228 _____ _____ 6.534E+01 6.526E+01 Total Activity : 6.534E+01 Grand Total Activity : 6.526E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L) (pCi/L) Nuclide 0.000E+00 0.605 3.780E+01 4.100E+01 2.287E+01 K-40 0.424 0.000E+00 8.822E+01 6.639E+01 3.743E+01 RA-226 0.139 0.000E+00 9.270E+00 1.298E+01 1.802E+00 AC-228 0.487 0.000E+00 6.634E+00 5.989E+00 3.232E+00 TH-228 ---- Non-Identified Nuclides ----

1					
Nuclide	Key-Line Activity K.I (pCi/L) Ide	L. Act error ed	MDA (pCi/L)	MDA error	Act/MDA
ר יות	3 036E+00	2.372E+01	3.961E+01	0.000E+00	0.077
	-5.000H00	6.339E+03	Half-Life to	oo short	
NA-24 OD E1	-3.3110+03	3.189E+01	5.068E+01	0.000E+00	-0.790
CR-51	$-4.005 \pm 01$	2 313E+00	3.849E+00	0.000E+00	0.075
MN-54	$2.902 \pm 01$	2 285E+00	3.812E+00	0.000E+00	0.180
CO-57	4 = 542E - 01	2.661E+00	4.370E+00	0.000E+00	-0.104
CU-58	-4.542E-01 4 913E+00	6 065E+00	1.033E+01	0.000E+00	0.476
FE-59	4.913E+00	2 428E+00	4.125E+00	0.000E+00	0.294
CU-60	7 472E+00	6.256E+00	9.584E+00	0.000E+00	0.780
ZN-65	$4 231 E \pm 00$	3 385E+00	5.445E+00	0.000E+00	-0.777
SE-75	-4.2510+00 -2.0270+01	3 301E+00	6.358E+00	0.000E+00	3.188
SR-85	2.0276+01 2.158E+00	3 135E+00	5.415E+00	0.000E+00	0.399
	1.453E+00	2.310E+00	3.869E+00	0.000E+00	0.375
NB-94 ND OF	f = 324E = 01	2.679E+00	4.500E+00	0.000E+00	0.141
NB-95	-1 707E+00	4.816E+00	7.871E+00	0.000E+00	-0.217
ZR-95	$-1.07 \pm 0.02$	2676E+03	4.288E+03	0.000E+00	-0.173
MU-99	4 067E = 01	3.385E+00	5.640E+00	0.000E+00	0.072
RU-105	-1 291E+01	2.202E+01	3.519E+01	0.000E+00	-0.367
RU-106	6 163E-01	2.323E+00	3.846E+00	0.000E+00	0.160
AG-IIUM	-1.643E+00	3.241E+00	5.203E+00	0.000E+00	-0.316
SN-IIS	-2.647E+00	7.023E+00	4.609E+00	0.000E+00	-0.574
0D-124 0D 125	2.813E+00	6.751E+00	1.115E+01	0.000E+00	0.252
5B-125 TTT 120M	-1 447E+01	3.880E+01	6.203E+01	0.000E+00	-0.233
ID-IZ9M T 101	9.378E+00	1.324E+01	2.220E+01	0.000E+00	0.422
T-T2T	3 154E+00	3.909E+00	5.617E+00	0.000E+00	0.562
DA-133	6 285E+00	4.663E+00	4.556E+00	0.000E+00	1.379
CS = 134	2564E-02	6.193E+00	1.025E+01	0.000E+00	0.003
CS = 137	6 190E-01	2.483E+00	4.106E+00	0.000E+00	0.151
CE = 139	6 823E-01	2.447E+00	4.042E+00	0.000E+00	0.169
CE = 139 DA = 140	1 247E+01	2.314E+01	3.907E+01	0.000E+00	0.319
BA-140	-1 270E+00	8.075E+00	1.322E+01	0.000E+00	-0.096
DA - 140	4 116E+00	6.559E+00	9.365E+00	0.000E+00	0.440
CE = 141	-1 539E+00	2.083E+01	2.920E+01	0.000E+00	-0.053
	1 448E+01	1.377E+01	1.154E+01	0.000E+00	1.255
EU-152 EU-157	3 143E+00	4.596E+00	7.721E+00	0.000E+00	0.407
TTT-232	1 790E+00	+ 9.208E+00	1.494E+01	0.000E+00	0.120
III-232	-1 342E+00	2.046E+01	2.861E+01	0.000E+00	-0.047
U-235	3.988E+01	2.511E+02	4.146E+02	0.000E+00	0.096
U-230 Mm-241	-7 022E+01	2.975E+01	4.691E+01	0.000E+00	-1.497
AM-241	1.0221101				

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A.11L28784	- 8	,06/04/2006	16:23,05/15/2	006 10:05,	3.119E+00,WG	L28784-8	ΕX
B.11L28784	- 8	,LIBD	,06/	02/2006 08:22	2,113L082304		
C K - 40	YES.	2.287E+01,	4.100E+01,	3.780E+01,,	0.605		
$C_{PA} = 226$	VES	3.743E+01.	6.639E+01,	8.822E+01,,	0.424		
$C_{1}C_{2}$	VES	1.802E+00.	9.270E+00,	1.298E+01,,	0.139		
C, TU_228	VES	3 232E+00	5.989E+00,	6.634E+00,,	0.487		
C, IR - ZZO	, IBD, NO	3.036E+00.	2.372E+01,	3.961E+01,,	0.077		
C, BE = 7	, NO , NO	-4.003E+01	3.189E+01.	5.068E+01,,	-0.790		
C, CR-51	NO	2902E = 01	2.313E+00	3.849E+00,,	0.075		
C, MIN = 54	, NO ,	5.848E-01	2.285E+00,	3.812E+00,,	0.180		
C, CO = 57	, NO ,	-4.542E - 01	2 661E+00.	4.370E+00,,	-0.104		
C, CO-50	, NO ,	-4.J420 01, / 913F100	6.065E+00.	1.033E+01,,	0.476		
C, FE-59	, NO ,	4.913E+00, 1.212E+00	2.428E+00	4.125E+00,	0.294		
C, CO-60	, NO ,	1.2125+00	5.256E+00	9.584E+00.	0.780		
C, ZN-65	, NO ,	7.472.0+00,	3.385E+00	5.445E+00.	-0.777		
C, SE-75	, NO ,	-4.2310+00,	3.301E+00	6 358E+00.	3.188		
C, SR-85	, NO ,	2.02/E+01	3.301E+00, 3.135E+00	5 415E+00.	0.399		
C,Y-88	,NO ,	2.150E+00,	2.10E+00	3.869E+00	0.375		
C,NB-94	,NO ,	1.453E+00,	2.3100+00	4.500E+00	0.141		
C,NB-95	,NO,	6.324E-UL,	2.079E+00,	7.871E+00	-0.217		
C,ZR-95	,NO,	-1.707E+00,	4.816E+00,	/.0/15+00,,	-0 173		
С,МО-99	,NO,	-7.430E+02,	2.676E+03	4.2000+00,	0.173		
C,RU-103	,NO,	4.067E-01,	3.385E+00,	5.6400+00,,	-0.367		
C,RU-106	,NO,	-1.291E+01,	2.202E+01,	3.519E+01,	0.160		
C,AG-110m	,NO,	6.163E-01,	2.323E+00,	5.040E+00,,	-0.316		
C,SN-113	,NO,	-1.643E+00,	3.241E+00,	5.203E+00,,	-0.510		
C,SB-124	,NO,	-2.647E+00,	7.023E+00,	4.609E+00,,	-0.574		
C,SB-125	,NO,	2.813E+00,	6.751E+00,	1.115E+01,,	0.252		
C,TE-129M	,NO,	-1.447E+01,	3.880E+01,	6.203E+01,	-0.233		
C,I-131	,NO,	9.378E+00,	1.324E+01,	2.220E+01,,	0.422		
C,BA-133	,NO,	3.154E+00,	3.909E+00,	5.617E+00,,	0.562		
C,CS-134	,NO,	6.285E+00,	4.663E+00,	4.556E+00,,	1.379		
C,CS-136	,NO,	2.564E-02,	6.193E+00,	1.025E+01,,	0.003		
C,CS-137	,NO,	6.190E-01,	2.483E+00,	4.106E+00,,	0.151		
C,CE-139	,NO,	6.823E-01,	2.447E+00,	4.042E+00,,	0.169		
C,BA-140	,NO,	1.247E+01,	2.314E+01,	3.907E+01,,	0.319		
C,LA-140	,NO,	-1.270E+00,	8.075E+00,	1.322E+01,,	-0.096		
C.CE-141	, NO ,	4.116E+00,	6.559E+00,	9.365E+00,,	0.440		
C.CE-144	, NO ,	-1.539E+00,	2.083E+01,	2.920E+01,,	-0.053		
C.EU-152	, NO ,	1.448E+01,	1.377E+01,	1.154E+01,,	1.255		
C.EU-154	, NO ,	3.143E+00,	4.596E+00,	7.721E+00,,	0.407		
C.TH-232	NO .	1.790E+00,	9.208E+00,	1.494E+01,,	0.120		
C.U-235	NO .	-1.342E+00,	2.046E+01,	2.861E+01,,	-0.047		
C.U-238	, NO .	3.988E+01,	2.511E+02,	4.146E+02,,	, 0.096		
$C \Delta M - 241$	NO .	-7.022E+01.	2.975E+01,	4.691E+01,,	, -1.497		
	, /		•				

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LIMS: Analyst: Sec. Review:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 12:53:59.40 TBE13 P-10727B HpGe ******** Aquisition Date/Time: 4-JUN-2006 09:32:24.82 LIMS No., Customer Name, Client ID: WG L28784-9 EX BRAID Smple Date: 19-MAY-2006 10:00:00. : 13L28784-9 Sample ID : 1335L090904 Geometry : WG Sample Type : 13BG060306MT BKGFILE : 3.55430E+00 L Quantity Real Time : 0 03:21:20.72 Energy Tol : 1.50000 Start Channel : 25 Live time : 0 03:21:17.18 Pk Srch Sens: 5.00000 : 4090 End Channel Library Used: LIBD : 0.00 MDA Constant Cts/Sec %Err Fit %Eff FWHM Channel Bkqnd Pk It Energy Area 6.23E-01 4.94E-03 60.6 3.40E+00 126.79 60 353 1.14 63.38* 1 1 7.28E-01 7.82E-03 35.4 371 1.14 132.90 94 66.44 2 1 1.09E+00 4.09E-03 56.3 2.38E+00 1.07 154.44 273 77.22* 49 3 1 1.32E+00 1.02E-03236.1 1.13E+00 169.60 1.42 252 4 3 84.80* 12 1.39E+00 7.99E-03 40.1 174.68 5 3 97 378 1.42 87.34* 1.46E+00 6.42E-03 38.8 78 294 1.12 180.45 6 3 90.23 1.52E+00 5.53E-03 58.5 1.38 185.34 67 336 7 3 92.67* 2.02E+00 2.85E-04***** 2.75E+00 0.96 279.76 439 3 8 1 139.91* 1.95E+00 2.22E-03186.8 1.97E+00 371.72 27 1.51 509 9 1 185.91* 1.90E+00 9.88E-03 31.6 2.17E+00 397.31 1.74 198.71* 119 332 10 1 1.73E+00 8.76E-03 31.2 2.34E+00 238 1.45 476.87 106 2 238.50* 11 1.72E+00 8.68E-03 21.4 1.29 483.50 166 105 2 241.82 12 1.52E+00 1.05E-02 27.6 5.50E+00 589.91 254 1.63 127 13 1 295.04* 1.34E+00 1.62E-02 15.8 5.04E+00 703.29 1.12 177 351.73* 196 14 1 9.26E-01 2.99E-03 88.4 1.02E+00 2.76 1166.54 157 583.33* 36 15 1 9.11E-01 7.40E-03 22.5 1.10E+00 1.70 1191.57 89 83 595.84 16 1 8.96E-01 2.15E-02 11.1 8.01E-01 106 1.37 1218.53 260 609.31* 17 1 7.42E-01 2.13E-03 49.9 1.97E+00 1.32 1571.49 42 26 18 1 785.68 6.64E-01 4.52E-04337.7 8.69E-01 1.67 1822.81 62 5 911.23* 19 1 5.69E-01 4.24E-03 41.6 8.24E-01 1.71 2242.09 70 51 1120.61* 20 1 5.29E-01 2.19E-03 40.4 5.95E-01 2.00 2478.69 19 1238.73* 26 21 1 4.69E-01 2.01E-03 77.7 1.14E+00 32 2.20 2924.69 24 1461.31* 22 1 4.11E-01 5.39E-03 17.2 1.37E+00 2.71 3531.93 65 4 1764.21*

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

23

1

Nuclide Type: natural Uncorrected Decay Corr 2-Sigma pCi/L %Error pCi/L %Eff %Abn Area Nuclide Energy 155.44 3.057E+01 3.057E+01 4.687E-01 10.67* 24 1460.81 K-40 373.55 2.644E+01 3.28* 1.946E+00 2.644E+01 27 186.21 RA-226 ----- Line Not Found _ _ _ _ _ _ _ 1.75 7.084E-01 835.50 AC-228 675.39 1.868E+00 1.878E+00 5 6.640E-01 27.70* 911.07 62.35 8.614E+00 8.752E+00 44.60* 1.733E+00 106 238.63 TH-228 42.88 9.869E+01 9.713E+01 3.95 1.720E+00 105 240.98 176.86 8.130E+00 8.130E+00 9.260E-01 30.25 583.14 36 TH-232

		L28784 82 of 1
U-235	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	6.640E-01 1.868E+00 1.868E+00 675.39 6.342E-01 Line Not Found 2.023E+00 Line Not Found 2.011E+00 Line Not Found 1.946E+00 1.606E+00 1.606E+00 373.55 1.871E+00 Line Not Found

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L28784 83 of 141

Summary Sample	of Nuclide Acti ID : 13L28784-9	vity	Acquisition	n date : 4-JUN-	Page 2006 09:	2 : 2 232:24
Total : Number Number	number of lines of unidentified of lines tentat	in spectrum l lines lively identifie	23 17 d by NID 6	26.09%		
Nuclide	Type : natural					
Nuclide K-40 RA-226 AC-228 TH-228 TH-232 U-235	Hlife Dec 1.28E+09Y 1. 1600.00Y 1. 5.75Y 1. 1.91Y 1. 1.41E+10Y 1. 7.04E+08Y 1.	Uncorrected cay pCi/L .00 3.057E+01 .00 2.644E+01 .01 1.868E+00 .02 8.614E+00 .00 1.868E+00 .00 1.606E+00	Decay Corr pCi/L 3.057E+01 2.644E+01 1.878E+00 8.752E+00 1.868E+00 1.606E+00	Decay Corr 2-Sigma Error 4.752E+01 9.877E+01 12.68E+00 5.457E+00 12.62E+00 5.999E+00	2-Sigma %Error 155.44 373.55 675.39 62.35 675.39 373.55	Flags K
	Total Activity	y : 7.097E+01	7.112E+01			
Gran	nd Total Activit	y : 7.097E+01	7.112E+01			
Flags:	"K" = Keyline n "E" = Manually	ot found edited	"M" = Manua "A" = Nucli	ally accepted de specific ab	on. limit	

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Unidentified Energy Lines Sample ID : 13L28784-9

Page : 3 Acquisition date : 4-JUN-2006 09:32:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Ρw	Cts/Sec	%Err	%Eff Flags
1 1 3 3 3 1 1 1 1 1 1 1	63.38 66.44 77.22 84.80 87.34 90.23 92.67 139.91 198.71 295.04 351.73 595.84 609.31 785.68 1120.61 1238.73 1764.21	60 94 49 12 97 78 67 3 119 127 196 89 260 26 51 26 51	353 371 273 252 378 294 336 439 332 254 177 83 106 42 70 19 4	1.14 1.07 1.42 1.42 1.12 1.38 0.96 1.74 1.63 1.12 1.70 1.37 1.32 1.71 2.00 2.71	126.79 132.90 154.44 169.60 174.68 180.45 185.34 279.76 397.31 589.91 703.29 1191.57 1218.53 1571.49 2242.09 2478.69 3531.93	122 123 166 166 166 276 392 586 699 1186 1212 1568 2236 2474 3526	15 15 27 27 27 27 10 11 13 96 14	$\begin{array}{c} 4.94E-03\\ 7.82E-03\\ 4.09E-03\\ 1.02E-03\\ 7.99E-03\\ 6.42E-03\\ 5.53E-03\\ 2.85E-04\\ 9.88E-03\\ 1.05E-02\\ 1.62E-02\\ 7.40E-03\\ 2.15E-02\\ 2.13E-03\\ 4.24E-03\\ 2.19E-03\\ 5.39E-03\end{array}$	**** 70.8 **** 80.2 77.6 **** 63.3 55.2 31.6 45.0 22.1 99.7 83.2 80.9 34.3	$\begin{array}{c} 6.23E-01\\ 7.28E-01\\ 1.09E+00\\ 1.32E+00\\ 1.39E+00\\ 1.39E+00\\ 1.52E+00\\ 2.02E+00\\ 1.52E+00\\ 1.52E+00\\ 1.52E+00\\ 1.52E+00\\ 1.34E+00\\ 9.11E-01\\ 8.96E-01\\ 7.42E-01\\ 5.69E-01\\ 5.29E-01\\ 4.11E-01 \end{array}$
	1,01,01									

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of lines in spectrum	23 17	
Number of unidentified lines	т, 6	26.09%
Number of lines tentatively identified by NID	0	201050

Nuclide Type : natural

Nuclide	Type : natur	aı	Wtd Mean Uncorrected	Wtd Mean Decay Corr	Decay Corr	2-Sigma	Flage
Nuclide K-40 RA-226 TH-228 TH-232	Hlife 1.28E+09Y 1600.00Y 1.91Y 1.41E+10Y Total Activ	Decay 1.00 1.00 1.02 1.00	pCi/L 3.057E+01 2.644E+01 8.614E+00 4.592E+00  7.022E+01	pCi/L 3.057E+01 2.644E+01 8.752E+00 4.592E+00 7.036E+01	2-Sigma Error 4.752E+01 9.877E+01 5.457E+00 9.484E+00	155.44 373.55 62.35 206.52	riago

Grand Total Activity : 7.022E+01 7.036E+01

Flags:	"E" :	= Keyline not found = Manually edited	"M" = Manually accepted "A" = Nuclide specific abn. limit
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Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
TH-232	911.07	AC-228	911.07

Combined Activity-MDA Report
Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
K-40	3.057E+01	4.752E+01	4.098E+01	0.000E+00	0.746
RA-226	2.644E+01	9.877E+01	1.074E+02	0.000E+00	0.246
TH-228	8.752E+00	5.457E+00	8.177E+00	0.000E+00	1.070
TH-232	4.592E+00	9.484E+00	1.465E+01	0.000E+00	0.314

## ---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K.L (pCi/L) Ide	. Act error d	MDA (pCi/L)	MDA error	Act/MDA
DF 7	-6 606E+00	2.747E+01	4.432E+01	0.000E+00	-0.149
	-1 811E+02	8.484E+01	Half-Life to	o short	
NA-24 CD E1	-5,250E+01	3.489E+01	5.477E+01	0.000E+00	-0.959
CR-DI MNI E4	1 565E+00	2.859E+00	4.838E+00	0.000E+00	0.324
MN-54 00 57	1 110E+00	2.880E+00	4.844E+00	0.000E+00	0.229
CO-57	-3.064E+00	3.054E+00	4.644E+00	0.000E+00	-0.660
	4.264E+00	6.447E+00	1.116E+01	0.000E+00	0.382
FE-59	2.2040+00	2.830E+00	4.913E+00	0.000E+00	0.417
CO-60	2.0490+00 9.199E+00	6.988E+00	1.111E+01	0.000E+00	0.828
ZN-65	7.502E = 01	4.141E+00	6.669E+00	0.000E+00	-0.112
SE-75	-7.502H 01	3.971E+00	7.486E+00	0.000E+00	2.333
SR-85	-2.789E+00	3.084E+00	4.480E+00	0.000E+00	-0.622
Y-88	$-2.700 \pm 00$	2.627E+00	4.112E+00	0.000E+00	-0.546
NB-94	5 298E+00	3.458E+00	6.160E+00	0.000E+00	0.860
NB-95	-4.093E+00	5.838E+00	9.172E+00	0.000E+00	-0.446
ZR-95	8 186E+02	1.125E+03	1.936E+03	0.000E+00	0.423
MO-99	-7.891E-01	3.725E+00	6.009E+00	0.000E+00	-0.131
RU-103	-1 205E+01	2.705E+01	4.383E+01	0.000E+00	-0.275
RU-106	-1.013E+00	2.757E+00	4.465E+00	0.000E+00	-0.227
AG-IIUM	7.946E-02	3.642E+00	6.011E+00	0.000E+00	0.013
SN-113	1.745E-01	7.300E+00	5.505E+00	0.000E+00	0.032
SB-124	5.7400 01	8.252E+00	1.360E+01	0.000E+00	0.050
SB-125	1.066E+00	4.284E+01	7.002E+01	0.000E+00	-0.015
TE-129№ T 101	$1 0.49 \pm 0.1$	1.107E+01	1.902E+01	0.000E+00	0.552
1-131 122	5 880F+00	4.507E+00	6.828E+00	0.000E+00	0.861
BA-133	7 397E+00	4.422E+00	5.727E+00	0.000E+00	1.291
CS-134	7.3975+00	5.992E+00	9.905E+00	0.000E+00	0.092
CS-136	3 330E+00	3.103E+00	5.291E+00	0.000E+00	0.629
CS-137	1 518E+00	2.940E+00	4.921E+00	0.000E+00	0.308
CE = 1.39	2.0100+00	2.277E+01	3.730E+01	0.000E+00	0.093
BA-140	4 248 <u>F</u> +00	7.186E+00	1.114E+01	0.000E+00	-0.390
DA-140	2 0898+00	7.507E+00	1.075E+01	0.000E+00	0.194
CE-141	2.005E+00	2.640E+01	3.731E+01	0.000E+00	-0.096
CE-144	$= 3.374 \pm 00$	1.012E+01	1.430E+01	0.000E+00	-0.398
EU-152	-3.007E+00	5.840E+00	9.915E+00	0.000E+00	0.447
出U-154 アロー254	4.455E+00 1 878F±00	1.268E+01	1.792E+01	0.000E+00	0.105
AC-ZZO	1 856F±00	2.554E+01	3.600E+01	0.000E+00	0.052
	1 000E+00	3.181E+02	4.881E+02	0.000E+00	-0.406
U-238		2.918E+01	4.035E+01	0.000E+00	-0.202
AM-241	-8.102E+00	2.JI01701			

						T 2070/ 0	ΓV
A.13L28784	-9	,06/04/2006	12:54,05/19/2	006 10:00,	3.554E+00,WG	∐28764-9	ĽΛ
B,13L28784	-9	,LIBD	,06/	01/2006 10:1	3,13351090904		
C.K-40	,YES,	3.057E+01,	4.752E+01,	4.098E+01,,	0.746		
C.RA-226	,YES,	2.644E+01,	9.877E+01,	1.074E+02,,	0.246		
C.TH-228	YES,	8.752E+00,	5.457E+00,	8.177E+00,,	1.070		
C. TH-232	YES.	4.592E+00,	9.484E+00,	1.465E+01,,	0.314		
$C_{BE-7}$	, NO ,	-6.606E+00,	2.747E+01,	4.432E+01,,	-0.149		
C CR - 51	NO ,	-5.250E+01,	3.489E+01,	5.477E+01,,	-0.959		
C MN - 54	.NO .	1.565E+00,	2.859E+00,	4.838E+00,,	0.324		
C C - 57	NO .	1.110E+00,	2.880E+00,	4.844E+00,,	0.229		
$C_{1}C_{0} = 58$	NO .	-3.064E+00,	3.054E+00,	4.644E+00,,	-0.660		
C FE = 59	NO .	4.264E+00,	6.447E+00,	1.116E+01,,	0.382		
C, CO = 60	NO .	2.049E+00,	2.830E+00,	4.913E+00,,	0.417		
$C_{7N-65}$	NO .	9.199E+00,	6.988E+00,	1.111E+01,,	0.828		
$C_{2} = 75$	NO /	-7.502E-01.	4.141E+00,	6.669E+00,,	-0.112		
$C_{BE}^{-1}$	NO	1.746E+01.	3.971E+00,	7.486E+00,,	2.333		
C, SK = 05	NO	-2 789E+00.	3.084E+00,	4.480E+00,,	-0.622		
C, I = 00	, NO , NO	-2 243E+00,	2.627E+00,	4.112E+00,,	-0.546		
C, ND - 94	, NO , NO	5 298E+00.	3.458E+00,	6.160E+00,,	0.860		
C, NB - 95	, NO , NO	-4.093E+00	5.838E+00,	9.172E+00,,	-0.446		
$C, \Delta R = 95$	, NO ,	8 186E+02.	1.125E+03,	1.936E+03,,	0.423		
C, MO - 99	, NO ,	-7.891E-01	3.725E+00,	6.009E+00,,	-0.131		
C, RU = 103	, NO ,	-1.205E+01.	2.705E+01,	4.383E+01,,	-0.275		
C, RU = 106	, NO ,	-1 013E+00.	2.757E+00,	4.465E+00,,	-0.227		
C, AG-IIUM	, INO , NO	7.946E-02	3.642E+00,	6.011E+00,,	0.013		
C, SN-113	, NO , NO	1.745E-01	7.300E+00,	5.505E+00,,	0.032		
C, SB-124	, NO ,	5.850E-01	8.252E+00,	1.360E+01,,	0.050		
C, SB-125	, NO ,	-1.066E+00	4.284E+01,	7.002E+01,,	-0.015		
C, TE-129M	, NO ,	-1.000E+00,	1.107E+01.	1.902E+01,,	0.552		
C, I-I3I	, INO ,	5 880F+00	4.507E+00.	6.828E+00,,	0.861		
C, BA-133	, NO ,	$5.000 \pm 00$	4 422E+00	5.727E+00,	1.291		
C, CS - 134	, NO ,	0.121E-01	5.992E+00	9.905E+00,	, 0.092		
C, CS-136	, NO ,	3.131E-01	3.103E+00.	5.291E+00,	0.629		
C, CS-137	, NO ,	3.330E+00, 1 519F+00	2.940E+00.	4.921E+00,	, 0.308		
C, CE-139	, NO ,	1.510E+00,	2.9400+00	3.730E+01,	, 0.093		
C, BA-140	, NO ,	3.451E+00,	7.186E+00	1.114E+01.	, -0.390		
C,LA-140	, NO ,	-4.340E+00,	7.507E+00	1 075E+01	, . 0.194		
C,CE-141	, NO ,	2.089E+00,	$7.507 \pm 00,$ $2.640 \pm 01$	3 731E+01	, -0.096		
C,CE-144	, NO ,	-3.5/4E+00,	2.0400+01, 1.012F+01	1 430E+01	-0.398		
C,EU-152	,NO,	-5.687E+00,	$I \cdot O I Z \Box + O I$	9.915E+00.	0.447		
C,EU-154	, NO ,	4.435E+00,	1 269F±01	1.792E+01	0.105		
C,AC-228	, NO ,	, <u>1.8/85+00</u> ,	1.20000001,	3.600E+01	0.052		
C,U-235	, NO	, <u>1.856E+00</u> ,	2.004D+01	4 881E+02	-0,406		
C,U-238	,NO	, -1.982E+02,	3.1010+02,	$4.035E\pm02$	-0.202		
C,AM-241	,NO	, -8.165E+00,	Z.910E+U1,	H. ODDETUI	/ 0.202		

Sec. Review: Analyst: LIMS: V

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 16:24:16.40 TBE14 P-10933A HpGe ******* Aquisition Date/Time: 4-JUN-2006 09:32:50.91

LIMS No., Customer Name, Client ID: WG L28784-10 EX BRAID

Sample ID	:	14L28784	4-10		Smple Date	:	19-MAY-2006 11:15:00.
Sample Type	:	WG			Geometry	:	1435L091304
Quantity	:	3.573301	E+00 L		BKGFILE	:	14BG060306MT
Start Channel	:	90	Energy Tol :	1.00000	Real Time	:	0 06:51:19.19
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 06:51:15.17
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.37	294	959	1 75	133 72	4 54E-01	1 198-02	20 G	4 92E-01
2	1	139.91	247	773	1.79	281.19	1.67E+00	1.00E-02	21.9	8.97E-01
3	1	198.59*	196	798	1.81	398.79	1.60E+00	7.93E-03	32.3	1.10E+00
4	1	295.47	59	375	1.19	592.82	1.29E+00	2.41E-03	57.5	3.55E+00
5	1	352.50*	36	288	1.28	706.97	1.14E+00	1.47E-031	06.8	2.41E+00
6	1	583.71*	24	175	1.55	1169.23	7.91E-01	9.65E-041	37.0	1.18E+00
7	1	596.66	111	254	3.90	1195.10	7.78E-01	4.50E-03	36.0	1.55E+00
8	1	609.73*	88	253	1.59	1221.21	7.65E-01	3.55E-03	44.3	7.09E-01
9	1	911.71*	11	82	1.84	1823.52	5.64E-01	4.55E-041	77.9	7.01E-01
10	1	1120.66*	42	75	1.90	2239.45	4.81E-01	1.68E-03	54.7	7.79E-01
11	1	1461.91*	34	47	2.57	2917.23	3.93E-01	1.38E-03	77.5	1.60E+00
12	1	1766.99*	69	13	3.17	3521.64	3.43E-01	2.81E-03	23.4	1.06E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al					
					Uncorrected	l Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
AC-228	835.50		1.75	6.034E-01	Li	ne Not Found	
	911.07	11	27.70*	5.643E-01	2.199E+00	2.211E+00	355.78
TH-232	583.14	24	30.25	7.907E-01	3.051E+00	3.051E+00	273.95
	911.07	11	27.70*	5.643E-01	2.199E+00	2.199E+00	355.78
	969.11		16.60	5.383E-01	Li	ne Not Found	

Flag: "*" = Keyline

L28784 88 of 141

Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 09:32:50 Sample ID : 14L28784-10 12 Total number of lines in spectrum Number of unidentified lines 10 Number of lines tentatively identified by NID 2 16.67% Nuclide Type : natural 

 Uncorrected
 Decay Corr
 Decay Corr
 2-Sigma

 Nuclide
 Hlife
 Decay
 pCi/L
 pCi/L
 2-Sigma Error
 %Error Flags

 AC-228
 5.75Y
 1.01
 2.199E+00
 2.211E+00
 7.867E+00
 355.78

 TH-232
 1.41E+10Y
 1.00
 2.199E+00
 2.199E+00
 7.825E+00
 355.78

 Total Activity :
 4.399E+00
 4.410E+00
 4.410E+00
 7.825E+00
 355.78

 Grand Total Activity : 4.399E+00 4.410E+00 "M" = Manually accepted Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

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Unidentified Energy Lines Sample ID : 14L28784-10

Page : 3 Acquisition date : 4-JUN-2006 09:32:50

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	66.37	294	959	1.75	133.72	129	10	1.19E-02	41.1	4.54E-01	-
1	139.91	247	773	1.79	281.19	277	10	1.00E-02	43.8	1.67E+00	)
1	198.59	196	798	1.81	398.79	392	13	7.93E-03	64.6	1.60E+00	)
1	295.47	59	375	1.19	592.82	590	8	2.41E-03	* * * *	1.29E+00	)
1	352.50	36	288	1.28	706.97	703	9	1.47E-03	* * * *	1.14E+00	)
1	596.66	111	254	3.90	1195.10	1187	19	4.50E-03	72.1	7.78E-01	
1	609.73	88	253	1.59	1221.21	1215	13	3.55E-03	88.6	7.65E-01	L
1	1120.66	42	75	1.90	2239.45	2231	13	1.68E-03	****	4.81E-01	L
1	1461.91	34	47	2.57	2917.23	2908	21	1.38E-03	****	3.93E-01	L
1	1766.99	69	13	3.17	3521.64	3513	17	2.81E-03	46.8	3.43E-01	L
Fla	gs: "T" =	Tentativ	ely ass	ociate	d						
Sum	ummary of Nuclide Activity										

Total number of lines in spectrum12Number of unidentified lines10Number of lines tentatively identified by NID216.67%

Nuclide Type : natural

Nuclide TH-232	Hlife 1.41E+10Y	Decay 1.00	Wtd Mean Uncorrected pCi/L 2.597E+00	Wtd Mean Decay Corr pCi/L 2.597E+00	Decay Corr 2-Sigma Error 5.712E+00	2-Sigma %Error 219.94	Flags
	Total Acti	vity :	2.597E+00	2.597E+00			
Grand	d Total Acti	.vity :	2.597E+00	2.597E+00			

Flags:	"K"	=	Keyline not found	чМи	=	Manually	accepted	l	
	"E"	=	Manually edited	"A"	=	Nuclide	specific	abn.	limit

Interference Report

Interfe	ring	Interf	ered
Nuclide	Line	Nuclide	Line
TH-232	911.07	AC-228	911.07

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
TH-232	2.597E+00	5.712E+00	1.249E+01	0.000E+00	0.208

---- Non-Identified Nuclides ----

Key-Line					
Activity	K.L.	Act error	MDA	MDA error	Act/MDA

Nuclide	(pCi/L)	Ided		(pCi/L)		N.
BE-7	-4.016E+00		2.433E+01	3.986E+01	0.000E+00	-0.101
NA-24	-1.977E+01		6.519E+01	Half-Life	too short	
K-40	1.142E+01		3.530E+01	6.227E+01	0.000E+00	0.183
CR-51	-5.407E+01		2.932E+01	4.567E+01	0.000E+00	-1.184
MN-54	3.496E-01		2.464E+00	4.043E+00	0.000E+00	0.086
CO-57	-8.878E-01		2.430E+00	4.006E+00	0.000E+00	-0.222
CO-58	-3.865E+00		2.599E+00	3.944E+00	0.000E+00	-0.980
FE-59	7.590E+00		5.550E+00	9.709E+00	0.000E+00	0.782
CO-60	2.116E-01		2.409E+00	3.988E+00	0.000E+00	0.053
ZN-65	1.360E+01		6.091E+00	9.726E+00	0.000E+00	1.398
SE-75	1.043E-01		3.335E+00	5.522E+00	0.000E+00	0.019
SR-85	2.023E+01		3.078E+00	5.897E+00	0.000E+00	3.431
Y-88	-2.329E+00		2.909E+00	4.483E+00	0.000E+00	-0.520
NB-94	-4.864E-01		2.228E+00	3.642E+00	0.000E+00	-0.134
NB-95	2.267E+00		2.617E+00	4.452E+00	0.000E+00	0.509
ZR-95	-6.386E-01		4.690E+00	7.652E+00	0.000E+00	-0.083
MO-99	-2.764E+02		9.745E+02	1.582E+03	0.000E+00	-0.175
RU-103	8.914E-01		3.114E+00	5.167E+00	0.000E+00	0.173
RU-106	2.237E+01		2.317E+01	3.804E+01	0.000E+00	0.588
AG-110m	-1.953E+00		2.299E+00	3.677E+00	0.000E+00	-0.531
SN-113	2.753E+00		3.336E+00	5.547E+00	0.000E+00	0.496
SB-124	-1.876E+00		6.822E+00	4.486E+00	0.000E+00	-0.418
SB-125	5.395E-01		6.728E+00	1.118E+01	0.000E+00	0.048
TE-129M	3.444E+01		3.514E+01	5.986E+01	0.000E+00	0.575
I-131	3.108E+00		9.319E+00	1.533E+01	0.000E+00	0.203
BA-133	7.304E+00		3.886E+00	5.761E+00	0.000E+00	1.268
CS-134	3.087E+00		5.855E+00	4.321E+00	0.000E+00	0.714
CS-136	-2.301E+00		5.092E+00	8.135E+00	0.000E+00	-0.283
CS-137	-4.886E-01		2.419E+00	3.971E+00	0.000E+00	-0.123
CE-139	6.271E-01		2.463E+00	4.060E+00	0.000E+00	0.154
BA-140	2.657E+00		1.937E+01	3.186E+01	0.000E+00	0.083
LA-140	4.290E+00		5.908E+00	1.025E+01	0.000E+00	0.418
CE-141	-3.494E-02		6.464E+00	9.049E+00	0.000E+00	-0.004
CE-144	8.186E-01		2.211E+01	3.112E+01	0.000E+00	0.026
EU-152	-2.464E+00		8.711E+00	1.224E+01	0.000E+00	-0.201
EU-154	-1.521E+00		4.959E+00	8.181E+00	0.000E+00	-0.186
RA-226	-3.622E+01		6.270E+01	9.516E+01	0.000E+00	-0.381
AC-228	2.211E+00		7.867E+00	1.508E+01	0.000E+00	0.147
TH-228	5.014E+00		4.747E+00	7.624E+00	0.000E+00	0.658
U-235	1.889E+01		2.148E+01	3.083E+01	0.000E+00	0.613
U-238	-7.081E+01		2.547E+02	4.137E+02	0.000E+00	-0.171
AM-241	-1.602E+01		3.714E+01	5.138E+01	0.000E+00	-0.312

A,14L28784-10	,06/04/2006	16:24,05/19/2	2006 11:15,	3.573E+00,WG	L28784-10 H	Ξ
B,14L28784-10	,LIBD	,06,	/02/2006 08:23	3,1435L091304		
C,TH-232 ,YE	S, 2.597E+00,	5.712E+00,	1.249E+01,,	0.208		
C,BE-7,NO	, -4.016E+00,	2.433E+01,	3.986E+01,,	-0.101		
C,K-40 ,NO	, 1.142E+01,	3.530E+01,	6.227E+01,,	0.183		
C,CR-51 ,NO	, -5.407E+01,	2.932E+01,	4.567E+01,,	-1.184		
C,MN-54 ,NO	3.496E-01,	2.464E+00,	4.043E+00,,	0.086		
C, CO-57 , NO	-8.878E-01,	2.430E+00,	4.006E+00,,	-0.222		
C.CO-58 ,NO	-3.865E+00,	2.599E+00,	3.944E+00,,	-0.980		
C,FE-59 ,NO	7.590E+00,	5.550E+00,	9.709E+00,,	0.782		
C.CO-60 .NO	2.116E-01,	2.409E+00,	3.988E+00,,	0.053		
C. 7N-65 . NO	1.360E+01,	6.091E+00,	9.726E+00,,	1.398		
C.SE-75, NO	1.043E-01,	3.335E+00,	5.522E+00,,	0.019		
$C_{\rm SR}$ -85 NC	2.023E+01	3.078E+00,	5.897E+00,,	3.431		
C Y-88 NC	-2.329E+00.	2.909E+00,	4.483E+00,,	-0.520		
C NB - 94 NC	-4.864E-01	2.228E+00,	3.642E+00,,	-0.134		
C NB-95 NC	2.267E+00	2.617E+00.	4.452E+00,,	0.509		
C ZR - 95 NC	-6.386E-01	4.690E+00.	7.652E+00,,	-0.083		
C MO-99 NC	-2.764E+02	9.745E+02.	1.582E+03.	-0.175		
C RII-103 NC	8 914E - 01	3 114E+00	5.167E+00.	0.173		
C RU-106 NC	2 237E+01	2.317E+01.	3.804E+01.	0.588		
$C \Lambda G = 110 m$ NC	-1 953E+00	2.299E+00	3.677E+00.	-0.531		
C = 113 NC	2 753E+00	3.336E+00	5.547E+00	0.496		
C, SN=113, NC	-1.876E+00	6.822E+00	4 486E+00.	-0.418		
C, SD = 124, NC	$5 395F_{-01}$	6.728E+00	$1.100\pm00,$	0.048		
C, SB-125, NC C, TE-120M NC	3.355 = 01,	3.514E+01	5 986E+01	0.575		
C, IE = IZ M, NC	3 108E+00	9 319E+00	1.533E+01	0 203		
C, I = I $J$	7 - 304E + 00	3.886F±00,	5.761E+00	1 268		
C, DA=133, NC	$2 087 \overline{E} + 00$	5.855E±00,	4 321E+00	0 714		
C, CS=134, NC	3.00/E+00	5.092E+00,	9 135F±00,	-0.283		
C, CS-136 , NC	-2.3012+00,	2.092E+00,	3, 971E+00, 7	-0.123		
C, CS=137, NC	-4.886E-01	2.419E+00	4 060E+00,	0.154		
C, CE-139 , NC	0, 0.2/1E-01,	2.405E+00,	$4.0000\pm00,$	0.734		
C, BA-140 , NC	2.65/E+00,	1.93/E+01,	3.100E+U1,, 1.00EE+01	0.005		
C,LA-140 ,NC	4.290E+00,	5.908E+00,	1.025E+01,	0.410		
C,CE-141 ,NC	), -3.494E-02,	6.464E+00,	9.049E+00,,	-0.004		
C,CE-144 ,NC	), 8.186E-01,	2.211E+01,	3.112E+01,,	0.026		
C,EU-152 ,NC	), -2.464E+00,	8.711E+00,	1.224E+U1,,	-0.201		
C,EU-154 ,NC	0, -1.521E+00,	4.959E+00,	8.181E+00,,	-0.186		
C,RA-226 ,NC	0, -3.622E+01,	6.270E+01,	9.516E+01,,	-0.381		
C,AC-228 ,NC	0, 2.211E+00,	7.867E+00,	1.508E+01,,	0.147		
C,TH-228 ,NC	D, 5.014E+00,	4.747E+00,	7.624E+00,,	0.658		
C,U-235 ,NC	D, 1.889E+01,	2.148E+01,	3.083E+01,,	0.613		
C,U-238 ,NC	○ , -7.081E+01,	2.547E+02,	4.137E+02,,	-0.171		
C,AM-241 ,NC	), -1.602E+01,	3.714E+01,	5.138E+01,,	-0.312		

LIMS: Analyst: Sec. Review: VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 16:26:02.70 TBE15 P-10635B HpGe ******** Aquisition Date/Time: 4-JUN-2006 09:33:07.47 LIMS No., Customer Name, Client ID: WG L28784-11 EX BRAID Smple Date: 22-MAY-2006 10:00:00. : 15L28784-11 Sample ID Geometry : 1535L090104 : WG Sample Type BKGFILE : 15BG060306MT : 3.59680E+00 L Ouantity Start Channel : 40 Energy Tol : 1.50000 Real Time : 0 06:52:51.70 Pk Srch Sens: 5.00000 Live time : 0 06:52:49.21 End Channel : 4090 Library Used: LIBD MDA Constant : 0.00 Fit Cts/Sec %Err FWHM Channel %Eff Bkgnd Area Pk It Energy 1.48E+00 7.56E-03 30.2 3.45E+00 266.30 1.94 798 1 1 139.33 187 1.37E+00 5.22E-03 32.7 1.90E+00 509 1.11 384.68 129 2 198.27 1 9.17E-01 4.46E-03 44.7 1.02E+00 2.26 692.33 111 387 351.45* 3 1 5.97E-01 3.84E-03 24.1 1.33E+00 112 1.96 1182.34 95 1 595.50 4 5.87E-01 5.68E-03 19.5 4.96E-01 153 1.75 1209.38 608.97 141 5 1 3.58E-01 2.19E-03 39.3 1.00E+00 2.41 2232.90 81 1 1119.04 54 6 2.54E-01 1.56E-03 31.5 1.66E+00 2.43 3526.79 39 30 7 1 1764.42

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flaq: "*" = Keyline

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Summary of Nuclide Activity<br/>Sample ID : 15L28784-11Page : 2<br/>Acquisition date : 4-JUN-2006 09:33:07Total number of lines in spectrum<br/>Number of unidentified lines7<br/>7<br/>0.00%Number of lines tentatively identified by NID<br/>**** There are no nuclides meeting summary criteria ****0.00%Flags: "K" = Keyline not found<br/>"E" = Manually edited"M" = Manually accepted<br/>"A" = Nuclide specific abn. limit

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3 Page : Unidentified Energy Lines Acquisition date : 4-JUN-2006 09:33:07 Sample ID : 15L28784-11 Bkgnd FWHM Channel Left Pw Cts/Sec %Err Flaqs %Eff Energy Area It 262 11 7.56E-03 60.4 1.48E+00 798 1.94 266.30 187 139.33 1 384.68 381 9 5.22E-03 65.4 1.37E+00 509 1.11 129 198.27 1 9.17E-01 692.33 685 17 4.46E-03 89.3 387 2.26 111 351.45 1 1182.34 1178 11 3.84E-03 48.2 5.97E-01 112 1.96 95 595.50 1 153 1.75 1209.38 1203 12 5.68E-03 39.0 5.87E-01 608.97 141 1 2232.90 2226 16 2.19E-03 78.6 3.58E-01 81 2.41 54 1119.04 1 30 2.43 3526.79 3521 11 1.56E-03 62.9 2.54E-01 39 1 1764.42 Flags: "T" = Tentatively associated Summary of Nuclide Activity 7 Total number of lines in spectrum 7 Number of unidentified lines Number of lines tentatively identified by NID 0 0.00% **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA Activity K.L. Act error (nci/L)

Nuclide	(pCi/L) lde	d	(pcr/n)		
BE-7	-1.253E+01	2.737E+01	4.386E+01	0.000E+00	-0.286
NA-24	-4.076E+00	2.938E+00	Half-Life to		1 891
K-40	1.390E+02	3.957E+01	7.352E+01	0.000E+00	1.001
CR-51	1.085E+01	3.260E+01	5.424E+01	0.000E+00	0.200
MN-54	-1.813E+00	2.900E+00	4.593E+00	0.000E+00	-0.393
CO-57	-3.767E-02	2.995E+00	4.796E+00	0.000E+00	-0.008
CO - 58	1.393E+00	3.030E+00	5.070E+00	0.000E+00	0.275
EE-59	4.872E+00	6.233E+00	1.073E+01	0.000E+00	0.454
CO = 60	-5.412E-01	2.869E+00	4.628E+00	0.000E+00	-0.11/
ZN-65	8.479E+00	7.339E+00	1.109E+01	0.000E+00	0.764
SF-75	2.586E+00	3.992E+00	6.715E+00	0.000E+00	0.385
GD_95	1 931E+01	3.563E+00	6.687E+00	0.000E+00	2.888
V 00 V	4.098E-01	3.415E+00	5.656E+00	0.000E+00	0.072
1-00 ND 04	-2.057E+00	2.743E+00	4.365E+00	0.000E+00	-0.471
NB-94	2.03717.00	3,131E+00	5.350E+00	0.000E+00	0.544
NB-95	2.91100	5.607E+00	9.144E+00	0.000E+00	-0.075
ZR-95	-0.051E-01	5,790E+02	9.370E+02	0.000E+00	-0.195
MO-99	-1.024E+02	3 635E+00	6.041E+00	0.000E+00	0.356
RU-103	2.151E+00	$2.789F\pm01$	4,419E+01	0.000E+00	0.077
RU-106	3.424E+00	2.7090+01	$4 \ 425E+00$	0.000E+00	-0.307
AG-110m	-1.357E+00		6 627E+00	0.000E+00	-0.086
SN-113	-5.692E-01	4.0585+00	0.02/11+00	0.0000000	

		7 649E+00	5.381E+00	0.000E+00	0.628
SB-124	3.382E+00	8.250E+00	1.318E+01	0.000E+00	-0.436
SB-125	-5.7410+00 1 910F+01	4.020E+01	6.666E+01	0.000E+00	0.272
TE-129M	7.059E+00	9.397E+00	1.459E+01	0.000E+00	0.511
	$7.400 \pm 00$	4.634E+00	6.864E+00	0.000E+00	1.137
BA-133	1 234E+01	6.052E+00	5.354E+00	0.000E+00	2.305
CS-134 dd 126	-2 $475E+00$	5.441E+00	8.695E+00	0.000E+00	-0.285
CS-130	-5.806E-01	2.965E+00	4.838E+00	0.000E+00	-0.141
CE 120	1 239E+00	2.992E+00	4.932E+00	0.000E+00	0.251
CE=139	-1 171E+01	2.028E+01	3.294E+01	0.000E+00	-0.356
BA = 140	-1 977E+00	6.419E+00	1.036E+01	0.000E+00	-0.191
DR = 140	4.279E+00	7.491E+00	1.050E+01	0.000E+00	0.407
CE = 144	9.957E-01	2.639E+01	3.655E+01	0.000E+00	0.027
EII-152	-9.230E+00	1.074E+01	1.431E+01	0.000E+00	-0.645
E0 = 152 ETI = 154	5.364E-01	6.138E+00	9.846E+00	0.000E+00	0.054
DD-104 DD-206	-6.403E+01	7.580E+01	1.148E+02	0.000E+00	-0.558
$NC_{220}$	1.178E+01	1.068E+01	1.834E+01	0.000E+00	0.642
TU-220	8.690E-01	5.596E+00	8.811E+00	0.000E+00	0.099
TH-220	1.173E+01	1.064E+01	1.826E+01	0.000E+00	0.642
II-235	3 188E+01	2.639E+01	3.762E+01	0.000E+00	0.847
U-233	2.689E+02	3.185E+02	5.495E+02	0.000E+00	0.489
0-230 ∧M-241	-5.296E+01	3.658E+01	5.941E+01	0.000E+00	-0.891
MI CIL	<b>U</b> , <b>U</b> , <b>U</b> , <b>U</b> , <b>U</b> , <b>U</b> , <b>U</b> , <b>U</b> ,				

			06/04/2006	16.26 05/22/2	006 10:00.	3.597E+00,WG	L28784-11	Ε
A,15L28784	-11		,06/04/2000	10.20,05/22/2	$000 \pm 0.000$	0.1535L090104		
B,15L28784	-11		1 050E.01	,007 つ ワンフロー01	4 386E+01	-0.286		
C, BE-7	,NO ,		-1.253E+U1,	2.737E+01	$7.352E\pm01$	1,891		
C,K-40	,NO,		1.390E+02,	3.95/E+01,	7.3325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5325+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+01, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5525+00, 7.5555+00, 7.55555+00, 7.55555+00, 7.55555+00, 7.5555555+00, 7.555555-00, 7.555555555555555555555555555555555555	0 200		
C,CR-51	,NO,		1.085E+01,	3.2608+01,	5.4240+01,,	-0.395		
C,MN-54	,NO,		-1.813E+00,	2.900E+00,	4.593E+00,,	-0.008		
C,CO-57	,NO,		-3.767E-02,	2.995E+00,	4./96E+00,,	-0.000		
C,CO-58	,NO,		1.393E+00,	3.030E+00,	5.070E+00,,	0.275		
C,FE-59	,NO,	,	4.872E+00,	6.233E+00,	1.0/3E+01,	0.454		
C,CO-60	,NO,	,	-5.412E-01,	2.869E+00,	4.628E+00,,			
C,ZN-65	,NO,	,	8.479E+00,	7.339E+00,	1.109E+01,,	0.764		
C,SE-75	,NO,	,	2.586E+00,	3.992E+00,	6.715E+00,,	0.385		
C,SR-85	, NO ,	,	1.931E+01,	3.563E+00,	6.687E+00,,	2.888		
C.Y-88	, NO	,	4.098E-01,	3.415E+00,	5.656E+00,,	0.072		
C.NB-94	, NO		-2.057E+00,	2.743E+00,	4.365E+00,,	-0.471		
C.NB-95	, NO	,	2.911E+00,	3.131E+00,	5.350E+00,,	0.544		
$C_{2}ZR - 95$	, NO		-6.851E-01,	5.607E+00,	9.144E+00,,	-0.075		
C MO - 99	NO	,	-1.824E+02,	5.790E+02,	9.370E+02,,	-0.195		
C RII-103	NO		2.151E+00,	3.635E+00,	6.041E+00,,	0.356		
C $RU = 106$	NO	,	3.424E+00.	2.789E+01,	4.419E+01,,	0.077		
$C_{\Lambda C} = 110$	NO	,	-1 357E+00.	2.744E+00,	4.425E+00,,	-0.307		
C CN 112		'	-5.692E-01	4.058E+00,	6.627E+00,,	-0.086		
C, SN-113		'	3 382E+00	7 649E+00.	5.381E+00,,	0.628		
C, SB = 124		'	-5.741E+00	8.250E+00,	1.318E+01,	-0.436		
C, SB-125		'	- 9.7410100, 1 810F±01	4 020E+01	6.666E+01,	0.272		
C, TE-129M	, NO	'	T.0TUE+UI,	9.397E+00	1.459E+01.	0.511		
C, I-131	, NO	'	7.459E+00,	4.634E+00	6 864E+00.	1.137		
C, BA-133	, NO	'	1.004E+00,	$4.054 \pm 00,$	5.354E+00	2.305		
C,CS-134	, NO	'	1.234E+UL,	6.052E+00	9.594 <u>0</u> 100,	-0.285		
C,CS-136	, NO	'	-2.4/5E+00,	5.4416+00,	4 838E+00,	-0 141		
C,CS-137	, NO	,	-6.806E-01,	2.965E+00,	4.0305+00,	0 251		
C,CE-139	, NO	1	1.239E+00,	2.992E+00,	4.9525+00,	-0.356		
C,BA-140	, NO	,	-1.171E+01,	2.028E+01,	3.2946+01,	, -0.330		
C,LA-140	, NO	,	-1.977E+00,	6.419E+00,	1.0366+01,	, -0.101		
C,CE-141	, NO	,	4.279E+00,	7.491E+00,	1.050E+01,	, 0.407		
C,CE-144	, NO	,	9.957E-01,	2.639E+01,	3.655E+01,	, 0.027		
C,EU-152	, NO	,	-9.230E+00,	1.074E+01,	1.431E+01,	, -0.645		
C,EU-154	, NO	,	5.364E-01,	6.138E+00,	9.846E+00,	, 0.054		
C,RA-226	, NO	,	-6.403E+01,	7.580E+01,	1.148E+02,	, -0.558		
C,AC-228	, NO	,	1.178E+01,	1.068E+01,	1.834E+01,	, 0.642		
C.TH-228	, NO	,	8.690E-01,	5.596E+00,	8.811E+00,	, 0.099		
C.TH-232	, NO	,	1.173E+01,	1.064E+01,	1.826E+01,	, 0.642		
C.U-235	, NO	,	3.188E+01,	2.639E+01,	3.762E+01,	, 0.847		
C.U-238	, NO	,	2.689E+02,	3.185E+02,	5.495E+02,	, 0.489		
C.AM-241	, NO	,	-5.296E+01,	3.658E+01,	5.941E+01,	, -0.891		
	,	1	/	,				

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LIMS: Sec. Review: Analyst:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 12:54:47.26 TBE23 03017322 HpGe ******* Aquisition Date/Time: 4-JUN-2006 09:33:31.57 LIMS No., Customer Name, Client ID: WG L28784-12 EX BRAID Sample ID : 23L28784-12 Smple Date: 22-MAY-2006 10:30:00. Geometry : 233L082404 Quantity : 3.24610E+00 L BKGFILE : 23BG060306MT Start Channel : 50 Energy Tol : 1.50000 Real Time : 0 03:21:08.27 End Channel : 4090 Pk Srch Sens: 5.00000 Live time : 0 03:20:59.79 MDA Constant : 0.00 Library Used: LIBD Pk It Energy Area Bkgnd FWHM Channel %Eff Cts/Sec %Err Fit
LIMS No., Customer Name, Client ID: WG L28784-12 EX BRAID Sample ID : 23L28784-12 Smple Date: 22-MAY-2006 10:30:00. Geometry : 233L082404 Guantity : 3.24610E+00 L Start Channel : 50 Energy Tol : 1.50000 Real Time : 0 03:21:08.27 End Channel : 4090 Pk Srch Sens: 5.00000 Live time : 0 03:20:59.79 MDA Constant : 0.00 Library Used: LIBD Pk It Energy Area Bkgnd FWHM Channel %Eff Cts/Sec %Err Fit
Sample ID: 23L28784-12Smple Date: 22-MAY-2006 10:30:00.Sample Type: WGGeometry : 233L082404Quantity: 3.24610E+00 LBKGFILE : 23BG060306MTStart Channel: 50Energy Tol : 1.50000End Channel: 4090Pk Srch Sens: 5.00000MDA Constant: 0.00Library Used: LIBDPk It EnergyArea Bkgnd FWHM Channel %EffCts/Sec %ErrCts/Sec %ErrFit
Pk It Energy Area Bkgnd FWHM Channel %Eff Cts/Sec %Err Fit
1       4       33.77*       22       15       1.19       67.86       8.22E-02       1.81E-03       75.3       2.89E+00         2       0       92.61*       4       532       0.84       185.46       1.94E+00       3.56E-04****         3       0       139.69*       68       302       1.59       279.56       2.32E+00       5.67E-03       45.6         4       0       185.29*       28       346       1.15       370.70       2.18E+00       2.36E-03134.2         5       0       198.38*       87       307       1.61       396.86       2.11E+00       7.21E-03       38.7         6       0       240.03       138       513       4.12       480.09       1.89E+00       1.14E-02       38.8         7       0       353.50       54       264       4.94       706.89       1.43E+00       4.45E-03       71.2         8       0       866.19       45       39       1.68       1731.93       7.33E-01       3.74E-03       34.5         9       9       910.99*       45       33       3.42       1821.52       7.08E-01       3.76E-03       45.9         10       0

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	al					
	- 2 L				Uncorrected	d Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
RA-226	186.21	28	3.28*	2.176E+00	2.751E+01	2.751E+01	268.43
AC-228	835.50		1.75	7.515E-01	L:	ine Not Found	
	911.07	45	27.70*	7.084E-01	1.587E+01	1.593E+01	69.01
TH-228	238.63	138	44.60*	1.893E+00	1.127E+01	1.141E+01	77.57
	240.98	138	3.95	1.893E+00	1.272E+02	1.289E+02	77.57

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 09:33:31 Sample ID : 23L28784-12 11 Total number of lines in spectrum 8 Number of unidentified lines Number of lines tentatively identified by NID 3 27.27% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 

 Nuclide
 Hlife
 Decay
 pCi/L
 pCi/L
 2-Sigma Error
 %Error Flags

 RA-226
 1600.00Y
 1.00
 2.751E+01
 2.751E+01
 7.385E+01
 268.43

 AC-228
 5.75Y
 1.00
 1.587E+01
 1.593E+01
 1.100E+01
 69.01

 TH-228
 1.91Y
 1.01
 1.127E+01
 1.141E+01
 0.885E+01
 77.57

 Total Activity : 5.464E+01 5.486E+01 Grand Total Activity : 5.464E+01 5.486E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit

"E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 09:33:31 Sample ID : 23L28784-12 Channel Left Pw Cts/Sec %Err %Eff Flaqs Bkgnd FWHM It Enerqy Area 65 19 1.81E-03 **** 8.22E-02 22 15 1.19 67.86 33.77 4 9 3.56E-04 **** 1.94E+00 0.84 185.46 181 532 4 0 92.61 2.32E+00 279.56 277 6 5.67E-03 91.2 1.59 302 68 0 139.69 8 7.21E-03 77.4 2.11E+00 396.86 393 1.61 198.38 87 307 0 697 17 4.45E-03 **** 1.43E+00 4.94 706.89 54 264 0 353.50 1731.93 1724 13 3.73E-03 64.5 7.33E-01 1.68 45 39 866.19 0 6.15E-01 2243.85 2234 23 3.76E-03 91.8 56 3.43 45 1122.16 0 4.37E-01 3532.47 3523 14 2.21E-03 87.6 23 1.38 1766.29 27 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 11 Total number of lines in spectrum 8 Number of unidentified lines 27.27% 3 Number of lines tentatively identified by NID Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Hlife Decay Nuclide 268.43 7.385E+01 2.751E+01 2.751E+01 RA-226 1600.00Y 1.00 69.01 1.593E+01 1.100E+01 AC-228 5.75Y 1.00 1.587E+01 77.57 1.127E+01 0.885E+01 1.141E+011.01 TH-228 1.91Y _____ _ _ _ _ _ _ _ _ _ _ 5.486E+01 5.464E+01 Total Activity : 5.486E+01 Grand Total Activity : 5.464E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)Nuclide (pCi/L) 0.229 0.000E+00 1.202E+02 7.385E+01 2.751E+01 RA-226 1.023 1.558E+01 0.000E+00 1.100E+01 1.593E+01 AC-228 1.211 0.000E+00 9.422E+00 8.852E+00 TH-228 1.141E+01 ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA Activity K.L. Act error (pCi/L)(pCi/L)Ided Nuclide

					-0 146
BE-7	-6.647E+00	2.710E+01	4.557E+01	0.000±+00	-0.140
NA-24	-5.847E+00	2.586E+00	Hali-Life to		0 012
K-40	9.826E-01	4.130E+01	8.402E+01	0.000E+00	-0.176
CR-51	-9.893E+00	3.321E+01	5.612E+01	0.000E+00	-0.170
MN-54	2.178E+00	2.564E+00	4.717E+00	0.000E+00	0.402
CO-57	-9.313E-01	3.092E+00	5.168E+00	0.000E+00	-0.180
CO-58	1.580E-01	2.876E+00	5.017E+00	0.000E+00	0.031
FE-59	3.178E+00	5.927E+00	1.087E+01	0.000E+00	0.292
CO-60	5.983E-01	2.436E+00	4.444E+00	0.0008+00	0.135
ZN-65	4.832E+00	6.541E+00	1.054E+01	0.000E+00	0.458
SE-75	5.127E-01	4.243E+00	7.286E+00	0.000E+00	0.070
SR-85	1.241E+01	3.611E+00	6.897E+00	0.000E+00	1.799
Y-88	-1.731E+00	2.757E+00	4.643E+00	0.000E+00	-0.373
NB-94	1.300E+00	2.631E+00	4.694E+00	0.000E+00	0.277
NB-95	1.775E+00	3.058E+00	5.487E+00	0.000E+00	0.323
7R-95	-2.094E+00	5.491E+00	9.297E+00	0.000E+00	-0.225
MO-99	-3.516E+02	5.224E+02	8.688E+02	0.000E+00	-0.405
RU-103	1.016E+00	3.605E+00	6.205E+00	0.000E+00	0.164
RU-106	-6.932E+00	2.608E+01	4.473E+01	0.000E+00	-0.155
AG-110m	-3.513E-01	2.673E+00	4.620E+00	0.000E+00	-0.076
SN-113	5.641E-01	3.900E+00	6.694E+00	0.000E+00	0.084
SB-124	-8.186E+00	3.625E+00	5.601E+00	0.000E+00	-1.462
SB-125	-3.743E+00	8.139E+00	1.357E+01	0.000E+00	-0.276
TE-129M	-3.013E+01	4.033E+01	6.614E+01	0.000E+00	-0.455
T_131	6.070E+00	8.989E+00	1.511E+01	0.000E+00	0.402
BD-133	1.369E+00	4.637E+00	6.814E+00	0.000E+00	0.201
CS-134	1.701E+00	3.219E+00	5.680E+00	0.000E+00	0.300
CS = 136	2.009E+00	4.914E+00	8.790E+00	0.000E+00	0.229
CS-137	-8.034E-01	2.843E+00	4.871E+00	0.000E+00	-0.165
CF-139	2.179E+00	3.246E+00	5.519E+00	0.000E+00	0.395
BA = 140	-4.149E+00	2.073E+01	3.480E+01	0.000E+00	-0.119
1.2 - 140	2.810E+00	5.596E+00	1.061E+01	0.000E+00	0.265
CE = 141	3.098E+00	7.924E+00	1.143E+01	0.000E+00	0.271
CE = 144	-2 291E+01	2.877E+01	3.989E+01	0.000E+00	-0.574
$C_{1}$ $152$	-8 884E+00	1.113E+01	1.534E+01	0.000E+00	-0.579
EU = 152 EII = 154	-8568E-01	6.318E+00	1.060E+01	0.000E+00	-0.081
TTT-232	1.587E+01	+ 1.095E+01	1.910E+01	0.000E+00	0.831
111-232 TT_025	2.481E+00	2.898E+01	4.084E+01	0.000E+00	0.061
U-233	2.470E+01	3.143E+02	5.374E+02	0.000E+00	0.046
JM_2/1	-5 309E+00	1.732E+01	2.839E+01	0.000E+00	-0.187
LTLL - 7 - 7 - 7	5.505100				

A,23L28784	-12	,06/04/2006	12:54,05/22/2	006 10:30,	3.246E+00,WG	L28784-12	Ε
B,23L28784	-12	,LIBD	,06/	01/2006 10:14	,233L082404		
C.RA-226	,YES,	2.751E+01,	7.385E+01,	1.202E+02,,	0.229		
C.AC-228	,YES,	1.593E+01,	1.100E+01,	1.558E+01,,	1.023		
C.TH-228	YES,	1.141E+01,	8.852E+00,	9.422E+00,,	1.211		
C.BE-7	.NO .	-6.647E+00,	2.710E+01,	4.557E+01,,	-0.146		
$C_{K-40}$	NO .	9.826E-01,	4.130E+01,	8.402E+01,,	0.012		
C CR = 51	NO .	-9.893E+00,	3.321E+01,	5.612E+01,,	-0.176		
C MN - 54	NO .	2.178E+00,	2.564E+00,	4.717E+00,,	0.462		
C C - 57	NO	-9.313E-01,	3.092E+00,	5.168E+00,,	-0.180		
$C_{1}CO_{-58}$	NO .	1.580E-01,	2.876E+00,	5.017E+00,,	0.031		
C FF-59	NO .	3.178E+00.	5.927E+00,	1.087E+01,,	0.292		
C, C = 60	NO	5.983E-01	2.436E+00,	4.444E+00,,	0.135		
$C_{7N-65}$	NO	4 832E+00.	6.541E+00.	1.054E+01,,	0.458		
$C, \Delta N = 05$	, NO , NO	5.127E-01.	4.243E+00,	7.286E+00,,	0.070		
C, SE=75	, NO , NO	1 241E+01.	3.611E+00,	6.897E+00,,	1.799		
$C, SK^{-0}$	NO	-1 731E+00.	2.757E+00.	4.643E+00,,	-0.373		
C, I = 00	NO	1.300E+00	2.631E+00.	4.694E+00,,	0.277		
C, ND - 94	$, \mathbb{NO}$	1.775E+00	3.058E+00.	5.487E+00,,	0.323		
C, NB - 95	, NO ,	-2.094E+00	5.491E+00	9.297E+00,,	-0.225		
$C, \Delta R = 95$	, INO ,	-2.004B+00,	5.224E+02	8.688E+02,,	-0.405		
C, MO = 99	, INO ,	-3.5100+02, 1 016E+00	3.605E+00.	6.205E+00,,	0.164		
C, RU-103	, NO ,	$\pm .0100+00,$	2.608E+01	4.473E+01,,	-0.155		
C, RU = 106	, NO ,	$-0.952 \pm 00,$ $2.512 \pm 01$	$2.600 \pm 101$	4.620E+00.	-0.076		
C, AG-IIOM	, NO ,	-3.513E-01	3 900E+00.	6.694E+00.	0.084		
C, SN-113	, NO ,	3.0410-01	3.625E+00	5.601E+00.	-1.462		
C, SB-124	, NO ,	-0.100E+00,	9.020E+00, 8.139E+00	1.357E+01.	-0.276		
C, SB-125	, NO ,	-3.743E+00,	0.132⊞+00, / 033⊞±01	6 614E+01.	-0.455		
C, TE-129M	, NO ,	-3.013E+01,	4.0000H+01,	1.511E+01	0.402		
C,1-131	, NO ,	5.070E+00,	0.505H+00, 1 637F+00	6.814E+00.	0.201		
C, BA-133	, NO ,	1.369E+00,	4.0375+00,	5.680E+00	0.300		
C, CS-134	, NO ,	1.701E+00,	3.2195+00,	8 790E+00	0.229		
C,CS-136	,NO,	2.009E+00,	4.9140+00,	4 871E+00	-0.165		
C, CS-137	, NO ,	-8.034E-01,	2.0450+00	5 519E+00	0.395		
C,CE-139	,NO,	2.1/9E+00,	$3.240 \pm 00,$	$3.480E\pm01$	-0 119		
C,BA-140	,NO,	-4.149E+00,	Z.073E+01	$1.061 E \pm 01$	0 265		
C,LA-140	,NO,	2.810E+00,	5.596E+00,	1.1/3E+01	0.203		
C,CE-141	,NO,	3.098E+00,	7.924E+00,	1.1450+01,	-0 574		
C,CE-144	,NO,	-2.291E+01,	2.87/E+01,	3.9090+01,	-0 579		
C,EU-152	,NO,	-8.884E+00,	1.113E+01,	1.054E+01,	-0.081		
C,EU-154	,NO,	, -8.568E-01,	6.318E+00,	1,0000+01,	0.001		
C,TH-232	,NO	, 1.587E+01,	1.095E+01,	1.910E+01,	0.031		
C,U-235	,NO	, 2.481E+00,	2.898E+01,	4.0048+01,,	0.001		
C,U-238	,NO	, 2.470E+01,	3.143E+02,	5.3/4E+02,	0.040		
C,AM-241	,NO	, -5.309E+00,	1.732E+01,	Z.839E+U1,,	-0.10/		

Sec. Review: Analyst: LIMS:

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yne Brov B HpGe	vn Eng.	Labora *** Aqu	tory isiti	Gamma Re on Date/	port: 4-J Time: 4-JU	UN-2006 1 N-2006 12	5:30: :50:5	44.65 2.71 
tomer Na	ame, Cl:	ient ID	: WG	L28785-1	CLINTON			
: 07L23 : WG : 3.344 : 40 : 4090 : 0.00	8785-1 450E+00 Ene: Pk s Lib:	L rgy Tol Srch Se rary Us	. : 1 ens: 5 sed: L	y cr .00000 .00000 IBD	Smple Date Geometry BKGFILE Real Time Live time	22-MAY- : 0735L09 : 07BG050 : 0 02:39 : 0 02:39	2006 0904 506MT :40.2 ):38.3	17:20:00. 8 6
rgy .	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
.86* .63* .40* .84 .12*	62 85 77 35 83	193 326 255 86 76	1.59 1.16 2.06 1.83 1.92	186.54 280.14 397.77 1193.10 1219.68	1.56E+00 2.09E+00 1.98E+00 9.96E-01 9.81E-01	6.43E-03 8.86E-03 8.09E-03 3.64E-03 8.63E-03	45.5 43.0 44.0 57.5 26.8	1.81E+00 1.32E+00 2.12E+00 1.25E+00 1.22E+00
	<pre>yne Brow B HpGe tomer Na : 07L2; : WG : 3.344 : 40 : 4090 : 0.00</pre>	<pre>yne Brown Eng. B HpGe ******** tomer Name, Cl: : 07L28785-1 : WG : 3.34450E+00 : 40 Ene: : 4090 Pk S : 0.00 Lib: Cgy Area 86* 62 63* 85 40* 77 84 35 12* 83</pre>	<pre>yne Brown Eng. Labora B HpGe ******** Aqu tomer Name, Client ID : 07L28785-1 : WG</pre>	<pre>yne Brown Eng. Laboratory B HpGe ******** Aquisiti tomer Name, Client ID: WG : 07L28785-1 : WG : 3.34450E+00 L : 40 Energy Tol : 1 : 4090 Pk Srch Sens: 5 : 0.00 Library Used: L  Cgy Area Bkgnd FWHM 86* 62 193 1.59 63* 85 326 1.16 40* 77 255 2.06 84 35 86 1.83 12* 83 76 1.92</pre>	<pre>yne Brown Eng. Laboratory Gamma Re B HpGe ******** Aquisition Date/ tomer Name, Client ID: WG L28785-1 : 07L28785-1 : WG : 3.34450E+00 L : 40 Energy Tol : 1.00000 : 4090 Pk Srch Sens: 5.00000 : 0.00 Library Used: LIBD  Ggy Area Bkgnd FWHM Channel 86* 62 193 1.59 186.54 63* 85 326 1.16 280.14 40* 77 255 2.06 397.77 84 35 86 1.83 1193.10 12* 83 76 1.92 1219.68</pre>	yne Brown Eng. Laboratory Gamma Report: 4-J         B HpGe ******** Aquisition Date/Time: 4-JU         tomer Name, Client ID: WG L28785-1 CLINTON         : 07L28785-1         : WG         : 3.34450E+00 L         : 40         Energy Tol         : 0.00         Pk Srch Sens: 5.00000         Library Used: LIBD         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *         *	yne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 1         B HpGe ******** Aquisition Date/Time: 4-JUN-2006 12         tomer Name, Client ID: WG L28785-1 CLINTON         : 07L28785-1         : WG         : 3.34450E+00 L         : 40       Energy Tol : 1.00000 Real Time : 0 02:39         : 4090       Pk Srch Sens: 5.00000 Live time : 0 02:39         : 0.00       Library Used: LIBD         : 0.00       Library Used: LIBD         : 40*       77       255       2.06       397.77       1.98E+00       8.86E-03         : 40*       77       255       2.06       397.77       1.98E+00       8.09E-03         : 0.1       : 40       : 1.83       : 1.92       1.219.68       9.81E-01       8.63E-03	yne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 15:30:         B HpGe ******** Aquisition Date/Time: 4-JUN-2006 12:50:5         tomer Name, Client ID: WG L28785-1 CLINTON         : 07L28785-1         : WG         : 3.34450E+00 L         : 40         Energy Tol : 1.00000         Real Ekgnd FWHM Channel         %Eff       Cts/Sec %Err         86*       62       193       1.59       186.54       1.56E+00       6.43E-03       45.5         63*       85       326       1.16       280.14       2.09E+00       8.86E-03       43.0         40*       77       255       2.06       397.77       1.98E+00       8.09E-03       44.0         84       35       86       1.83       1193.10       9.96E-01       3.64E-03       57.5         12*       83       76       1.92       1219.68       9.81E-01       8.63E-03       26.8

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

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Summary of Nuclide ActivityPage : 2Sample ID : 07L28785-1Acquisition date : 4-JUN-2006 12:50:52Total number of lines in spectrum5Number of unidentified lines5Number of lines tentatively identified by NID0**** There are no nuclides meeting summary criteria ****Flags: "K" = Keyline not found"M" = Manually accepted"E" = Manually edited"A" = Nuclide specific abn. limit

L28784 104 of 141

Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 12:50:52 Sample ID : 07L28785-1 Area Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags It Energy 186.54 183 8 6.43E-03 91.0 1.56E+00 62 193 1.59 92.86 1 326 1.16 280.14 277 11 8.86E-03 85.9 2.09E+00 85 139.63 1 255 2.06 397.77 393 12 8.09E-03 88.0 1.98E+00 198.40 77 1 86 1.83 1193.10 1188 13 3.64E-03 **** 9.96E-01 1 595.84 35 76 1.92 1219.68 1213 14 8.63E-03 53.6 9.81E-01 1 609.12 83 Flags: "T" = Tentatively associated Summary of Nuclide Activity 5 Total number of lines in spectrum Number of unidentified lines 5 0.00% Number of lines tentatively identified by NID 0 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited

Interference Report

No interference correction performed

Combined Activity-MDA Report

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-1.762E+01		2.856E+01	4.542E+01	0.000E+00	-0.388
NA-24	-3.037E+00		2.620E+00	Half-Life to	o short	
K-40	3.616E+01		4.375E+01	8.661E+01	0.000E+00	0.417
CR-51	-8.364E+00		3.727E+01	6.046E+01	0.000E+00	-0.138
MN-54	-4.054E-03		3.124E+00	5.115E+00	0.000E+00	-0.001
CO-57	-5.688E-02		3.112E+00	5.135E+00	0.000E+00	-0.011
CO-58	2.273E-01		3.542E+00	5.836E+00	0.000E+00	0.039
FE-59	2.076E+00		7.006E+00	1.180E+01	0.000E+00	0.176
CO-60	1.754E+00		3.125E+00	5.449E+00	0.000E+00	0.322
ZN-65	3.586E+00		6.846E+00	1.172E+01	0.000E+00	0.306
SE-75	-2.380E+00		4.474E+00	7.235E+00	0.000E+00	-0.329
SR-85	2.515E+01		4.320E+00	8.624E+00	0.000E+00	2.917
Y-88	-2.452E+00		3.676E+00	5.600E+00	0.000E+00	-0.438
NB-94	7.919E-01		3.247E+00	5.445E+00	0.000E+00	0.145
NB-95	3.610E+00		3.387E+00	5.969E+00	0.000E+00	0.605
ZR-95	-3.515E+00		5.752E+00	9.047E+00	0.000E+00	-0.389
MO-99	2.082E+02		5.853E+02	9.880E+02	0.000E+00	0.211
RU-103	6.505E+00		3.961E+00	7.062E+00	0.000E+00	0.921
RU-106	-8.335E+00		2.768E+01	4.407E+01	0.000E+00	-0.189
AG-110m	1.353E-01		3.017E+00	5.023E+00	0.000E+00	0.027
SN-113	4.084E+00		4.119E+00	7.030E+00	0.000E+00	0.581
SB-124	1.519E+00		7.960E+00	5.758E+00	0.000E+00	0.264
SB-125	1.591E+00		8.851E+00	1.481E+01	0.000E+00	0.107

## L28784 105 of 141

I-131-1.137E+009.707E+001.571E+010.000E+00-0.07BA-1333.418E+004.745E+007.970E+000.000E+000.42CS-1348.475E+007.165E+006.263E+000.000E+001.35CS-136-7.082E-026.005E+009.836E+000.000E+00-0.00CS-137-6.591E-013.348E+005.489E+000.000E+00-0.12CE-1392.021E-013.259E+005.336E+000.000E+000.03BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	2 9 3 7 0 8 6
BA-1333.418E+004.745E+007.970E+000.000E+000.42CS-1348.475E+007.165E+006.263E+000.000E+001.35CS-136-7.082E-026.005E+009.836E+000.000E+00-0.00CS-137-6.591E-013.348E+005.489E+000.000E+00-0.12CE-1392.021E-013.259E+005.336E+000.000E+000.03BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	9 3 7 0 8 6
CS-1348.475E+007.165E+006.263E+000.000E+001.35CS-136-7.082E-026.005E+009.836E+000.000E+00-0.00CS-137-6.591E-013.348E+005.489E+000.000E+00-0.12CE-1392.021E-013.259E+005.336E+000.000E+000.03BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	3 7 0 8 6
CS-136-7.082E-026.005E+009.836E+000.000E+00-0.00CS-137-6.591E-013.348E+005.489E+000.000E+00-0.12CE-1392.021E-013.259E+005.336E+000.000E+000.03BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	7 0 8 6
CS-137-6.591E-013.348E+005.489E+000.000E+00-0.12CE-1392.021E-013.259E+005.336E+000.000E+000.03BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	0 8 6
CE-1392.021E-013.259E+005.336E+000.000E+000.03BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	8
BA-1406.964E+002.130E+013.559E+010.000E+000.19LA-1403.555E+006.862E+001.185E+010.000E+000.30	6
1.3 - 1.40 3 555E+00 6 862E+00 1.185E+01 0.000E+00 0.30	0
	0
CE-141 3.426E+00 8.077E+00 1.147E+01 0.000E+00 0.29	9
CE-144 1.772E+01 2.778E+01 4.003E+01 0.000E+00 0.44	3
EU-152 -1.752E+01 1.085E+01 1.649E+01 0.000E+00 -1.06	3
EU-154 1.512E+00 6.379E+00 1.061E+01 0.000E+00 0.14	:3
RA-226 2.562E+01 7.886E+01 1.322E+02 0.000E+00 0.19	)4
AC-228 -8.184E-01 1.127E+01 1.911E+01 0.000E+00 -0.04	:3
TH-228 2.135E+00 6.213E+00 1.070E+01 0.000E+00 0.20	)0
TH-232 -8.150E-01 1.122E+01 1.903E+01 0.000E+00 -0.04	:3
U-235 4.158E+01 2.858E+01 4.258E+01 0.000E+00 0.97	17
U-238 1.673E+02 3.166E+02 5.488E+02 0.000E+00 0.30	)5
AM-241 -9.567E+01 3.152E+01 4.616E+01 0.000E+00 -2.07	12

A,07L28785	-1	,06/04/2006	15:30,05/22/2	006 17:20,	3.345E+00,WG	L28785-1	CL
B,07L28785	-1	,LIBD	,06/	02/2006 08:24	,07356090904		
C,BE-7	,NO ,	-1.762E+01,	2.856E+01,	4.542E+01,,	-0.388		
C,K-40	,NO,	3.616E+01,	4.375E+01,	8.661E+01,,	0.417		
C, CR-51	,NO,	-8.364E+00,	3.727E+01,	6.046E+01,,	-0.138		
C, MN-54	,NO ,	-4.054E-03,	3.124E+00,	5.115E+00,,	-0.001		
C.CO-57	NO ,	-5.688E-02,	3.112E+00,	5.135E+00,,	-0.011		
$C_{-}C_{0}-58$	NO .	2.273E-01,	3.542E+00,	5.836E+00,,	0.039		
C FE-59	NO .	2.076E+00,	7.006E+00,	1.180E+01,,	0.176		
C, CO = 60	NO	1.754E+00.	3.125E+00,	5.449E+00,,	0.322		
$C_{7N-65}$	NO /	3586E+00	6.846E+00,	1.172E+01,,	0.306		
C, ZN = 05	, NO , NO	-2.380E+00	4 474E+00.	7.235E+00,,	-0.329		
C, SE = 75	, NO , NO	2.5000+00	4 320E+00	8.624E+00.	2.917		
C, SR-05	, NO ,	$2.515\pm01$	3.676E+00	5.600E+00.	-0.438		
C, Y-88	, NO ,	-2.4525+00,	3.070100, 3.2475+00	5.445E+00.	0.145		
C,NB-94	,NO ,	7.919E-01,	3.2475+00	5.969E+00	0.605		
C,NB-95	,NO ,	3.6100+00,	5.3076+00,	9.000000000,	-0 389		
C, ZR-95	,NO,	-3.515E+00,	5.752E+00	9.0475+00,,	0.211		
C,MO-99	,NO ,	2.082E+02,	$5.853 \pm 102$ ,	9.000E+02,,	0.211		
C,RU-103	,NO,	6.505E+00,	3.961E+00,	7.06ZE+00,,	0.921		
C,RU-106	,NO,	-8.335E+00,	2.768E+01,	4.40/E+01,,	-0.109		
C,AG-110m	,NO ,	1.353E-01,	3.017E+00,	5.023E+00,,	0.027		
C,SN-113	,NO ,	4.084E+00,	4.119E+00,	7.030E+00,,	0.581		
C,SB-124	,NO ,	1.519E+00,	7.960E+00,	5.758E+00,,	0.264		
C,SB-125	,NO ,	1.591E+00,	8.851E+00,	1.481E+01,,	0.107		
C,TE-129M	,NO,	-1.284E+00,	4.505E+01,	7.433E+01,,	-0.017		
C,I-131	,NO,	-1.137E+00,	9.707E+00,	1.571E+01,,	-0.072		
C,BA-133	,NO,	3.418E+00,	4.745E+00,	7.970E+00,,	0.429		
C.CS-134	, NO ,	8.475E+00,	7.165E+00,	6.263E+00,,	1.353		
C.CS-136	NO .	-7.082E-02,	6.005E+00,	9.836E+00,,	-0.007		
C.CS-137	. NO .	-6.591E-01,	3.348E+00,	5.489E+00,,	-0.120		
$C_{CE} = 139$	.NO .	2.021E-01,	3.259E+00,	5.336E+00,,	0.038		
C BA - 140	NO .	6.964E+00,	2.130E+01,	3.559E+01,,	0.196		
$C I \Delta - 140$	NO	3.555E+00,	6.862E+00,	1.185E+01,,	0.300		
C, CF = 141	NO /	3 426E+00.	8.077E+00,	1.147E+01,,	0.299		
C, CE = 141	, NO ,	1.772E+01	2.778E+01.	4.003E+01,,	0.443		
C, CE = 144	, NO ,	-1 752E+01	1 085E+01.	1.649E+01,,	-1.063		
C, EU-152	, NO ,	-1.520+01	$5.000\pm000$	1 061E+01.	0.143		
C, EU = 154	, NO ,	1.5120+00	$7.886E\pm01$	1 322E+02.	0.194		
C, RA-226	, NO ,	2.302ETUI,	1.107E+01	1.911E+01	-0.043		
C, AC-228	,NO,	-0.104E-01,	1.12/D+01	1 070F+01	0 200		
C, TH-228	, NO ,	2.135E+00,	0.213ET00,	1 0 0 3 E + 01	-0.043		
C,TH-232	, NO ,	-8.150E-01,	1.144B+V1, 0.0505.01	1 258〒±01	0 977		
C,U-235	, NO ,	4.158E+01,	$\angle .000 \pm +01$	$\pm .200ET011$	0.305		
C,U-238	,NO,	L.673E+02,	3.100E+UZ,	$3.400E+UZ_{1}$	-2 072		
C,AM-241	,NO,	-9.567E+01,	3.1528+01,	4.010E+V1,,	-2.072		

9.11E-01 2.97E-03 69.1 1.04E+00

5.78E-01 5.30E-03 25.4 1.76E+00

5.69E-01 2.38E-03 59.9 6.20E-01

4.69E-01 1.39E-03112.3 4.69E-01

3.99E-01 9.58E-04 70.3 9.77E-01

1.42 1218.72 8.96E-01 1.57E-03120.0 1.05E+00

Sec. Review: Analyst: LIMS:

			-							
==== VAX/ TBE1	==== VMS .3 P-	Teledyne B 10727B HpG	======================================	. Labora **** Aqu	====== atory uisiti	======= Gamma Re on Date/	eport: 4-J Time: 4-JU	EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE	6:16: :57:5	56.01 0.18
LIMS	No.	, Customer	Name, C	lient II	D: WG	L28785-2	2 CLINTON			
Samp Samp Quan Star End MDA	ole I ntity ct Ch Chan Cons	D : 13 Type : WG : 3. mannel : 25 mel : 40 stant : 0.	L28785-2 50540E+00 Ene 90 Pk 00 Lil	) L ergy To Srch S orary U	l : 1 ens: 5 sed: I	.50000 .00000 IBD	Smple Date Geometry BKGFILE Real Time Live time	2: 23-MAY- : 1335L09 : 13BG060 : 0 03:18 : 0 03:18	-2006 90904 )306MT 3:52.2 3:48.8	08:30:00. 28 39
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	5	63.77*	90 113	440 301	1.66	127.56	6.36E-01 7.38E-01	7.57E-03 9.44E-03	48.0 27.6	3.98E+00
2	2	77 10*	8	257	0.89	154.22	1.09E+00	6.81E-043	336.0	8.28E+00
2 2	1	140 14*	41	356	1.38	280.23	2.02E+00	3.48E-03	86.2	2.89E+00
5	1	185.69*	35	281	1.19	371.28	1.95E+00	2.94E-031	100.3	3.37E+00
6	1	198.60*	91	271	1.46	397.09	1.90E+00	7.62E-03	36.5	2.08E+00
7	1	238.63*	44	260	0.88	477.12	1.73E+00	3.70E-03	74.9	1.12E+00
8	1	351.82*	8	149	1.51	703.47	1.34E+00	6.77E-043	310.8	1.80E+00

1.23 1192.28

9.69 2194.41

1.97 2924.20

1.65 3697.30

2.98 2242.15

Nuclide Line Activity Report

596.19

609.41*

1461.07*

1 1096.81

1 1120.65*

1 1846.67

91

1

1

10

11

12

13

14

35

19

63

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17

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123

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15

Flag: "*" = Peak area was modified by background subtraction

34

Nuclide	Type: natura	al					
	<i>x x</i>				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
K-40	1460.81	17	10.67*	4.688E-01	2.149E+01	2.149E+01	224.50
RA-226	186.21	35	3.28*	1.946E+00	3.553E+01	3.553E+01	200.66
TH-228	238.63	44	44.60*	1.733E+00	3.694E+00	3.739E+00	149.77
	240.98		3.95	1.723E+00	Li:	ne Not Found	
U-235	143.76		10.50*	2.023E+00	Li	ne Not Found	
0 _ 0 0	163.35		4.70	2.011E+00	Li	ne Not Found	
	185.71	35	54.00	1.946E+00	2.158E+00	2.158E+00	200.66
	205.31		4.70	1.871E+00	Li	ne Not Found	

Flaq: "*" = Keyline

L28784 108 of 141

Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 12:57:50 Sample ID : 13L28785-2 14 Total number of lines in spectrum Number of unidentified lines 11 Number of lines tentatively identified by NID 3 21.43% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr %Error Flags 2-Sigma Error pCi/L pCi/L Decay Nuclide Hlife 224.50 4.824E+01 2.149E+01 1.00 2.149E+01 K-40 1.28E+09Y 200.66 7.130E+01 1.00 3.553E+01 3.553E+01 RA-226 1600.00Y 5.600E+00 149.77 3.739E+00 3.694E+00 1.01 1.91Y TH-228 4.330E+00 200.66 K 2.158E+00 2.158E+00 U-235 7.04E+08Y 1.00 _____ _ _ _ _ _ _ _ _ _ 6.291E+01 Total Activity : 6.287E+01 Grand Total Activity : 6.287E+01 6.291E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

3 Page : Unidentified Energy Lines Acquisition date : 4-JUN-2006 12:57:50 Sample ID : 13L28785-2 %Eff Flags Channel Left Pw Cts/Sec %Err Bkgnd FWHM Area It Energy 123 14 7.57E-03 96.0 6.36E-01 1.66 127.56 63.77 90 440 5 7.38E-01 123 14 9.44E-03 55.2 301 1.14 133.47 66.72 113 5 147 10 6.81E-04 **** 1.09E+000.89 154.22 257 8 3 77.10 8 3.48E-03 **** 2.02E+00 1.38 280.23 276 140.14 356 41 1 9 7.62E-03 72.9 1.90E+00393 397.09 1.46 91 271 1 198.60 1.34E+00 9 6.77E-04 **** 700 703.47 149 1.51 351.82 8 1 1192.28 1185 14 2.97E-03 **** 9.11E-01 35 123 1.23 596.19 1 1218.72 1214 11 1.57E-03 **** 8.96E-01 96 1.42 19 609.41 1 2194.41 2191 17 5.30E-03 50.8 5.78E-01 43 9.69 63 1 1096.81 2242.15 2235 17 2.38E-03 **** 5.69E-01 38 2.98 1120.65 28 1 3697.30 3690 10 9.58E-04 **** 3.99E-01 1.65 11 15 1846.67 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 14 Total number of lines in spectrum Number of unidentified lines 11 21.43% Number of lines tentatively identified by NID 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Hlife Decay Nuclide 224.50 4.824E+01 2.149E+01 1.28E+09Y 1.00 2.149E+01 K-40 200.66 7.130E+01 3.553E+01 3.553E+01 1600.00Y 1.00 RA-226 149.77 5.600E+00 3.739E+00 1.01 3.694E+00 1.91Y TH-228 _____ _____ 6.076E+01 Total Activity : 6.071E+01 6.076E+01 Grand Total Activity : 6.071E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)Nuclide (pCi/L) 0.563 0.000E+00 3.817E+01 4.824E+01 K-40 2.149E+01 0.333 0.000E+00 1.066E+02 7.130E+01 3.553E+01 RA-226 0.460 0.000E+00

5.600E+00

8.128E+00

---- Non-Identified Nuclides ----

TH-228

3.739E+00

Nuclide	Key-Line Activity K. (pCi/L) Id	L. Act error ed	MDA (pCi/L)	MDA error	Act/MDA
DT7	2 439E+01	2.677E+01	4.575E+01	0.000E+00	0.533
	-1 119E+00	1.154E+00	Half-Life to	o short	
CD E1	-1 091E+01	3.135E+01	5.145E+01	0.000E+00	-0.212
UR-DI MN EA	4 117E+00	2.972E+00	5.273E+00	0.000E+00	0.781
MIN = 54	3 719E-01	2.813E+00	4.702E+00	0.000E+00	0.079
CO=57	7 174E - 01	3.035E+00	5.047E+00	0.000E+00	0.142
	/ 352E+00	5.963E+00	1.040E+01	0.000E+00	0.419
FE-59	3.364E+00	2.742E+00	4.979E+00	0.000E+00	0.676
CU-60	3 3568+00	6.696E+00	9.872E+00	0.000E+00	0.340
ZN-05	_3 898E-01	4.015E+00	6.485E+00	0.000E+00	-0.060
	$-5.050 \pm 01$	3 785E+00	7.179E+00	0.000E+00	2.352
SK-05	4 039E+01	3,491E+00	5.819E+00	0.000E+00	0.694
1-00 ND 04	-6.765E-02	2.595E+00	4.273E+00	0.000E+00	-0.016
ND 94	7 901E - 01	3.055E+00	5.100E+00	0.000E+00	0.155
	-1 063E+00	5.867E+00	9.534E+00	0.000E+00	-0.112
MO-99	-1 040E+02	4.512E+02	7.313E+02	0.000E+00	-0.142
MO-JJ DII_103	-6.922E-01	3.544E+00	5.722E+00	0.000E+00	-0.121
RU-105	-6.291E+00	2.669E+01	4.373E+01	0.000E+00	-0.144
AG = 110m	-6.531E-01	2.626E+00	4.280E+00	0.000E+00	-0.153
SN-113	1.546E+00	3.746E+00	6.291E+00	0.000E+00	0.246
SR-124	-4.432E+00	7.387E+00	4.850E+00	0.000E+00	-0.914
SB-125	1.488E+00	7.820E+00	1.296E+01	0.000E+00	0.115
TE-129M	2.416E+01	3.964E+01	6.683E+01	0.000E+00	0.361
T-131	-5.141E+00	7.745E+00	1.243E+01	0.000E+00	-0.414
RA-133	2.238E+00	4.204E+00	6.125E+00	0.000E+00	0.365
CS = 134	-4.760E-01	5.291E+00	4.671E+00	0.000E+00	-0.102
CS - 136	-1.962E+00	4.719E+00	7.478E+00	0.000E+00	-0.262
CS = 137	-3.577E-01	2.970E+00	4.720E+00	0.000E+00	-0.076
CE = 1.39	8.368E-01	2.892E+00	4.811E+00	0.000E+00	0.174
BA-140	-2.154E+01	1.919E+01	2.915E+01	0.000E+00	-0.739
LA - 140	-2.241E+00	5.852E+00	9.280E+00	0.000E+00	-0.241
CE - 141	2.586E+00	6.562E+00	9.451E+00	0.000E+00	0.274
CE - 144	1.233E+01	2.513E+01	3.641E+01	0.000E+00	0.339
EU-152	-6.599E+00	9.787E+00	1.416E+01	0.000E+00	-0.466
EU-154	4.096E-01	5.693E+00	9.498E+00	0.000E+00	0.043
AC-228	-1.640E+01	1.144E+01	1.633E+01	0.000E+00	-1.005
TH-232	-1.634E+01	1.140E+01	1.627E+01	0.000E+00	-1.005
U-235	-5.427E+00	2.459E+01	3.421E+01	0.000E+00	-0.159
U-238	9.011E+01	3.445E+02	5.657E+02	0.000E+00	0.159
AM-241	1.474E+00	2.857E+01	4.008E+01	0.000E+00	0.037

						T 0 0 7 0 5 0	CTT
A,13L28785	-2	,06/04/2006	16:16,05/23/2	006 08:30,	3.505E+00,WG	L28785-2	СL
B,13L28785	-2	,LIBD	,06/	01/2006 10:13	,1335L090904		
C.K-40	,YES,	2.149E+01,	4.824E+01,	3.817E+01,,	0.563		
C,RA-226	,YES,	3.553E+01,	7.130E+01,	1.066E+02,,	0.333		
C.TH-228	,YES,	3.739E+00,	5.600E+00,	8.128E+00,,	0.460		
C.BE-7	, NO ,	2.439E+01,	2.677E+01,	4.575E+01,,	0.533		
C.CR-51	, NO ,	-1.091E+01,	3.135E+01,	5.145E+01,,	-0.212		
C. MN-54	NO .	4.117E+00,	2.972E+00,	5.273E+00,,	0.781		
$C_{1}C_{2}-57$	NO .	3.719E-01,	2.813E+00,	4.702E+00,,	0.079		
$C_{1}C_{0}-58$	NO .	7.174E-01,	3.035E+00,	5.047E+00,,	0.142		
C FE-59	NO .	4.352E+00,	5.963E+00,	1.040E+01,,	0.419		
C C C - 60	NO .	3.364E+00,	2.742E+00,	4.979E+00,,	0.676		
$C_{\rm ZN-65}$	NO .	3.356E+00,	6.696E+00,	9.872E+00,,	0.340		
C SE - 75	NO .	-3.898E-01,	4.015E+00,	6.485E+00,,	-0.060		
C, DD, J	NO /	1.689E+01.	3.785E+00,	7.179E+00,,	2.352		
C, X-88	NO ,	4.039E+00.	3.491E+00,	5.819E+00,,	0.694		
$C, NB_{-9/}$	NO	-6.765E-02.	2.595E+00,	4.273E+00,,	-0.016		
C, ND - 95	NO	7901E-01	3.055E+00,	5.100E+00,,	0.155		
C, NB = 95	, NO ,	-1.063E+00.	5.867E+00,	9.534E+00,,	-0.112		
$C, \Delta R = 95$	NO	-1.040E+02	4.512E+02,	7.313E+02,,	-0.142		
C, MO = 99	NO	-1.0400+02, -6.922E-01	3544E+00.	5.722E+00,,	-0.121		
C, RU=103	, NO ,	-6.291F±00	2.669E+01.	4.373E+01,,	-0.144		
C, RU = 100	, NO , NO	-6.531E-01	$2.6005\pm001$	4.280E+00,,	-0.153		
C, AG-IIU	, NO , NO	-0.551E 01, 1 5/6F+00	3.746E+00	6.291E+00,,	0.246		
C, SN-113	, INO , NO	1.3400+00,	7.387E+00	4.850E+00,	-0.914		
C, SB-124	, INO ,	-4.4325+00, 1 /00E,00	$7.820E\pm00$	1 296E+01.	0.115		
C, SB-125	, INO ,	1.4000+00,	3.964E+01	6 683E+01.	0.361		
C, TE-129M	, NO ,	2.4100+01,	7.745E+00	1 243E+01.	-0.414		
C, I - I 3 I	, INO ,	-5.1416+00,	1.7450+00, 1.204E+00	6.125E+00	0.365		
C, BA-133	, NO ,	$2.230\pm00$	4.204B+00, 5.201F+00	4.671E+00	-0.102		
C, CS-134	, NO ,	-4.760E-01,	J.ZJIH+00, 1 719F+00	7.478E+00	-0.262		
C, CS-136	,NO ,	-1.962E+00,	4.7190+00,	/ 720E+00	-0.076		
C, CS-137	,NO,	-3.57/E-01,	2.970E+00,	4.720E700,,	0.174		
C,CE-139	,NO,	8.368E-01,	2.092E+00,	2.015E+01	-0.739		
C,BA-140	,NO,	-2.154E+01,	1.9196+01	2.9196+01,	-0.241		
C,LA-140	,NO,	-2.241E+00,	5.852E+00,	9.2000+00,,	0.241		
C,CE-141	,NO,	2.586E+00,	6.562E+00,	9.451E+00,,	0.274		
C,CE-144	,NO,	1.233E+01,	2.513E+01,	3.641E+01,	-0.466		
C,EU-152	,NO,	-6.599E+00,	9.787E+00,	1.4168+01,,	-0.400		
C,EU-154	,NO,	4.096E-01,	5.693E+00,	9.498E+00,,	1 005		
C,AC-228	,NO,	-1.640E+01,	1.1448+01,	1.033E+U1,,	-1.005		
C,TH-232	,NO,	-1.634E+01,	1.140E+01,	1.62/E+U1,,	-1.005 0 1EQ		
C,U-235	,NO,	-5.427E+00,	2.459E+01,	3.4ZIE+01,,	-U.ID7 0 150		
C,U-238	,NO ,	9.011E+01,	3.445E+02,	5.65/E+U2,,	0.159		
C,AM-241	,NO,	1.474E+00,	2.857E+01,	4.008E+01,,	0.037		

Sec. Review: Analyst: LIMS: _

									====			
==== VAX/ TBE2	==== VMS 3 03	============== Teledyne B 017322 HpG	======================================	Labora *** Aqu	tory isiti	Gamma Re on Date/	port: 4-J Time: 4-J	UN-2006 1 UN-2006 1	6:19: 2:57:	11.05 50.74		
LIMS	LIMS No., Customer Name, Client ID: WG L28785-3 CLINTON											
Samp Samp Quan Star End MDA	ole I ole T ntity Char Cons	D : 23 Type : WG nannel : 50 nel : 40 stant : 0.	L28785-3 56800E+00 Ene 90 Pk 00 Lik	) L ergy Tol Srch Se orary Us	l : 1 ens: 5 sed: I	.50000 .00000 IBD	Smple Date Geometry BKGFILE Real Time Live time	: 23-MAY- : 2335L09 : 23BG060 : 0 03:21 : 0 03:20	2006 0704 306MT :07.5 ):59.0	09:30:00. 0 6		
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit		
1	5	33.85* 35.45*	57 18	16 85	1.30 1.94	68.03 71.22	9.48E-02 1.21E-01	4.73E-03 1.48E-031	33.4 186.7	2.86E+00		
2	5	38 04*	53	187	1.95	76.39	1.70E-01	4.44E-03	63.1			
	5	/1 10*	3	252	1.90	82.52	2.40E-01	2.27E-04	****			
4 E	5	42 00*	31	396	1.40	126.71	9.38E-01	2.58E-031	121.1	1.51E+00		
5	5	65 98	122	458	1.72	132.24	1.03E+00	1.01E-02	35.3			
0	5	00.00						4 04 7 00	70 0			

6565.981224581.72132.241.03E+001.01E-0235.370139.84*584951.59279.852.05E+004.84E-0372.980596.7295982.051193.138.73E-017.88E-0327.6901460.77*5391.842921.174.59E-013.95E-04410.4

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natural				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĊi/L	%Error
K-40	1460.81	5	10.67*	4.595E-01	6.105E+00	6.105E+00	820.87

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 12:57:50 Sample ID : 23L28785-3 9 Total number of lines in spectrum Number of unidentified lines 8 Number of lines tentatively identified by NID 1 11.11% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma pCi/L 2-Sigma Error %Error Flags Decay pCi/L Hlife Nuclide 6.105E+00 50.11E+00 820.87 K-40 1.28E+09Y 1.00 6.105E+00 _____ _____ Total Activity : 6.105E+00 6.105E+00 Grand Total Activity : 6.105E+00 6.105E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 12:57:50 Sample ID : 23L28785-3 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM Area It Energy 9.48E-02 65 26 4.73E-03 66.7 68.03 57 16 1.30 33.85 5 65 26 1.48E-03 **** 1.21E-01 71.22 85 1.94 18 5 35.45 65 26 4.44E-03 **** 1.70E-01 1.95 76.39 187 53 5 38.04 2.40E-01 65 26 2.27E-04 **** 82.52 1.90 252 3 5 41.10 123 14 2.58E-03 **** 9.38E-01 126.71 396 1.40 5 63.22 31 1.03E+00 123 14 1.01E-02 70.6 132.24 1.72 458 5 65.98 122 2.05E+00 9 4.84E-03 **** 276 495 1.59 279.85 58 0 139.84 1193.13 1183 19 7.88E-03 55.3 8.73E-01 2.05 98 95 596.72 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 9 Total number of lines in spectrum 8 Number of unidentified lines Number of lines tentatively identified by NID 11.11% 1 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L Hlife Decav pCi/L Nuclide 820.87 50.11E+00 6.105E+00 6.105E+00 1.00 K-40 1.28E+09Y _ _ _ _ _ _ _ _ _ _ _____ 6.105E+00 6.105E+00 Total Activity : 6.105E+00 Grand Total Activity : 6.105E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L) (pCi/L)Nuclide 0.140 0.000E+00 4.353E+01 5.011E+01 K-40 6.105E+00 ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA Activity K.L. Act error (pCi/L)Ided (pCi/L)Nuclide -0.080 0.000E+00 4.433E+01 2.620E+01 BE-7 -3.530E+00 Half-Life too short -2.805E+00 1.067E+00 NA-24 -0.221 5.431E+01 0.000E+00 3.224E+01 -1.199E+01 CR-51

MNI = 5A	-1 662E+00	2.690E+00	4.467E+00	0.000E+00	-0.372
MN = 54 CO = 57	3.018E+00	3.216E+00	5.525E+00	0.000E+00	0.546
$CO_{-58}$	-3.380E-01	2.923E+00	5.036E+00	0.000E+00	-0.067
CU-50 FF-59	1.699E+00	5.295E+00	9.666E+00	0.000E+00	0.176
CO-60	-2.589E-01	2.692E+00	4.724E+00	0.000E+00	-0.055
7N - 65	3.099E+00	5.834E+00	1.067E+01	0.000E+00	0.290
2N-05 GF-75	3.651E+00	4.020E+00	7.084E+00	0.000E+00	0.515
CD_85	1 636E+01	3.477E+00	6.931E+00	0.000E+00	2.360
N-88	-4 989E-01	3.151E+00	5.576E+00	0.000E+00	-0.089
ND-9/	$1.909\pm02$ 1.809E+00	2.536E+00	4.592E+00	0.000E+00	0.394
ND-94 ND-95	-1 218E+00	3.016E+00	5.097E+00	0.000E+00	-0.239
ND-95	2815E+00	5.437E+00	9.726E+00	0.000E+00	0.289
MO-99	3 136E+02	4.287E+02	7.787E+02	0.000E+00	0.403
MO-55	2 854E+00	3.367E+00	5.970E+00	0.000E+00	0.478
RU-105	-1 952E+01	2.537E+01	4.226E+01	0.000E+00	-0.462
RO=100	-1 636E+00	2.643E+00	4.434E+00	0.000E+00	-0.369
CN_113	-1 373E+00	3.845E+00	6.457E+00	0.000E+00	-0.213
SN-113	-2 999E+00	3.793E+00	5.217E+00	0.000E+00	-0.575
3D-124 CD-125	5 891E+00	7.745E+00	1.369E+01	0.000E+00	0.430
3D-123 TT-129M	2 835E+01	3.972E+01	6.992E+01	0.000E+00	0.405
T_121	-7 826E+00	8.155E+00	1.337E+01	0.000E+00	-0.585
T-T2T	2933E+00	3.872E+00	6.803E+00	0.000E+00	0.431
DA-137	5 871E+00	3.077E+00	5.178E+00	0.000E+00	1.134
CS = 136	-2 $431E+00$	4.727E+00	7.922E+00	0.000E+00	-0.307
CS = 137	1 284E+00	2.960E+00	5.275E+00	0.000E+00	0.243
CB-139	4 176E - 01	3.172E+00	5.328E+00	0.000E+00	0.078
CE=139	5.840E+00	1.825E+01	3.162E+01	0.000E+00	0.185
BA=140	-2 297E+00	5.788E+00	1.003E+01	0.000E+00	-0.229
CE = 1/1	4 389E - 01	7.940E+00	1.132E+01	0.000E+00	0.039
CE = 141	-9 742E+00	2.897E+01	4.083E+01	0.000E+00	-0.239
	-6.345E+00	8.943E+00	1.484E+01	0.000E+00	-0.427
EU-152 EU-154	6.318E+00	6.555E+00	1.127E+01	0.000E+00	0.561
EU-134 DD-226	-5 106E+01	7.944E+01	1.275E+02	0.000E+00	-0.401
RA-220	-2 172E-01	1.123E+01	1.829E+01	0.000E+00	-0.012
AC-220	3.677E+00	5.799E+00	9.589E+00	0.000E+00	0.383
1H-220 TH-220	-2.164E-01	1.118E+01	1.822E+01	0.000E+00	-0.012
10-225	-3.860E+00	2.959E+01	4.139E+01	0.000E+00	-0.093
U-233	1 573E+02	3.063E+02	5.412E+02	0.000E+00	0.291
U-250 MA 241	2 922E+01	1.898E+01	2.830E+01	0.000E+00	1.032
AIMIZAT					

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A.23128785	-3	,06/04/2006	16:19,05/23/2	006 09:30,	3.568E+00,WG	L28785-3	CL
B. 23L28785	-3	,LIBD	,06/	01/2006 10:14	1,2335L090704		
C K - 40	YES.	6.105E+00,	5.011E+01,	4.353E+01,,	0.140		
C BE - 7	NO .	-3.530E+00,	2.620E+01,	4.433E+01,,	-0.080		
C CR - 51	NO .	-1.199E+01,	3.224E+01,	5.431E+01,,	-0.221		
C MN = 54	NO	-1.662E+00,	2.690E+00,	4.467E+00,,	-0.372		
C, M, 54	NO .	3.018E+00,	3.216E+00,	5.525E+00,,	0.546		
$C_{1}C_{0}=58$	, NO ,	-3.380E-01	2.923E+00,	5.036E+00,,	-0.067		
C, CO = 50	, NO , NO	1.699E+00.	5.295E+00,	9.666E+00,,	0.176		
C, FE=55	NO	-2.589E-01	2.692E+00,	4.724E+00,,	-0.055		
C, CU=60	, NO ,	3.099E+00.	5.834E+00,	1.067E+01,,	0.290		
C, ZN = 05	NO	3.651E+00	4.020E+00.	7.084E+00,,	0.515		
C, SE = 75	NO	1.636E+01	3.477E+00.	6.931E+00,,	2.360		
$C, SK^{-0S}$	, NO ,	-1.989E-01	3.151E+00.	5.576E+00,,	-0.089		
C, I = 00	, NO ,	1 809E+00	2536E+00.	4.592E+00,,	0.394		
C, NB-94	, INO ,	_1 218E+00,	3.016E+00.	5.097E+00,,	-0.239		
C, NB-95	, INO ,	-1.2105+00, 2.915F+00	5.437E+00	9.726E+00,	0.289		
C, ZR-95	, NO ,	2.0136F+00,	4.287E+02.	7.787E+02,	0.403		
C,MO-99	, NO , NO	$2.130\pm02,$	3.367E+00.	5.970E+00,,	0.478		
C, RU-103	, NO ,	2.0540+00	2.537E+01	4.226E+01.	-0.462		
C,RU-106	, NO ,	-1.952E+01, 1.626E+00	2.55710101	4.434E+00.	-0.369		
C, AG-110m	, NO ,	-1.030E+00,	3.845E+00	6.457E+00.	-0.213		
C, SN-113	, NO ,	-1.373E+00,	3 793E+00	5 217E+00.	-0.575		
C,SB-124	, NO ,	-2.999E+00,	7.745E+00	1.369E+01.	0.430		
C,SB-125	, NO ,	2.091E+00,	3 972E+01	6 992E+01.	0.405		
C, TE-129M	, NO ,	Z.035E+01,	9.9728+01, 8.155E+00	1 337E+01.	-0.585		
C,1-131	, NO ,	-7.826E+00,	3 872E+00,	6 803E+00.	0.431		
C, BA-133	, NO ,	2.933E+00,	3.0725+00, 3.0775+00	5 178E+00	1.134		
C, CS-134	, NO ,	5.871E+00	3.077⊡+00, 4 727F±00	7 922E+00.	-0.307		
C,CS-136	,NO,	-2.431E+00,	4.7270+00,	5.275E+00	0.243		
C,CS-137	,NO,	1.284E+00,	2.900E+00, 2.172E+00	5.328E+00	0.078		
C,CE-139	, NO ,	4.1/6E-01,	3.1/26+00, 1 $0.055+01$	3.162E+01	0.185		
C,BA-140	,NO,	5.840E+00,	1.025E+01	1 003F+01	-0 229		
C,LA-140	,NO,	-2.297E+00,	5.700E+00,	1 122E+01	0.039		
C,CE-141	,NO,	4.389E-UL,	7.940E+00,	1.132E+01,,	-0.239		
C,CE-144	,NO,	-9.742E+00,	2.897E+01,	4.003E+01,	-0.427		
C,EU-152	,NO,	-6.345E+00,	8.943E+00,	1 1070-01	0.561		
C,EU-154	,NO,	6.318E+00,	6.555E+00,	1.12/6+01,			
C,RA-226	,NO,	-5.106E+01,	7.944E+01,	1.275E+02,,			
C,AC-228	,NO,	-2.172E-01,	1.123E+01,	1.829E+01,	, -0.012		
C,TH-228	,NO,	3.677E+00,	5.799E+00,	メ・DOソ些+UU,,	_0 012		
C,TH-232	,NO,	-2.164E-01,	1.118E+01,	1.0225+U1,,	-0.012 _0 093		
C,U-235	,NO,	-3.860E+00,	2.959E+01,	4.139E+U1,	, -0.033		
C,U-238	,NO,	, 1.573E+02,	3.063E+02,	5.412E+02,	, U.ZYI 1 000		
C,AM-241	, NO	, 2.922E+01,	1.898E+01,	2.830E+01,	, I.U3Z		

Sec. Review: Analyst: LIMS:

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 22:49:42.43 TBE07 P-10768B HpGe ******** Aquisition Date/Time: 4-JUN-2006 15:34:26.77 LIMS No., Customer Name, Client ID: WG L28785-4 CLINTON

 Sample ID
 : 07L28785-4
 Smple Date: 23-MAY-2006 10:05:00.

 Sample Type
 : WG
 Geometry : 0735L090904

 Quantity
 : 3.64420E+00 L
 BKGFILE : 07BG060306MT

 Start Channel
 : 40
 Energy Tol : 1.00000
 Real Time : 0 07:15:05.10

 End Channel
 : 4090
 Pk Srch Sens: 5.00000
 Live time : 0 07:15:00.00

 MDA Constant
 : 0.00
 Library Used: LIBD

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	52.61	108	609	1.39	105.98	2.73E-01	4.14E-03	42.0	2.78E-01
2	1	65.11	96	1106	1.24	131.00	6.81E-01	3.70E-03	75.1	1.87E+01
3	1	139.82*	234	574	1.28	280.53	2.09E+00	8.97E-03	21.3	3.91E-01
4	1	198.40*	166	645	1.22	397.77	1.98E+00	6.37E-03	33.0	6.97E-01
5	1	351.84*	85	303	1.29	704.85	1.43E+00	3.24E-03	50.5	1.62E+00
6	1	596.09	139	182	2.00	1193.60	9.96E-01	5.34E-03	20.6	1.75E+00
7	1	1460.67*	49	55	2.48	2922.93	5.15E-01	1.87E-03	53.6	1.45E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

					Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pCi/L	%Error
K-40	1460.81	49	10.67*	5.152E-01	2.523E+01	2.523E+01	107.28

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Sample ID : 07L28785-4 Acquisition date : 4-JUN-2006 15:34:26 7 Total number of lines in spectrum 6 Number of unidentified lines 14.29% Number of lines tentatively identified by NID 1 Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags Hlife Decay pCi/L pCi/L 2.523E+01 2.707E+01 107.28 Nuclide K-40 1.28E+09Y 1.00 2.523E+01 _____ _____ Total Activity : 2.523E+01 2.523E+01 Grand Total Activity : 2.523E+01 2.523E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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Unidentified Sample ID :	Energy Lines 07L28785-4		Page : 3 Acquisition date : 4-JUN-2006 15:34:26						
It Energy	Area Bkgr	nd FWHM Char	nel Left	Pw Cts/Sec	%Err %Eff	Flags			
1 52.61 1 65.11 1 139.82 1 198.40 1 351.84 1 596.09	108 60 96 110 234 57 166 64 85 30 139 18	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5.98102.00124.532777.773934.857003.601189	9 4.14E-03 13 3.70E-03 8 8.97E-03 10 6.37E-03 11 3.24E-03 11 5.34E-03	84.0 2.73E **** 6.81E 42.5 2.09E 66.0 1.98E **** 1.43E 41.2 9.96E	-01 -01 +00 +00 +00 -01			
Flags: "T" =	Tentatively a	associated							
Summary of N	Nuclide Activi	ty							
Total numbe Number of u Number of ]	er of lines in unidentified l lines tentativ	spectrum ines ely identifie	d by NID	7 6 1 14	1.29%				
Nuclide Type Nuclide K-40 1.23	e : natural Hlife Decay BE+09Y 1.00	Wtd Mean Uncorrected pCi/L 2.523E+01	Wtd Mean Decay Con pCi/L 2.523E+	n rr Decay ( 2-Sigma 01 2.707] 	Corr 2-Sigr Error %Erro E+01 107.28	na or Flags 3			
Total Activity : 2.523E+01 2.523E+01									
Grand Total Activity : 2.523E+01 2.523E+01									
Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit									
Interference Report									
No interference correction performed									
Combined Ac	tivity-MDA Rep	port							
Identi	fied Nuclides								
Nuclide	Activity (pCi/L)	Act err	or	MDA (pCi/L)	MDA error	Act/MDA			
K-40	2.523E+01	2.707E+	01 2	.700E+01	0.000E+00	0.935			
Non-Io	dentified Nucl	ides							
Nuclide	Key-Line Activity (pCi/L)	K.L. Act err Ided	or	MDA (pCi/L)	MDA error	Act/MDA			
BE-7 NA-24 CR-51 MN-54 CO-57	8.848E+00 -1.271E-01 -1.878E+01 -3.596E-02 -4.776E-02	1.677E+ 8.139E- 2.002E+ 1.777E+ 1.781E+	01 2 01 H 01 3 00 2 00 2	.813E+01 alf-Life too .198E+01 .908E+00 .939E+00	0.000E+00 short 0.000E+00 0.000E+00 0.000E+00	0.315 -0.587 -0.012 -0.016			

				0.007.00	0 272		
CO-58	-8.664E-01	1.969E+00	3.171E+00	0.000E+00	-0.273		
FE-59	5.885E+00	3.793E+00	6.711E+00	0.000E+00	-0.029		
CO-60	-8.371E-02	1.737E+00	2.871E+00	0.000E+00	0.020		
ZN-65	1.411E+00	3.813E+00	6.379E+00	0.000E+00	0.221		
SE-75	-2.734E+00	2.433E+00	3.908E+00	0.000E+00	-0.700		
SR-85	2.097E+01	2.369E+00	4.676E+00	0.000E+00	4.400		
Y-88	-5.495E-01	2.057E+00	3.334E+00	0.000E+00	-0.100		
NB-94	-4.453E-01	1.724E+00	2.825E+00	0.000E+00	-0.158		
NB-95	-6.739E-01	1.843E+00	2.986E+00	0.000E+00	-0.226		
ZR-95	1.605E+00	3.274E+00	5.503E+00	0.000E+00	0.292		
MO-99	-4.134E+01	2.746E+02	4.499E+02	0.000E+00	-0.092		
RII-103	-1.982E+00	2.177E+00	3.477E+00	0.000E+00	-0.570		
RU 105	-7.743E+00	1.613E+01	2.573E+01	0.000E+00	-0.301		
AG-110m	4.183E-01	1.665E+00	2.791E+00	0.000E+00	0.150		
SN-113	7.863E-01	2.413E+00	3.953E+00	0.000E+00	0.199		
$SR \pm 12A$	-8.216E+00	2.794E+00	3.269E+00	0.000E+00	-2.513		
GD-124 GD-125	2.490E-01	4.975E+00	8.264E+00	0.000E+00	0.030		
75-129M	9.872E+00	2.482E+01	4.152E+01	0.000E+00	0.238		
T_131	-4.723E+00	5.029E+00	7.953E+00	0.000E+00	-0.594		
	7598E+00	2.823E+00	4.314E+00	0.000E+00	1.761		
CG_13/	4 880E+00	2.169E+00	3.297E+00	0.000E+00	1.480		
CG-126	-7 904E-01	3.226E+00	5.232E+00	0.000E+00	-0.151		
CG-130	-1 070E+00	1.803E+00	2.924E+00	0.000E+00	-0.366		
CB-137	5 184E - 01	1.817E+00	2.986E+00	0.000E+00	0.174		
CE=139	-2901E+00	1.188E+01	1.930E+01	0.000E+00	-0.150		
BA = 140	8 609E-01	3.779E+00	6.277E+00	0.000E+00	0.137		
DA=140	2 332E+00	4.325E+00	6.119E+00	0.000E+00	0.381		
CE = 141	_3 083E+00	1.581E+01	2.197E+01	0.000E+00	-0.140		
	-8.730E+00	6.739E+00	8.778E+00	0.000E+00	-0.995		
EU-152	$-8.750\pm00$	3.634E+00	5.964E+00	0.000E+00	-0.186		
EU-154	$-1.100 \pm 00$	4750E+01	7.480E+01	0.000E+00	0.056		
RA-226	4.173E+00 1 029E+00	7556E+00	1.137E+01	0.000E+00	-0.091		
AC-228	-1.039E+00	3 616E+00	5.826E+00	0.000E+00	0.483		
TH-228	2.810E+00	7 525E+00	1.132E+01	0.000E+00	-0.091		
TH-232		1.552E+01	2.276E+01	0.000E+00	1.255		
U-235	2.0076+01	1.865E+02	3.104E+02	0.000E+00	0.075		
U-238	$2.323 \pm 101$	2 730E±01	2.711E+01	0.000E+00	0.553		
AM-241	上.499比+01	2.73011701	2., 2				
A,07L28785	-4	,06/04/2006	22:49,05/23/2	2006 10:05,	3.644E+00,WG	L28785-4	CL
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B,07L28785	-4	,LIBD	,06,	/02/2006 08:24	1,0735L090904		
C,K-40	,YES,	2.523E+01,	2.707E+01,	2.700E+01,,	0.935		
C,BE-7	,NO ,	8.848E+00,	1.677E+01,	2.813E+01,,	0.315		
C, CR-51	, NO ,	-1.878E+01,	2.002E+01,	3.198E+01,,	-0.587		
C.MN-54	, NO ,	-3.596E-02,	1.777E+00,	2.908E+00,,	-0.012		
C.CO-57	.NO	-4.776E-02,	1.781E+00,	2.939E+00,,	-0.016		
C.CO-58	, NO	-8.664E-01,	1.969E+00,	3.171E+00,,	-0.273		
C.FE-59	, NO	5.885E+00,	3.793E+00,	6.711E+00,,	0.877		
C, CO-60	, NO	-8.371E-02,	1.737E+00,	2.871E+00,,	-0.029		
C, ZN-65	NO .	1.411E+00,	3.813E+00,	6.379E+00,,	0.221		
C.SE-75	.NO	-2.734E+00,	2.433E+00,	3.908E+00,,	-0.700		
$C_{\rm SR} = 85$	, NO	2.097E+01,	2.369E+00,	4.676E+00,,	4.486		
$C_{1}Y - 88$	NO	-5.495E-01,	2.057E+00,	3.334E+00,,	-0.165		
C. NB-94	, NO	-4.453E-01,	1.724E+00,	2.825E+00,,	-0.158		
C NB-95	NO	-6.739E-01,	1.843E+00,	2.986E+00,,	-0.226		
C $ZR - 95$	NO	1.605E+00,	3.274E+00,	5.503E+00,,	0.292		
C MO - 99	NO	-4.134E+01,	2.746E+02,	4.499E+02,,	-0.092		
C RU-103	, NO	-1.982E+00,	2.177E+00,	3.477E+00,,	-0.570		
C RII-106	, NO	-7.743E+00,	1.613E+01,	2.573E+01,,	-0.301		
C AG-110m	, NO	, 4.183E-01,	1.665E+00,	2.791E+00,,	0.150		
C SN-113	, NO	, 7.863E-01,	2.413E+00,	3.953E+00,,	0.199		
C SB-124	, NO	, -8.216E+00,	2.794E+00,	3.269E+00,,	-2.513		
C.SB-125	, NO	, 2.490E-01,	4.975E+00,	8.264E+00,,	0.030		
$C_{TE} = 129M$	, NO	, 9.872E+00,	2.482E+01,	4.152E+01,,	0.238		
C. T-131	, NO	, -4.723E+00,	5.029E+00,	7.953E+00,,	-0.594		
$C_{BA} = 133$	, NO	, 7.598E+00,	2.823E+00,	4.314E+00,,	1.761		
$C_{1}CS - 134$	, NO	. 4.880E+00,	2.169E+00,	3.297E+00,,	1.480		
C CS = 136	NO	, -7.904E-01,	3.226E+00,	5.232E+00,,	-0.151		
C CS - 137	, NO	-1.070E+00,	1.803E+00,	2.924E+00,,	-0.366		
C CE - 139	, NO	. 5.184E-01,	1.817E+00,	2.986E+00,,	0.174		
C BA - 140	, NO	-2.901E+00,	1.188E+01,	1.930E+01,,	-0.150		
C LA-140	, NO	. 8.609E-01,	3.779E+00,	6.277E+00,,	0.137		
C CE - 141	, NO	2.332E+00,	4.325E+00,	6.119E+00,,	0.381		
C CE - 144	, NO	-3.083E+00,	1.581E+01,	2.197E+01,,	-0.140		
C EII - 152	NO	-8.730E+00,	6.739E+00,	8.778E+00,,	-0.995		
C = 152	NO	-1.109E+00.	3.634E+00,	5.964E+00,,	-0.186		
C, BO = 226	NO	4.173E+00.	4.750E+01,	7.480E+01,,	0.056		
$C_{\rm A}C_{-228}$	, NO	-1.039E+00	7.556E+00,	1.137E+01,,	-0.091		
C TH-228		2.816E+00.	3.616E+00,	5.826E+00,,	0.483		
C TH-220	NO	-1.034E+00.	7.525E+00,	1.132E+01,,	-0.091		
$C_{\rm II} = 235$	NO	, 2.857E+01,	1.552E+01,	2.276E+01,,	1.255		
$C_{11-238}$	, NO	, 2.323E+01.	1.865E+02,	3.104E+02,,	0.075		
$C_{\Delta M_{2}}$		1.499E+01	2.730E+01.	2.711E+01,,	0.553		
CILLI 271	,	,,					

Sec. Review: Analyst: LIMS:

							==========			==
VAX/ TBE1	==== VMS 0 12	Teledyne B 892256 HpG	rown Eng. e *******	Labora *** Aqu	tory isiti	Gamma Re on Date/	port: 4-J Time: 4-JU	UN-2006 2: N-2006 16	2:53:16.24 :38:02.54	
LIMS	No.	, Customer	Name, Cl:	ient ID	: WG	L28784-5	CLINTON			
Samp Samp Quan Star End MDA	Sample ID       : 10L28785-5       Smple Date: 23-MAY-2006 11:40:00.         Sample Type       : WG       Geometry : 1035L091004         Quantity       : 3.68800E+00 L       BKGFILE : 10BG060306MT         Start Channel       : 80       Energy Tol : 1.00000       Real Time : 0 06:15:03.66         End Channel       : 4090       Pk Srch Sens: 5.00000       Live time : 0 06:15:00.00         MDA Constant       : 0.00       Library Used: LIBD									
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err Fit	
1 2 3 4 5 6	1 1 1 1 1	66.22* 139.58 198.95 352.87* 499.91 596.09	186 111 240 29 39 124	737 572 605 379 125 125	1.60 1.46 2.12 1.58 1.45 2.11	131.73 278.59 397.45 705.58 999.96 1192.51	6.31E-01 1.68E+00 1.55E+00 1.06E+00 8.11E-01 7.06E-01 6.94E-01	8.28E-03 4.92E-03 1.07E-02 1.29E-031 1.72E-03 5.53E-03 2.85E-03	28.5 1.77E+0 39.2 5.56E+0 21.6 3.29E+0 50.0 7.40E+0 56.5 1.26E+0 20.9 2.37E+0 50.1 1.03E+0	0 10 10 10 10 10 10 10
7 8 9 10	1 1 1 1	609.23* 909.53 1119.32* 1764.40*	64 92 9 46	178 77 52 22	6.02 2.00 6.57	1820.09 2240.17 3532.04	5.08E-01 4.33E-01 3.13E-01	4.08E-03 4.04E-041 2.02E-03	22.4 5.45E+0 77.0 2.05E+0 36.4 2.61E+0	)0 )0 )0

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

L28784 123 of 141

Summary of Nuclide Activity Sample ID : 10L28785-5 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

L28784 124 of 141

0.244

0.202

-0.067

0.000E+00

0.000E+00

0.000E+00

Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 16:38:02 Sample ID : 10L28785-5 Cts/Sec %Err %Eff Flags Channel Left Pw FWHM Bkqnd Area It Energy 9 8.28E-03 57.0 6.31E-01 128 131.73 66.22 1.86 737 1.60 1 1.68E+00 8 4.92E-03 78.4 275 278.59 572 1.46 139.58 111 1 1.55E+00 392 12 1.07E-02 43.3 2.12 397.45 605 240 1 198.95 698 13 1.29E-03 **** 1.06E+00 1.58 705.58 379 29 352.87 1 8.11E-01 994 10 1.72E-03 **** 999.96 1.45 39 125 1 499.91 7.06E-01 1192.51 1187 13 5.53E-03 41.7 2.11 125 596.09 124 1 6.94E-01 1218.83 1212 13 2.85E-03 **** 178 1.37 64 609.23 1 1820.09 1817 15 4.08E-03 44.9 5.08E-01 6.02 77 92 909.53 1 4.33E-01 9 4.04E-04 **** 2240.17 2236 52 2.00 9 1119.32 1 3532.04 3523 24 2.02E-03 72.7 3.13E-01 22 6.57 46 1764.40 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 10 Total number of lines in spectrum 10 Number of unidentified lines Number of lines tentatively identified by NID 0.00% 0 **** There are no nuclides meeting summary criteria **** "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA Activity K.L. Act error (pCi/L)(pCi/L)Ided Nuclide 0.385 0.000E+00 3.712E+01 2.177E+01 1.427E+01 BE-7 Half-Life too short 1.051E+00 -8.205E-01 NA-24 -0.1700.000E+00 5.962E+01 3.416E+01 -1.012E+01 K-40 0.000E+00 -0.229 4.349E+01 2.667E+01 -9.940E+00 CR-51 -0.079 0.000E+00 3.689E+00 2.240E+00 -2.918E-01 MN-54 0.000E+00 -0.261 2.430E+00 3.981E+00 -1.038E+00 CO-57 0.173 0.000E+00 4.298E+00 2.551E+00 CO-58 7.445E-01 0.000E+00 0.291 8.620E+00 5.119E+00 2.509E+00 FE-59 -0.201 0.000E+00 3.884E+00 2.409E+00 -7.799E-01 CO-60 0.709 0.000E+00 8.737E+00 4.975E+00 6.192E+00 ZN-65 0.000E+00 0.107 5.446E+00 3.265E+00 5.835E-01 SE-75 3.328 0.000E+00 5.650E+00 2.860E+00 1.880E+01 SR-85 0.075 0.000E+00 4.767E+00 2.860E+00 3.564E-01 Y-88 0.115 0.000E+00 3.780E+00 4.338E-01 2.293E+00 NB-94 0.000E+00 -0.1144.028E+00 2.501E+00 -4.606E-01 NB-95

4.525E+00

3.864E+02

2.721E+00

1.832E+00

9.245E-01

-4.175E+01

ZR-95

MO-99

RU-103

7.521E+00

6.261E+02

4.579E+00

				000 11 10	2 COORLOD WG	1.28784-5	CL
A,10L28785	-5	,06/04/2006	22:53,05/23/2	2006 11:40,	3.6666+00, NG	120704 0	
B,10L28785	-5	,LIBD	,06/	02/2006 08:22	2,10356091004		
C,BE-7	,NO,	1.427E+01,	2.177E+01,	3.712E+01,,	0.385		
C.K-40	, NO ,	-1.012E+01,	3.416E+01,	5.962E+01,,	-0.170		
C.CR-51	.NO .	-9.940E+00,	2.667E+01,	4.349E+01,,	-0.229		
C MN - 54	NO .	-2.918E-01,	2.240E+00,	3.689E+00,,	-0.079		
C C C - 57	NO .	-1.038E+00,	2.430E+00,	3.981E+00,,	-0.261		
$C_{1}CO_{-58}$	NO	7.445E-01.	2.551E+00,	4.298E+00,,	0.173		
C, EE_59	, NO ,	2509E+00	5.119E+00,	8.620E+00,,	0.291		
C, EE=55	, NO ,	-7 799E-01.	2.409E+00,	3.884E+00,,	-0.201		
C, CO=60	, INO ,	6 192E 02,	4 975E+00,	8.737E+00,,	0.709		
C, ZN - 65	, NO ,	5 935 F - 01	3.265E+00	5.446E+00,,	0.107		
C, SE-75	, NO ,	$1 000 \overline{E} 01$	2.860E+00	5.650E+00,	3.328		
C, SR-85	, NO ,	2 = CAE = 01	2.000H100, 2.860E±00	4 767E+00.	0.075		
C,Y-88	, NO	, 3.564E-01,	$2.000\pm00,$	3.780E+00	0.115		
C,NB-94	, NO	4.338E-01,	2.2935+00,	4.028E+00	-0.114		
C,NB-95	, NO	, -4.606E-01,	2.501E+00,	7 521 F±00	0 244		
C,ZR-95	, NO	, 1.832E+00,	4.525E+00,	7.5210+00;;	-0.067		
C,MO-99	, NO	, -4.175E+01,	3.864E+02,	6.2010+02,,	0.202		
C,RU-103	, NO	, 9.245E-01,	2.721E+00,	4.579E+00,,	0.202		
C,RU-106	, NO	, 9.468E+00,	2.239E+01,	3.705E+01,,	0.250		
C,AG-110m	, NO	, 2.188E+00,	2.342E+00,	4.004E+00,,	0.540		
C,SN-113	, NO	, -4.318E-01,	3.239E+00,	5.272E+00,,	-0.062		
C,SB-124	, NO	, -5.784E-01,	6.039E+00,	4.1/1E+00,,	-0.139		
C,SB-125	, NO	, -2.164E+00,	6.610E+00,	1.063E+01,,	-0.204		
C,TE-129M	, NO	, 1.776E+01,	3.230E+01,	5.361E+01,,	0.331		
C.T-131	, NO	, -1.294E+00,	6.938E+00,	1.131E+01,,	-0.114		
C.BA-133	. NO	4.903E+00,	3.930E+00,	5.763E+00,,	0.851		
C CS - 134	, NO	5.939E+00,	5.257E+00,	4.391E+00,,	1.352		
C CS - 136	NO	-1.250E+00,	4.302E+00,	7.035E+00,,	-0.178		
C CS = 137	NO	-4.631E-01,	2.561E+00,	4.161E+00,,	-0.111		
C, CE = 139		-1 127E+00.	2.462E+00,	3.993E+00,,	-0.282		
C, CE = 137		-4.853E-01	1.553E+01,	2.568E+01,,	-0.019		
C, BA=140	$, \mathbf{NO}$	2049E+00	5.139E+00,	8.650E+00,,	0.237		
$C, \Box A = 140$	, NO	1 139E+00	5.934E+00.	8.329E+00,,	0.137		
C, CE - 141	, NO	-1 316F $+01$	2 172E+01	2.984E+01,,	-0.441		
C, CE-144	, NO	$-1.310\pm01,$	8 592E+00	1.151E+01.	-0.542		
C, EU-152	, NO	, -0.2372+00,	0.992E+00,	8 173E+00.	0.038		
C,EU-154	, NO	, <u>3.10/E-01</u> ,	4.9410+00,	9 810E+01.	0.087		
C,RA-226	, NO	, 8.509E+00,	0.3000+01,	1.472E+01	-0.038		
C,AC-228	, NO	, -5.530E-01,	9.504E+00,	7 /558+00	0.008		
C,TH-228	, NO	, 6.236E-02,	4.700E+00,	1 466F±01	-0.038		
C,TH-232	, NO	, -5.507E-01,	9.466世+00,		0.729		
C,U-235	, NO	, 2.249E+01,	$\angle \cdot \bot \bot \angle \Box + \cup \bot$	3.044 <u>0</u> +01,, 1 2710,02	0.755		
C,U-238	, NO	, 1.901E+02,	2.490E+02,	4.2/40+02,	, 0.440		
C,AM-241	, NO	, 8.230E-01,	2.361E+01,	3.20/6+01,	, 0.020		

Sec. Review: Analyst: LIMS:

					=====		=========	========	======	=======
===== VAX/Y TBE1:	==== VMS 1 P-	Teledyne Br 20610B HpGe	own Eng.	Labora **** Aqu	tory isiti	Gamma Re on Date/	port: 4-J Time: 4-JU	UN-2006 2 N-2006 16	2:54:17 :39:04	7.68 .27
LIMS	No.	, Customer	Name, Cl	lient II	): WG	L28785-6	5 CLINTON			
Samp Samp Quan Star End MDA	ample ID: 11L28785-6Smple Date: 23-MAY-2006 11:48:00.ample Type: WGGeometry : 1135L090204uantity: 3.51190E+00 LBKGFILE : 11BG060306MTstart Channel: 40Energy Tol : 1.00000Real Time : 0 06:15:07.82Ind Channel: 4090Pk Srch Sens: 5.00000Live time : 0 06:15:00.00IDA Constant: 0.00Library Used: LIBD									
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9 10		66.38 140.12* 198.58 238.96* 352.68 583.23* 596.02 609.18* 1120.08* 1460.15* 1760.76	282 145 196 119 175 39 135 78 24 42 47	1364 540 537 313 75 108 111 42 63 33	1.67 1.61 1.69 1.44 1.79 1.38 1.87 1.60 3.50 2.11 2.22	132.09 280.20 397.59 478.64 706.86 1169.24 1194.88 1221.25 2244.26 2924.07 3524.23	6.04E-01 1.69E+00 1.57E+00 1.42E+00 1.08E+00 7.27E-01 7.14E-01 7.02E-01 4.37E-01 3.54E-01 3.05E-01	1.25E-026.44E-038.71E-035.29E-037.78E-031.74E-035.98E-033.46E-031.05E-031.85E-032.08E-03	24.4 32.9 23.1 46.9 23.1 62.9 17.2 33.2 67.3 59.0 30.8	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide	Type: natura	1			Uncorrected	Decay Corr	2-Sigma
Nuclide K-40 TH-228	Energy 1460.81 238.63 240.98	Area 42 119	%Abn 10.67* 44.60* 3.95	%Eff 3.541E-01 1.420E+00 1.413E+00	pCi/L 3.774E+01 6.426E+00 Li	pĊi/L 3.774E+01 6.505E+00 ne Not Found	%Error 118.07 93.79

Flag: "*" = Keyline

2 Page : Summary of Nuclide Activity Acquisition date : 4-JUN-2006 16:39:04 Sample ID : 11L28785-6 11 Total number of lines in spectrum 8 Number of unidentified lines Number of lines tentatively identified by NID 3 27.27% Nuclide Type : natural 2-Sigma Uncorrected Decay Corr Decay Corr 2-Sigma Error %Error Flags pCi/L Decay pCi/L Hlife Nuclide 4.456E+01 118.07 3.774E+01 3.774E+01 1.00 K-40 1.28E+09Y 93.79 6.101E+00 6.426E+00 6.505E+00 1.01 1.91Y TH-228 _____ _____ 4.425E+01 4.417E+01 Total Activity : Grand Total Activity : 4.417E+01 4.425E+01 Flags: "K" = Keyline not found

"E" = Manually edited

"M" = Manually accepted "A" = Nuclide specific abn. limit

L28784 129 of 141

Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 16:39:04 Sample ID : 11L28785-6 Channel Left Pw Cts/Sec %Err %Eff Flags Bkgnd FWHM Area It Energy 6.04E-01 9 1.25E-02 48.7 128 132.09 282 1364 1.67 66.38 0 1.69E+00 9 6.44E-03 65.8 276 540 1.61 280.20 140.12 145 0 393 10 8.71E-03 46.2 1.57E+00 1.69 397.59 530 196 0 198.58 1.08E+00 702 15 7.78E-03 46.3 1.79 706.86 313 175 352.68 0 7.27E-01 1169.24 1164 11 1.74E-03 **** Т 1.38 75 39 583.23 0 1194.88 1190 11 5.98E-03 34.5 7.14E-01 1.87 108 596.02 135 0 1221.25 1216 10 3.46E-03 66.4 7.02E-01 111 1.60 78 609.18 0 2244.26 2238 12 1.05E-03 **** 4.37E-01 3.50 42 24 1120.08 0 3524.23 3513 16 2.08E-03 61.5 3.05E-01 33 2.22 47 1760.76 0 Flags: "T" = Tentatively associated Summary of Nuclide Activity 11 Total number of lines in spectrum 8 Number of unidentified lines Number of lines tentatively identified by NID 27.27% 3 Nuclide Type : natural Wtd Mean Wtd Mean 2-Sigma Decay Corr Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Decay Nuclide Hlife 4.456E+01 118.07 3.774E+01 3.774E+01 1.28E+09Y 1.00 K-40 93.79 6.101E+00 6.505E+00 1.01 6.426E+00 1.91Y TH-228 _____ ____ 4.425E+01 4.417E+01 Total Activity : 4.425E+01 Grand Total Activity : 4.417E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Act error Activity (pCi/L)Nuclide (pCi/L) 1.132 0.000E+00 3.334E+01 3.774E+01 4.456E+01 K-40 0.959 0.000E+00 6.783E+00 6.101E+00 6.505E+00 TH-228 ---- Non-Identified Nuclides ----Key-Line Act/MDA MDA error MDA K.L. Act error Activity (pCi/L)(pCi/L)Ided Nuclide

					-0 235
BE-7	-8.601E+00	2.234E+01	3.658E+01	0.000E+00	-0.200
$N\Delta - 24$	-2.117E+00	1.156E+00	Halt-Life too	S SNOTL	-0 322
CR - 51	-1.463E+01	2.800E+01	4.548E+01	0.000E+00	-0 099
MN-54	-4.017E-01	2.463E+00	4.038E+00	0.000E+00	-0 183
CO = 57	-7.052E-01	2.341E+00	3.858E+00	0.000E+00	-0.587
CO = 58	-2.460E+00	2.657E+00	4.189E+00	0.000E+00	0.369
EE - 59	3.267E+00	5.226E+00	8.845E+00	0.000E+00	0.305
CO = 60	1.851E+00	2.508E+00	4.334E+00	0.000E+00	0.427
ZN = 65	6.351E+00	5.693E+00	8.786E+00	0.000E+00	-0.723
2N-05 CF-75	-3.714E+00	3.281E+00	5.284E+00	0.000E+00	-0.705
SD-85	2.063E+01	3.140E+00	6.150E+00	0.000E+00	5.333
X-88	2.166E+00	3.111E+00	5.388E+00	0.000E+00	0.402 0 178
NR_94	7.142E-01	2.433E+00	4.019E+00	0.000E+00	0.178
ND-95	7.697E-01	2.558E+00	4.312E+00	0.000E+00	0.170
7D-95	-2.789E+00	4.672E+00	7.537E+00	0.000E+00	-0.370
$\Delta R = 95$	-1 475E+02	4.207E+02	6.718E+02	0.000E+00	-0.220
MU-99	2 635E+00	2.898E+00	4.974E+00	0.000E+00	0.530
RU-105	-2 248E+01	2.281E+01	3.570E+01	0.000E+00	-0.630
RU-100	1 027E+00	2.413E+00	4.027E+00	0.000E+00	0.255
AG-IIUM	-8 345E-01	3.241E+00	5.248E+00	0.000E+00	-0.159
SN-IIS	1 202E - 01	6.212E+00	4.367E+00	0.000E+00	0.020
SB-124 CD 125	-5 493E+00	6.994E+00	1.104E+01	0.000E+00	-0.490
5B-125	-7.127E+00	3.433E+01	5.522E+01	0.000E+00	-0.129
1E-129M	-5.828E+00	7.625E+00	1.107E+01	0.000E+00	-0.527
1-131 122	7 246E+00	3.885E+00	5.867E+00	0.000E+00	1.235
BA-133	4 841E+00	5.570E+00	4.471E+00	0.000E+00	1.083
CS = 134	2.597E+00	4.381E+00	7.474E+00	0.000E+00	0.348
CS-130	8 917E - 01	2.598E+00	4.318E+00	0.000E+00	0.207
CS = 1.37	-6 241E - 01	2.375E+00	3.875E+00	0.000E+00	-0.161
CE-139	-6.254E+00	1.600E+01	2.601E+01	0.000E+00	-0.240
BA-140	-6.396E-01	5.391E+00	8.847E+00	0.000E+00	-0.072
LA-140	5,598E+00	5.687E+00	8.222E+00	0.000E+00	0.681
CE-141	$2.590 \pm 100$	2.125E+01	2.998E+01	0.000E+00	0.088
CE-144	-3 784E+00	8.643E+00	1.213E+01	0.000E+00	-0.312
EU-152	1 2608+00	4.808E+00	7.926E+00	0.000E+00	-0.159
EU-154	-1.2000+00	6.186E+01	9.426E+01	0.000E+00	-0.130
RA-226		1 107E+01	1.572E+01	0.000E+00	-0.287
AC-228		1.103E+01	1.565E+01	0.000E+00	-0.287
TH-232		2.050E+01	3.033E+01	0.000E+00	1.177
U-235		2.655E+02	4.576E+02	0.000E+00	0.495
U-238		2.0000 - 02 3.561 - 01	4.925E+01	0.000E+00	-0.190
AM-241	-9.334E+00	3.3011101	<b></b>		

A,11L28785	-6	,06/04/2006	22:54,05/23/2	2006 11:48, 3	.512E+00,WG	L28785-6	CL
B,11L28785	-6	,LIBD	,00/	$2 234F \pm 01$	1 132		
C,K-40	,YES,	3.774E+01,	4.450E+01,	5.554 <u>0</u> +01,	0 959		
C,TH-228	,YES,	6.505E+00,	0.1010+00,	$0.705 \pm 00, $	-0.235		
C,BE-7	,NO,	-8.601E+00,	2.234E+01,	$3.000 \pm 01$	-0.322		
C,CR-51	,NO,	-1.463E+01,	2.800E+01,	4.540 <u>5</u> +01,,	-0.022		
C,MN-54	,NO ,	-4.017E-01,	2.463E+00,	4.030E+00,,	-0.055		
C,CO-57	,NO,	-7.052E-01,	2.341E+00,	3.858E+00,,	-0.103		
C,CO-58	,NO,	-2.460E+00,	2.657E+00,	4.189E+00,,	-0.507		
C,FE-59	,NO ,	3.267E+00,	5.226E+00,	8.845E+00,,	0.309		
C,CO-60	,NO ,	1.851E+00,	2.508E+00,	4.334E+00,,	0.427		
C,ZN-65	,NO ,	6.351E+00,	5.693E+00,	8.786E+00,,	0.723		
C,SE-75	,NO,	-3.714E+00,	3.281E+00,	5.284E+00,,	-0.703		
C,SR-85	,NO,	2.063E+01,	3.140E+00,	6.150E+00,,	3.355		
C,Y-88	,NO,	2.166E+00,	3.111E+00,	5.388E+00,,	0.402		
C,NB-94	,NO,	7.142E-01,	2.433E+00,	4.019E+00,,	0.178		
C,NB-95	,NO ,	7.697E-01,	2.558E+00,	4.312E+00,,	0.178		
C.ZR-95	,NO ,	-2.789E+00,	4.672E+00,	7.537E+00,,	-0.370		
C.MO-99	, NO ,	-1.475E+02,	4.207E+02,	6.718E+02,,	-0.220		
C.RU-103	,NO ,	2.635E+00,	2.898E+00,	4.974E+00,,	0.530		
C.RU-106	, NO ,	-2.248E+01,	2.281E+01,	3.570E+01,,	-0.630		
C AG-110m	, NO	1.027E+00,	2.413E+00,	4.027E+00,,	0.255		
C SN-113	NO .	-8.345E-01,	3.241E+00,	5.248E+00,,	-0.159		
C SB-124	NO .	1.202E-01,	6.212E+00,	4.367E+00,,	0.028		
$C_{SB-125}$	NO .	-5.493E+00,	6.994E+00,	1.104E+01,,	-0.498		
C $TE = 129M$	NO .	-7.127E+00.	3.433E+01,	5.522E+01,,	-0.129		
$C_{T_{-131}}$	NO /	-5.828E+00	7.625E+00,	1.107E+01,,	-0.527		
$C_{BA}$	NO ,	7.246E+00	3.885E+00,	5.867E+00,,	1.235		
$C_{1}BA^{-}133$	NO ,	4 841E+00.	5.570E+00,	4.471E+00,,	1.083		
C, CS = 134	NO	2.597E+00	4.381E+00,	7.474E+00,,	0.348		
C, CS = 130	, NO , NO	8 917E-01	2.598E+00	4.318E+00,,	0.207		
C, CS=137	, NO , NO	-6.241E-01	2.375E+00.	3.875E+00,,	-0.161		
C, CE-139	, NO , NO	-6.241001,	1 600E+01	2.601E+01.,	-0.240		
C, BA-140	, NO , NO	-6.396F-01	5.391E+00.	8.847E+00,	-0.072		
$C, \Box A = 140$	, NO , NO	-0.590E 01, 5 598E±00	5.687E+00	8.222E+00.	0.681		
C, CE-141	, NO , NO	$5.590 \pm 00$	$2.125E\pm01$	2 998E+01.	0.088		
C,CE-144	, NO ,	2.644E+00,	2.12JE+01, 8 6/3F+00	1 213E+01	-0.312		
C,EU-152	,NO ,	-3.764E+00,	0.04JE+00,	7.926E+00	-0.159		
C,EU-154	,NO,	-1.260E+00,	$4.0000\pm00$	9 $126E \pm 01$	-0 130		
C, RA-226	, NO ,	-1.223E+01,	$1 107E \cdot 01$	$1.572E \pm 01$	-0 287		
C,AC-228	,NO,	-4.504E+00,	1.107E+01,	1.5720+01,, $1.5659,01$	-0.287		
C,TH-232	, NO ,	-4.485E+00,	1.100E+01	7.202ET01	1 177		
C,U-235	,NO,	3.571E+01,	$\angle .050E+01,$	$3.035 \pm 01,$	0 495		
C,U-238	,NO,	2.265E+02,		4.070E+02;;	-0 190		
C,AM-241	,NO,	-9.334E+00,	3.501E+U1,	4.9405+V1,,	-0.190		

Sec. Review: Analyst: LIMS:  $\underline{V}$ 

							==========	=========		:
==== VAX/ TBE1	==== VMS 3 P-	Teledyne B 10727B HpG	rown Eng. e ******	Labora *** Aqu	tory	Gamma Re on Date/	port: 4-J Time: 4-JU	UN-2006 2 N-2006 16	2:55:12.25 :39:56.84 	
LIMS	No.	, Customer	Name, Cl	ient II.	): WG	L28785-7	CLINTON			
Samp Samp Quan Star End MDA	Sample ID       : 13L28785-7       Smple Date: 23-MAY-2006 14:43:00.         Sample Type       : WG       Geometry : 1335L090904         Quantity       : 3.66160E+00 L       BKGFILE : 13BG060306MT         Start Channel       : 25       Energy Tol : 1.50000       Real Time : 0 06:15:06.36         End Channel       : 4090       Pk Srch Sens: 5.00000       Live time : 0 06:15:00.00         MDA Constant       : 0.00       Library Used: LIBD									
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err Fit	
1	5	63.28*	96	782	1.47	126.60	6.20E-01	4.25E-03	60.7 1.43E+00	
2	5	66 36	205	698	1.62	132.74	7.26E-01	9.10E-03	23.4	
2	2	77 19*	46	536	1.04	154.40	1.09E+00	2.03E-03	93.2 1.16E+00	
2	5	02 62*	29	806	1 27	185.26	1.52E+00	1.72E-031	L58.1 4.03E+00	
4 F	-	120 59*	182	643	1 23	279.11	2.02E+00	8.11E-03	27.4 4.01E+00	
5	1 1	105 75*	55	608	1 04	371.39	1.95E+00	2.45E-03	95.1 2.66E-01	
0	1	100 52*	161	597	1 19	396.94	1.90E+00	7.14E-03	31.2 2.11E+00	
/	-	190.55* 251 61*	101	350	1 34	703.04	1.34E+00	2.18E-03	86.0 1.71E+00	
8	1	221.01"	4.J 0.0	118	1 52	1166 42	9.26E-01	9.94E-041	L19.7 1.34E+00	
9	-	583.201	101	162	2 1 2	1192 71	9.11E-01	8.49E-03	15.5 2.41E+00	
10	1	596.40	100	195	2.72	1218 29	8 97E-01	4.85E-03	32.1 3.20E+00	
11	1	609.19*	109	70J	1 01	1416 16	8 01E-01	1.40E-03	52.2 2.93E+00	
12	T	/08.0/	31	107	2 02	1823 00	6.64E-01	$1.26E-03^{-1}$	100.5 3.34E+00	
13	1	9TT.33*	∠ø 27	⊥⊿/ ⊃⊃	2.04	2522.00	4 11E-01	1 19E-03	64.9 1.04E+00	
14	1	1764.30*	27		2.02	2224.14			01.0 1.012.00	

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide T	vpe: natura	al					
Mucride i	Jbe. magaz				Uncorrected	Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L	pĈi/L	%Error
RA-226	186.21	55	3.28*	1.946E+00	2.835E+01	2.835E+01	190.15
AC-228	835.50		1.75	7.084E-01	Li:	ne Not Found	
	911.07	28	27.70*	6.639E-01	5.068E+00	5.088E+00	201.05
тн-232	583.14	22	30.25	9.261E-01	2.620E+00	2.620E+00	239.46
	911.07	28	27.70*	6.639E-01	5.068E+00	5.068E+00	201.05
	969.11		16.60	6.342E-01	Li	ne Not Found	
II-235	143.76		10.50*	2.023E+00	Li	ne Not Found	
0 200	163.35		4.70	2.011E+00	Li	ne Not Found	
	185.71	55	54.00	1.946E+00	1.722E+00	1.722E+00	190.15
	205.31		4.70	1.871E+00	Li	ne Not Found	

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 16:39:56 Sample ID : 13L28785-7 Total number of lines in spectrum 14 10 Number of unidentified lines Number of lines tentatively identified by NID 4 28.57% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pCi/L pCi/L Nuclide Hlife Decay 5.390E+01 190.15 2.835E+01 1.00 2.835E+01 RA-226 1600.00Y 10.23E+00 201.05 5.088E+00 1.00 5.068E+00 5.75Y AC-228 201.05 5.068E+00 10.19E+00 1.00 5.068E+00 TH-232 1.41E+10Y 190.15 K 1.722E+00 3.274E+00 1.00 1.722E+00 U-235 7.04E+08Y _____ _____ Total Activity : 4.020E+01 4.022E+01 4.022E+01 Grand Total Activity : 4.020E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

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Page : 3 Unidentified Energy Lines Acquisition date : 4-JUN-2006 16:39:56 Sample ID : 13L28785-7 Area Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags Ιt Enerqy 126.60 121 16 4.25E-03 **** 6.20E-01 96 782 1.47 63.28 5 132.74 121 16 9.10E-03 46.9 7.26E-01 698 1.62 205 5 66.36 154.40 140 18 2.03E-03 **** 1.09E+00 536 1.04 46 3 77.19 185.26 181 9 1.72E-03 **** 1.52E+00 806 1.27 39 92.63 1 279.11 275 8 8.11E-03 54.7 2.02E+00 643 1.23 182 1 139.58 396.94 393 9 7.14E-03 62.3 1.90E+00 597 1.19 350 1.34 198.53 161 1 703.04 698 11 2.18E-03 **** 1.34E+00 49 351.61 1 162 3.13 1192.71 1186 13 8.49E-03 30.9 9.11E-01 191 596.40 1 185 2.32 1218.29 1211 13 4.85E-03 64.3 8.97E-01 609.19 109 1 1416.16 1412 7 1.40E-03 **** 8.01E-01 Т 89 1.01 31 708.07 1 33 2.62 3532.12 3525 16 1.19E-03 **** 4.11E-01 1 1764.30 27 Flags: "T" = Tentatively associated Summary of Nuclide Activity 14 Total number of lines in spectrum Number of unidentified lines 10 Number of lines tentatively identified by NID 4 28.57% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Sigma 2-Sigma Error %Error Flags pCi/L pCi/L 2.835E+01 Decay Nuclide Hlife 5.390E+01 190.15 1.00 2.835E+01 RA-226 1600.00Y 12.01E+00 488.88 2.457E+00 1.00 2.448E+00 5.75Y AC-228 6.274E+00 239.46 2.620E+00 TH-232 1.41E+10Y 1.00 2.620E+00 _____ 3.342E+01 Total Activity : 3.341E+01 Grand Total Activity : 3.341E+01 3.342E+01 Flags: "K" = Keyline not found "M" = Manually accepted "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report Interfered Interfering Nuclide Line _________________ Nuclide Line Nuclide AC-228 911.07 TH-232 911.07 Combined Activity-MDA Report ---- Identified Nuclides ----MDA error Act/MDA MDA Activity Act error (nCi/T)- - -

Nuclide	(pCi/L)		(DCT/T)		
RA-226	2.835E+01	5.390E+01	7.264E+01	0.000E+00	0.390
AC-228	2.457E+00	1.201E+01	1.043E+01	0.000E+00	0.236
TH-232	2.620E+00	6.274E+00	1.318E+01	0.000E+00	0.199

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity K. (pCi/L) Id	L. Act error led	MDA (pCi/L)	MDA error	Act/MDA
DF 7	-2 501E+00	1.850E+01	3.006E+01	0.000E+00	-0.083
	-7 710E-02	6.969E-01	Half-Life to	o short	
NA-24 V 40	1 191E+01	2.943E+01	5.360E+01	0.000E+00	0.222
CD E1	-1 952E+01	2.155E+01	3.492E+01	0.000E+00	-0.559
UK-SI MNI EA	-2.189E-02	1.942E+00	3.171E+00	0.000E+00	-0.007
MN-54 CO E7	8 579E-01	1.916E+00	3.219E+00	0.000E+00	0.267
CO-57	-2.167E+00	2.042E+00	3.155E+00	0.000E+00	-0.687
CU-58	P 929E-01	4.184E+00	6.989E+00	0.000E+00	0.126
FE-59	$0.025E_{-01}$	2028E+00	3.206E+00	0.000E+00	-0.286
CO-60	-9.172 H = 01	4 330E+00	7.458E+00	0.000E+00	0.493
ZN-65	9.410E - 01	2 731E+00	4.465E+00	0.000E+00	0.188
SE-75	0.410E-01	2 727E+00	5.156E+00	0.000E+00	3.270
SR-85	1.6805+01	2.161E+00	3.294E+00	0.000E+00	-0.507
Y-88	-1.072E+00	2.251E+00	2.978E+00	0.000E+00	-0.595
NB-94	-1.773E+00	2.2010E+00	3.312E+00	0.000E+00	0.044
NB-95	1.462E-01	3.602E+00	6.033E+00	0.000E+00	0.237
ZR-95	1.430E+00	3.049E+02	4.952E+02	0.000E+00	-0.167
MO-99	-8.2496+01	2382E+00	3.937E+00	0.000E+00	0.220
RU-103	8.678E-UI	$2.302 \pm 00$ 1 763 $\pm 01$	2926E+01	0.000E+00	-0.005
RU-106	-1.364E-01	1 9085+00	3 223E+00	0.000E+00	0.284
AG-110m	9.158E-01	2560E+00	4 309E+00	0.000E+00	0.370
SN-113	1.594E+00	$2.300 \pm 00$	3 421E+00	0.000E+00	0.596
SB-124	2.038E+00	4.2170+00	9 284E+00	0.000E+00	0.018
SB-125	1.676E-01	2.745E+01	4585E+01	0.000E+00	0.336
TE-129M	1.540E+01	2.7450+01	8 695E+00	0.000E+00	-0.139
I-131	-1.209E+00	$2.290\pm00$	4.313E+00	0.000E+00	0.568
BA-133	2.451E+00	2.940E+00	3 392E+00	0.000E+00	1.228
CS-134	4.1648+00	3.278E+00	5.546E+00	0.000E+00	0.081
CS-136	4.506E-01	3.367E+00	3 525E+00	0.000E+00	0.381
CS-137	1.342E+00	2.215E+00	3 355E+00	0.000E+00	0.259
CE-139	8.701E-01	2.016E+00	$2.131E\pm01$	0.000E+00	0.277
BA-140	5.910E+00		6 973E+00	0.000E+00	0.446
LA-140	3.111E+00	3.999E+00	$6.973 \pm 00$	0.000E+00	0.375
CE-141	2.593E+00	4.803E+00	2.427E+01	0.000E+00	0.077
CE-144	1.876E+00		2.4275+01 9 572F+00	0.000E+00	-1.242
EU-152	-1.1898+01	7.3I3E+00	9.372B+00 6.650F+00	0.000E+00	0.306
EU-154	2.038E+00	3.953E+00	6.650E+00	$0.000 \pm 00$	0.860
TH-228	5.725E+00	4.138E+00	0.004E+00 0 400E+00	0.000E+00	-0.469
U-235	-1.140E+01	T.SOSE+OT	ム・サンムロキVI つ ワウ1 豆・ヘウ	$0.000 \pm 00$	0.438
U-238	1.630E+02	2.338E+02	3./ZIE+VZ	0.0000+00	0.235
AM-241	6.675E+00	2.0056+01	2.030E+U1	0.0001100	0.200

N 10T0070E		06/04/2006	22.55.05/23/2	2006 14:43,	3.662E+00,WG	L28785-7	CL
A, 13 120705	- / 7	,0070472000	.06/	01/2006 10:13	3,1335L090904		
B,13U20705		, HIBD 2 835F+01	5 390E+01.	7.264E+01,	0.390		
C, RA-226	, IES,	2.035E+01	$1 201E \pm 01$	1 043E+01.	0.236		
C, AC-228	, IES,	2.457E+00,	$f = 274 \overline{E} + 00$	1 318E+01	0.199		
C,TH-232	,YES,	2.620E+00,	0.2745700,	3 006F+01	-0 083		
C,BE-7	,NO ,	-2.501E+00,	1.850E+01,	$5.000 \pm 01$	0.222		
C,K-40	,NO,	1.191E+01,	$2.943 \pm +01$ ,	5.360E+01	-0 559		
C,CR-51	,NO,	-1.952E+01,	2.155E+01,	3.4920+01,	-0.335		
C,MN-54	,NO ,	-2.189E-02,	1.942E+00,	3.1/1E+00,,	-0.007		
C,CO-57	,NO,	8.579E-01,	1.916E+00,	3.219E+00,,	0.207		
C,CO-58	,NO,	-2.167E+00,	2.042E+00,	3.155E+00,,	-0.687		
C,FE-59	,NO,	8.829E-01,	4.184E+00,	6.989E+00,,	0.126		
C, CO-60	,NO,	-9.172E-01,	2.028E+00,	3.206E+00,,	-0.286		
C.ZN-65	,NO,	3.673E+00,	4.330E+00,	7.458E+00,,	0.493		
C, SE-75	, NO ,	8.410E-01,	2.731E+00,	4.465E+00,,	0.188		
C.SR-85	NO .	1.686E+01,	2.727E+00,	5.156E+00,,	3.270		
C Y - 88	NO .	-1.672E+00,	2.161E+00,	3.294E+00,,	-0.507		
C NB-94	NO .	-1.773E+00,	2.251E+00,	2.978E+00,,	-0.595		
C NB - 95	NO .	1.462E-01.	2.010E+00,	3.312E+00,,	0.044		
$C$ $ZR_{95}$	NO /	1.430E+00.	3.602E+00,	6.033E+00,,	0.237		
C, MO = 99	NO ,	-8.249E+01.	3.049E+02,	4.952E+02,,	-0.167		
$C_{\rm PII} = 103$	NO	8 678E-01.	2.382E+00,	3.937E+00,,	0.220		
C, RU=105	NO	-1.364E-01	1.763E+01.	2.926E+01,,	-0.005		
C, RO = 100	, NO , NO	9 158E-01	1.908E+00.	3.223E+00,,	0.284		
C, AG = 110	, NO ,	1.594E+00	2.560E+00.	4.309E+00,,	0.370		
C, SN-113	, NO ,	2 038E+00	4 217E+00.	3.421E+00.	0.596		
C, SB - 124	, NO ,	$2.030 \pm 00,$ 1.676 $\pm 01$	5.647E+00	9.284E+00.	0.018		
C, SB-125	, NO ,	$1.070 \pm 01$	2.745E+01	4 585E+01.	0.336		
C, TE-IZ9M	, NO ,	1.340E+01,	5 296F±00	8 695E+00.	-0.139		
C,1-131	,NO ,	-1.209E+00,	3.290E+00,	/ 313E+00	0 568		
C,BA-133	,NO ,	2.451E+00,	2.940E+00,	3 302E+00,,	1 228		
C,CS-134	,NO,	4.164E+00,	3.270E+00,	5.552E+00,,	0 081		
C,CS-136	,NO,	4.506E-01,	3.36/E+00,	$5.540\pm00,,$	0.381		
C,CS-137	,NO,	1.342E+00,	$2.215 \pm +00,$	3.325E+00,,	0.259		
C,CE-139	,NO,	8.701E-01,	2.016E+00,	3.355E+00,,	0.239		
C,BA-140	,NO,	5.910E+00,	1.288E+01,	2.1310+01,,	0.277		
C,LA-140	,NO,	3.111E+00,	3.999E+00,	6.9/3E+00,,	0.440		
C,CE-141	,NO,	2.593E+00,	4.803E+00,	6.912E+00,,	0.375		
C,CE-144	,NO,	1.876E+00,	1.703E+01,	2.427E+01,,	0.077		
C,EU-152	,NO,	-1.189E+01,	7.313E+00,	9.572E+00,,	-1.242		
C,EU-154	,NO,	2.038E+00,	3.953E+00,	6.650E+00,,	0.306		
C, TH-228	, NO ,	5.725E+00,	4.138E+00,	6.654E+00,,	0.860		
C,U-235	, NO ,	-1.140E+01,	1.808E+01,	2.432E+01,,	-0.469		
C,U-238	, NO .	1.630E+02,	2.338E+02,	3.721E+02,,	0.438		
C.AM-241	, NO .	6.675E+00,	2.005E+01,	2.836E+01,,	0.235		
=,======	. ,	•					

Sec. Review: Analyst: LIMS: _

								========	======	
VAX/V TBE14	VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 4-JUN-2006 22:56:17.34 BE14 P-10933A HpGe ******** Aquisition Date/Time: 4-JUN-2006 16:40:59.91									
LIMS	No.	, Customer	Name, C	lient II	D: WG	L28785-8	B CLINTON			
Samp Samp Quant Start End MDA	Sample ID       : 14L28785-8       Smple Date: 23-MAY-2006 15:00:00.         Sample Type       : WG       Geometry : 1435L091304         Quantity       : 3.62160E+00 L       BKGFILE : 14BG060306MT         Start Channel       : 90       Energy Tol : 1.00000       Real Time : 0 06:15:03.62         End Channel       : 4090       Pk Srch Sens: 5.00000       Live time : 0 06:15:00.00         MDA Constant       : 0.00       Library Used: LIBD									
Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1 2 3 4 5 6 7 8 9	1 1 1 1 1 1 1 1	66.39 93.03* 140.12 198.70* 239.06* 352.17* 583.53* 596.06 609.80* 911.44*	212 59 157 93 30 5 15 100 72 30	718 775 571 642 395 314 152 160 178 58	1.23 1.91 1.28 1.57 1.55 1.88 1.90 1.98 2.10 2.10	133.77 187.20 281.60 399.01 479.86 706.31 1168.88 1193.90 1221.34 1823.00	4.54E-01 1.16E+00 1.67E+00 1.60E+00 1.47E+00 1.14E+00 7.91E-01 7.79E-01 7.65E-01 5.64E-01	9.43E-03 2.62E-03 6.96E-03 4.13E-03 1.35E-03 2.25E-04 6.50E-04 4.43E-03 3.20E-03 1.32E-03	22.9 97.3 27.6 55.5 134.2 768.5 198.9 27.6 47.9 61.0	6.98E-01 4.99E-01 9.43E-01 5.21E-01 1.44E+00 1.37E+00 7.60E-01 1.30E+00 9.34E-01 1.11E+00
11	1	1766.19*	25	38	3.28	3520.05	3.43E-01	1.10E-03	73.9	1.57E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide "	Type: natura	al				
1002200					Uncorrected Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L pĊi/L	%Error
AC-228	835.50		1.75	6.034E-01	Line Not Found	1
	911.07	30	27.70*	5.644E-01	6.282E+00 6.308E+00	121.95
TH-228	238.63	30	44.60*	1.467E+00	1.540E+00 1.559E+00	268.41
	240.98		3.95	1.461E+00	Line Not Found	d
ТН-232	583.14	15	30.25	7.909E-01	2.029E+00 2.029E+00	397.79
	911.07	30	27.70*	5.644E-01	6.282E+00 6.282E+00	121.95
	969.11		16.60	5.383E-01	Line Not Found	d

Flag: "*" = Keyline

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Page : 2 Summary of Nuclide Activity Acquisition date : 4-JUN-2006 16:40:59 Sample ID : 14L28785-8 Total number of lines in spectrum 11 8 Number of unidentified lines Number of lines tentatively identified by NID 3 27.27% Nuclide Type : natural Uncorrected Decay Corr Decay Corr 2-Sigma Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags Nuclide AC-2285.75Y1.006.282E+006.308E+007.693E+00121.95TH-2281.91Y1.011.540E+001.559E+004.185E+00268.41TH-2321.41E+10Y1.006.282E+006.282E+007.662E+00121.95 Total Activity : 1.411E+01 1.415E+01 Grand Total Activity : 1.411E+01 1.415E+01 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited

L28784 139 of 141

3 Page : Unidentified Energy Lines Acquisition date : 4-JUN-2006 16:40:59 Sample ID : 14L28785-8 Bkgnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags Area It Energy 133.77 130 8 9.43E-03 45.8 4.54E-01 718 1.23 66.39 212 1 187.20 183 10 2.62E-03 **** 1.16E+00 775 1.91 59 93.03 1 1.67E+00 281.60 278 8 6.96E-03 55.2 571 1.28 157 140.12 1 1.60E+00 394 10 4.13E-03 **** 642 1.57 399.01 93 1 198.70 706.31 702 10 2.25E-04 **** 1.14E+00 314 1.88 352.17 5 1 160 1.98 1193.90 1189 12 4.43E-03 55.1 7.79E-01 100 1 596.06 7.65E-01 178 2.10 1221.34 1215 14 3.20E-03 95.8 72 609.80 1 38 3.28 3520.05 3511 17 1.10E-03 **** 3.43E-01 25 1766.19 1 Flags: "T" = Tentatively associated Summary of Nuclide Activity 11 Total number of lines in spectrum 8 Number of unidentified lines Number of lines tentatively identified by NID 3 27.27% Nuclide Type : natural Wtd Mean Wtd Mean Decay Corr 2-Sigma Uncorrected Decay Corr 2-Sigma Error %Error Flags pCi/L pCi/L Nuclide Hlife Decay 11.17E+00 261.64 4.271E+00 1.00 4.253E+00 5.75Y AC-228 268.41 4.185E+00 1.559E+00 1.540E+00 1.01 TH-228 1.91Y 397.79 8.071E+00 2.029E+00 2.029E+00 TH-232 1.41E+10Y 1.00 _____ _____ 7.859E+00 7.823E+00 Total Activity : Grand Total Activity : 7.823E+00 7.859E+00 "M" = Manually accepted Flags: "K" = Keyline not found "A" = Nuclide specific abn. limit "E" = Manually edited Interference Report Interfered Interfering _____ _____ Line Nuclide Line Nuclide 911.07 AC-228 911.07 TH-232 Combined Activity-MDA Report ---- Identified Nuclides ----Act/MDA MDA error MDA Activity Act error (pCi/L) Nuclide (pCi/L) 0.295 0.000E+00 1.445E+01 1.117E+01 AC-228 4.271E+00 0.222 0.000E+00 7.029E+00 4.185E+00 TH-228 1.559E+00 0.000E+00 0.127 1.603E+01 2.029E+00 8.071E+00 TH-232

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	-6.818E+00		2.324E+01	3.789E+01	0.000E+00	-0.180
NA-24	-9.661E-01		9.191E-01	Half-Life too	short	
K-40	-1.192E+01		3.493E+01	6.094E+01	0.000E+00	-0.196
CR = 51	-3.427E+01		2.720E+01	4.299E+01	0.000E+00	-0.797
MN-54	4.302E-01		2.424E+00	3.987E+00	0.000E+00	0.108
CO = 57	-1.339E+00		2.442E+00	4.008E+00	0.000E+00	-0.334
CO = 58	-1.837E+00		2.563E+00	4.039E+00	0.000E+00	-0.455
EE-59	3.117E+00		5.364E+00	9.053E+00	0.000E+00	0.344
CO = 60	2.392E+00		2.443E+00	4.270E+00	0.000E+00	0.560
ZN = 65	3.855E+00		5.477E+00	9.276E+00	0.000E+00	0.416
SE-75	-3.180E+00		3.355E+00	5.418E+00	0.000E+00	-0.587
SR-85	2.010E+01		3.046E+00	5.876E+00	0.000E+00	3.421
V-88	8.035E-01		2.789E+00	4.670E+00	0.000E+00	0.172
NR-94	-2.150E-02		2.331E+00	3.842E+00	0.000E+00	-0.006
NB-95	3 648E+00		2.615E+00	4.552E+00	0.000E+00	0.801
ND 95 7P-95	-5.298E+00		4.672E+00	7.262E+00	0.000E+00	-0.730
MO-99	-9 848E+01		3.643E+02	5.912E+02	0.000E+00	-0.167
	8 137E-01		2.987E+00	4.956E+00	0.000E+00	0.164
RU-105 PII-106	-2.569E+01		2.381E+01	3.502E+01	0.000E+00	-0.734
$\Lambda G = 110$ m	9 454E-01		2.310E+00	3.891E+00	0.000E+00	0.243
$AG^{-113}$	2.949E+00		3.357E+00	5.599E+00	0.000E+00	0.527
SN-113 CD-124	9 866E-01		6.179E+00	4.357E+00	0.000E+00	0.226
SD = 124 CD = 125	1 245E-01		6.789E+00	1.126E+01	0.000E+00	0.011
3B-123 TE-129M	-2 904E+00		3.423E+01	5.635E+01	0.000E+00	-0.052
IG-IZ9M T 101	-1 095E+00		6.826E+00	1.106E+01	0.000E+00	-0.099
1-122	5 423E+00		3.988E+00	5.812E+00	0.000E+00	0.933
DA-133	8 289E+00		4.848E+00	4.286E+00	0.000E+00	1.934
CS = 134	-1 270E+00		4.327E+00	6.964E+00	0.000E+00	-0.182
CS-130	-1.270B+00 2 060F+00		2.466E+00	4.224E+00	0.000E+00	0.488
CE 120	2.000E+00 1 795F+00		2.499E+00	4.161E+00	0.000E+00	0.431
CE-139	1 029F±01		1.617E+01	2.711E+01	0.000E+00	0.380
BA=140	エ・02フロ+01 く 127〒-01	•	4.956E+00	8.275E+00	0.000E+00	0.074
DA-140	0.12/E-01 1 /07E+00		6.010E+00	8.479E+00	0.000E+00	0.177
CE = 141	2.497E+00		2.176E+01	3.064E+01	0.000E+00	0.028
CE - 144		-	9.025E+00	1.196E+01	0.000E+00	-0.632
EU-152	-7.302EF00	,	4.962E+00	8 259E+00	0.000E+00	0.094
ビU-154 DD 226	1 0000.01	-	4.356E±01	9,762E+01	0.000E+00	-0.187
KA-ZZO	-1.029E+U1	-	$2.176E \pm 01$	3 155E+01	0.000E+00	0.808
U-235	Z.3436+01	-	2.178F102	4 0.23E+0.2	0.000E+00	-0.156
U-238	-0.293E+U1	-	2.4/05+02	$5 257E \pm 01$	0.000E+00	-0.533
AM-241	-Z.803E+01	L.	3.07/6+UI		0.0000,000	0.000

CL

A,14L28785	- 8	,06/04/2006	22:56,05/23/	/2006 15:00,	3.622E+00,WG	L28785-8
B,14L28785	5-8	,LIBD	,06	5/02/2006 08:23	,1435L091304	
C, AC-228	,YES,	4.271E+00,	1.117E+01,	1.445E+01,,	0.295	
C,TH-228	,YES,	1.559E+00,	4.185E+00,	7.029E+00,,	0.222	
C, TH-232	,YES,	2.029E+00,	8.071E+00,	1.603E+01,,	0.127	
C.BE-7	, NO	-6.818E+00,	2.324E+01,	3.789E+01,,	-0.180	
C.K-40	NO .	-1.192E+01,	3.493E+01,	6.094E+01,,	-0.196	
C.CR-51	, NO ,	-3.427E+01,	2.720E+01,	4.299E+01,,	-0.797	
C.MN-54	.NO .	4.302E-01.	2.424E+00,	3.987E+00,,	0.108	
$C_{-}CO-57$	NO .	-1.339E+00.	2.442E+00,	4.008E+00,,	-0.334	
$C_{1}C_{2}-58$	NO .	-1.837E+00.	2.563E+00,	4.039E+00,,	-0.455	
C FE-59	NO	3.117E+00.	5.364E+00.	9.053E+00.	0.344	
$C_{1}C_{0}-60$	NO .	2.392E+00.	2.443E+00.	4.270E+00,,	0.560	
$C_{1}ZN = 65$	NO .	3.855E+00.	5.477E+00.	9.276E+00,,	0.416	
$C_{SE} = 75$	NO .	-3.180E+00.	3.355E+00,	5.418E+00,,	-0.587	
$C_{SR-85}$	NO	2.010E+01.	3.046E+00.	5.876E+00,	3.421	
C V = 88	NO	8 035E-01.	2.789E+00.	4.670E+00.	0.172	
C NB-94	NO /	-2.150E-02	2.331E+00.	3.842E+00.	-0.006	
C NB - 95	NO /	3.648E+00	2.615E+00.	4.552E+00.	0.801	
C ZR - 95	NO /	-5.298E+00.	4.672E+00.	7.262E+00.	-0.730	
C MO-99	NO ,	-9.848E+01	3.643E+02.	5.912E+02.	-0.167	
$C RII_103$	NO	8 137E-01	2.987E+00	4.956E+00.	0.164	
C RII-106	NO	-2.569E+01	2.381E+01	3.502E+01.	-0.734	
$C_A C_{-110m}$	, NO , NO	9.454E-01	2.310E+00	3.891E+00.	0.243	
C SN - 113	NO ,	2.949E+00	3.357E+00	5.599E+00	0.527	
$C_{SB-124}$	NO	9.866E-01	6 179E+00	4.357E+00.	0.226	
C, SB = 125	NO,	1.245E-01	6.789E+00	1.126E+01.	0.011	
$C_{TE-129M}$	NO ,	-2.904E+00	3.423E+01	5.635E+01.	-0.052	
$C_{T-131}$	NO ,	-1.095E+00	6 826E+00.	1,106E+01.	-0.099	
$C B \Delta - 133$	NO ,	5.423E+00	3.988E+00	5.812E+00.	0.933	
C, CS = 134	NO	8 289E+00	4 848E+00.	4.286E+00.	1.934	
C CS = 136	NO ,	-1.270E+00	4.327E+00.	6.964E+00.	-0.182	
$C_{137}$	NO ,	2.060E+00	2.466E+00	4.224E+00.	0.488	
C CE = 139	NO	1.795E+00	2.499E+00.	4.161E+00.	0.431	
$C B \Delta - 140$	NO ,	1.029E+01	1.617E+01.	2.711E+01.	0.380	
$C I \Delta - 140$	NO ,	6 127E-01	4.956E+00.	8.275E+00.	0.074	
C, DA = 140	NO	1.497E+00	6.010E+00	8.479E+00.	0.177	
C, CE = 144	NO	8 470E-01	2.176E+01	3.064E+01.	0.028	
$C$ $\overline{E}II_{-1}E2$	NO	-7 562E±00	9 025E+00	1 196E+01	-0.632	
C, EU=152	, NO , NO	7.791E-01	4.962E+00	8 259E+00	0.094	
C $B$ $D$ $ T$ $2$ $+$ $ T$ $2$ $+$ $ T$ $2$ $+$ $ T$ $2$ $+$ $ T$ $2$ $+$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$ $ T$	NO,	-1 829F±01	$6.356E \pm 01$	9.762E+01	-0.187	
$C_1 \overline{\Gamma}_{225}$	NO	$2.549E\pm01$	$2.176E \pm 01$	3.155E+01	0.808	
C II-238	NO	-6.293E+01	2.478E+02	4.023E+02	-0.156	
$C_{\rm AM} = 2/1$	NO	-2 803E+01	$3.697E \pm 01$	5.257E+01	-0.533	
$\cup I \cup \Box \cup \Box \cup \Box \cup \Box \cup \Box \cup \Box \cup \Box \cup \Box \cup \Box $	,,	2.0001T01/	J. U. / / U. / L/	J. 2 J. 2 J. 2 J. 7 Z. J. J	0.000	

L29406 1 of 37

A TELEDYNE BROWN ENGINEERING A Teledyne Technologies Company

> 2508 Quality Lane Knoxville, TN 37931 865-690-6819 (Phone)

### Work Order #: L29406

### Exelon

August 3, 2006



Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville CT 06062

#### Case Narrative - L29406 EX001-3ESPBRAID-06

08/03/2006 13:39

#### Sample Receipt

The following samples were received on August 1, 2006 in good condition, unless otherwise noted.

	Cross Reference Tab	le
 Client ID	Laboratory ID	Station ID(if applicable)
WG-BW-208D-072806-JL-100	L29406-1	
 WG-BW-207-072806-JL-101	L29406-2	
 WG-BW-207-072806-JL-102	L29406-3	

	Analytical Method Cross Reference Tab	ole
Radiological Parameter	TBE Knoxville Method	Reference Method
Gamma Spectrometry	TBE-2007	EPA 901.1
H-3 (DIST)	TBE-2010	
TOTAL SR	TBE-2018	EPA 905.0



#### Case Narrative - L29406 EX001-3ESPBRAID-06

08/03/2006 13:39

#### **Gamma Spectroscopy**

#### **Quality Control**

Quality control samples were analyzed as WG4276.

Duplicate Sample

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID WG-ZION-MW-ZN-10U-072806-MS-003 Laboratory IDQC Sample #L29402-1WG4276-1

#### **<u>H-3 (DIST)</u>**

#### **Quality Control**

Quality control samples were analyzed as WG4273.

<u>Method Blank</u> All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

#### **Duplicate Sample**

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

Client ID	Laboratory ID	QC Sample #
WG-ZION-MW-ZN-10U-072806-MS-003	L29402-1	WG4273-3



#### Case Narrative - L29406 EX001-3ESPBRAID-06

08/03/2006 13:39

#### <u>TOTAL SR</u>

#### **Quality Control**

Quality control samples were analyzed as WG4288.

<u>Method Blank</u> All blanks were within acceptance limits, unless otherwise noted.

Laboratory Control Sample

All laboratory control samples were within acceptance limits, unless otherwise noted.

#### **Duplicate Sample**

Duplicates were analyzed for the following samples. All duplicate results were within acceptance limits, unless otherwise noted.

<u>Client ID</u> WG-BW-207-072806-JL-101 Laboratory ID QC Sample # L29406-2 WG4288-3

#### **Certification**

This is to certify that Teledyne Brown Engineering - Environmental Services, located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

railes for Keith Jeter

Operations Manager

L29406 5 of 37

## **Sample Receipt Summary**

L29406 6 of 37

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1001-00(SOURCE)GN-CO004

L29406 7 of 37

08/01/06 10:34 SR #: SR09622	Sample Recei	ipt Verification/V	ariance Report
Client: Exelon	Project #	: EX001-3ESPBRAID-06	LIMS #: L29406
Initiated By: RCHARLES Init Date: 07/29/06	Receive Date: 08/01	/06	
	Notificat	ion of Variance	
Person Notified:		Contacted By:	
Notify Date:			
Notify Method:			
Notify Comment:			
	Client Resp	ponse	
Person Responding:			
Response Date:			
Response Method:			
Response Comment			
Criteria		Yes No NA Comment	
1 Shipping containe and intact.	r custody seals presen	t NA	
2 Sample container and intact.	custody seals present	NA	
3 Sample containers condition	received in good	Ŷ	
4 Chain of custody	received with samples	Y	
5 All samples liste received	d on chain of custody	Y	
6 Sample container legible.	labels present and	Y	
7 Information on co correspond with c	ntainer labels hain of custody	Ŷ	
8 Sample(s) properl appropriate conta	y preserved and in iner(s)	Y pH at or	below 2
9 Other (Describe)		NA	

#### AUG 0 1 2006

TELEDYNE BROWN ENGINEERING 2508 Quality Lane Knoxville, TN 37931-3133

ACKNOWLEDGEMENT

This is not an invoice

August 01, 2006

Kathy Shaw Conestoga-Rovers & Associates 45 Farmington Valley Drive Plainville, CT 06062

The following sample(s) were received at Teledyne Brown Engineering Knoxville laboratory on August 01, 2006. The sample(s) have been scheduled for the analyses listed below and the report is scheduled for completion by August 08, 2006. Please review the following login information and pricing. Contact me if anything is incorrect or you have questions about the status of your sample(s).

Thank you for choosing Teledyne Brown Engineering for your analytical needs.

Sincerely, Rebecca Charles Project Manager (865)934-0379

Project ID: EX001-3ESPBRAID-06
 P.O. #: 00411203
Release #:
Contract#: 00411203
Kathy Shaw, FAX#:860-747-1900, larry.walton@exeloncorp.com

Client ID/ Station	Laboratory ID Analysis	Vol/Units Price	Start Collect Date/Time	End Collect Date/Time
WG-BW-208D-072806-JL-100	L29406-1		07/28/06:1210	
WG	GELI H-3 (DIST)	162.00 162.00		
WG	SR-90 (FAST)	210.00		
WG-BW-207-072806-JL-101	L29406-2		07/28/06:1405	
WG	GELI	162.00		
WG WG	SR-90 (FAST)	210.00		
WG-BW-207-072806-JL-102	L29406-3		07/28/06:1410	
WG	GELI	162.00		
WG WG	H-3 (DIST) SR-90 (FAST)	162.00 210.00		

End of document

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## Internal Chain of Custody

Internal Chain of Custody

**************************************	******	**************************************	******	****
Prod	P	analyst		
H-3 (DIST)	E	IJ		
SR-90 (FAST)	I	CB		
GELI	I	WC		
Relinquish Date Reli	nquish By	Y	Received By	Comple Custodian
07/29/2006 00:00			099999	Sample Custodian
08/01/2006 12:24	030854	Donna Webb	029728	Lauren Larsen
08/01/2006 12:24	099999	Sample Custodian	030854	Donna Webb
08/02/2006 15:38	029728	Lauren Larsen	030854	Donna Webb
08/02/2006 15:38	030854	Donna Webb	099999	Sample Custodian
**************************************	******	**************************************	*****************	* * * * *
Prod H-3 (DIST)		Analyst EJ		
SR-90 (FAST)		LCB		
GELI		DW		
Relinquish Date Reli	nquish B	У	Received By 099999	Sample Custodian
08/01/2006 12:24	030854	Donna Webb	029728	Lauren Larsen
08/01/2006 12:24	000000	Sample Custodian	030854	Donna Webb
08/01/2006 12:24	033333	Lauren Larsen	030854	Donna Webb
08/02/2006 15:38	029728	Donna Webb	099999	Sample Custodian
08/02/2006 15:38	030854		* * * * * * * * * * * * * * * * * * * *	* ***
**************************************	******	Containernum 1		
Prod H-3 (DIST)		Analyst EJ		
GP_00 (FAST)		LCB		
CELT		DW		
CELL	inanich I		Received By	
Relinquish Date Rel.	Indaren 1	22	099999	Sample Custodian
07/29/2006 00:00	030854	Donna Webb	029728	Lauren Larsen
08/01/2006 12:24	000004	Sample Custodian	030854	Donna Webb
08/01/2006 12:24	020729	Lauren Larsen	030854	Donna Webb
08/02/2006 15:38	029728	Donna Webb	099999	Sample Custodian
08/02/2006 15:38	030854 ********	**************************************	*****	****
Prod		Analyst		
H-3 (DIST)		EJ		
SR-90 (FAST)		LCB		
GELI		DW		
Relinquish Date Rel	inquish	Ву	Received By	
07/29/2006 00:00	-	M-	099999	Sample Custodian
08/01/2006 12:24	030854	Donna Webb	029728	Lauren Larsen
08/01/2006 12:24	099999	Sample Custodian	030854	Donna Webb

#### Internal Chain of Custody

			*****	* * * * * * *
**************************************	********	Containernum 2		
- Relinguish Date			Received By	
08/02/2006 15:38	029728	Lauren Larsen	030854	Donna Webb
08/02/2006 15:38	030854	Donna Webb	099999	Sample Custodian
**************************************	*****	**************************************	*****	* * * * * *
Prod H-3 (DIST)	Ana EJ	lyst		
GELI	DW			
SR-90 (FAST)	LCE	3		
Relinquish Date Reli	nquish By		Received By	
07/29/2006 00:00	-		099999	Sample Custodian
08/01/2006 12:24	030854	Donna Webb	029728	Lauren Larsen
08/01/2006 12:24	099999	Sample Custodian	030854	Donna Webb
08/02/2006 15:38	029728	Lauren Larsen	030854	Donna Webb
08/02/2006 15:38	030854	Donna Webb	099999	Sample Custodian
**************************************	**********	**************************************	******	* * * * * * *
Prod H-3 (DIST)	Ana EJ	alyst		
GELI	DW			
SR-90 (FAST)	LC	В		
Relinquish Date Rel:	inquish By		Received By 099999	/ Sample Custodian
08/01/2006 12:24	030854	Donna Webb	029728	Lauren Larsen
08/01/2006 12:24	099999	Sample Custodian	030854	Donna Webb
08/02/2006 15:38	029728	Lauren Larsen	030854	Donna Webb
08/02/2006 15:38	030854	Donna Webb	099999	Sample Custodian

#### rereatue promu mudrucerend Internal Chain of Custody Supplemental Sheet

#### L29406

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L29406-1	WG WG-BW-208D-0	)72806-JL-100	
Process step	Prod	Analyst	Date
Login		RCHARLES	08/01/06
Aliquot	GELI	DW	08/01/06
Aliquot	H-3 (DIST)	EJ	08/01/06
Aliquot	SR-90 (FAST)	LCB	08/01/06
Count Room	GELI	KOJ	08/01/06
Count Room	H-3 (DIST)	KOJ	08/02/06
Count Room	SR-90 (FAST)	KOJ	08/03/06

#### 

L29406-2	WG WG-BW-207-072806-JL-	101	
Process step	Prod	Analyst	Date
Login		RCHARLES	08/01/06
Aliquot	GELI	DW	08/01/06
Aliquot	H-3 (DIST)	EJ	08/01/06
Aliquot	SR-90 (FAST)	LCB	08/01/06
Count Room	GELI	ILL	08/01/06
Count Room	H-3 (DIST)	KOJ	08/02/06
Count Room	SR-90 (FAST)	КОЈ	08/03/06
****	****	****	*****

L29406-3 WG WG-BW-207-072806-JL-102

Process step	Prod	Analyst	Date
Login		RCHARLES	08/01/06
Aliquot	GELI	DW	08/01/06
Aliquot	H-3 (DIST)	EJ	08/01/06
Aliquot	SR-90 (FAST)	LCB	08/01/06
Count Room	GELI	ILL	08/01/06
Count Room	H-3 (DIST)	КОЈ	08/02/06
Count Room	SR-90 (FAST)	КОЈ	08/03/06

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# Analytical Results Summary

BROWN ENGINEERING, II A Teledyne Technologies Company

# L29406

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESF	BRAID-06							
Sample ID: WC Station:	-BW-208D-0	172806-JL-100			Collec Collec	t Start: 0' t Stop:	7/28/2006 12:	10		Matrix: Gr ⁷ olume:	ound Wate	ы	Ŭ	DM
Description:					Receiv	e Date: 0	8/01/2006		W %	oisture:				
LIMS Number: L25	406-1													
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Value	s
H-3 (DIST)	2010	7.01E+01	1.11E+02	1.75E+02	pCi/L		10	Ш		08/02/06	60	M	<u>U</u>	
TOTAL SR	2018	-5.10E-01	5.92E-01	1.40E+00	pCi/L		450	ml	07/28/06 12:10	08/03/06	80	M	U	
MN-54	2007	9.76E-01	2.14E+00	<b>3.60E+00</b>	pCi/L		3000.67	ml	07/28/06 12:10	08/01/06	28800	Sec		20
CO-58	2007	-1.05E+00	2.20E+00	3.53E+00	pCi/L		3000.67	m	07/28/06 12:10	08/01/06	28800	Sec		20
FE-59	2007	2.15E+00	4.13E+00	7.05E+00	pCi/L		3000.67	ml	07/28/06 12:10	08/01/06	28800	Sec	- N	9
CO-60	2007	1.73E+00	2.27E+00	3.92E+00	pCi/L		3000.67	ml	07/28/06 12:10	08/01/06	28800	Sec	U D	0
ZN-65	2007	5.74E+00	5.28E+00	8.04E+00	pCi/L		3000.67	ml	07/28/06 12:10	08/01/06	28800	Sec	- - -	20
NB-95	2007	2.57E+00	2.65E+00	3.91E+00	pCi/L		3000.67	ml	07/28/06 12:10	08/01/06	28800	Sec		2
ZR-95	2007	-2.60E+00	4.24E+00	6.37E+00	pCi/L		3000.67	m	07/28/06 12:10	08/01/06	28800	Sec	- - -	9
CS-134	2007	5.68E+00	4.01E+00	4.39E+00	pCi/L		3000.67	m	07/28/06 12:10	08/01/06	28800	Sec	- - -	40
CS-137	2007	1.92E+00	2.30E+00	3.95E+00	pCi/L		3000.67	m	07/28/06 12:10	08/01/06	28800	Sec	- - -	20
BA-140	2007	-2.89E+00	9.97E+00	1.60E+01	pCi/L		3000.67	m	07/28/06 12:10	08/01/06	28800	Sec	n	20
LA-140	2007	2.92E+00	3.09E+00	5.39E+00	pCi/L		3000.67	ml	07/28/06 12:10	08/01/06	28800	Sec	- 	202
TH-228	2007	1.05E+01	4.90E+00	7.04E+00	pCi/L		3000.67	m	07/28/06 12:10	08/01/06	28800	Sec	+	cs

Compound/Analyte not detected or less than 3 sigma Flag Values U = + + = I U* = High = Spec = L H = =

Activity concentration exceeds MDC and 3 signal, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma

Activity concentration exceeds customer reporting value MDC exceeds customer technical specification

High recovery Low recovery

Bolded text indicates reportable value.

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MDC - Minimum Detectable Concentration

unless otherwise noted

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis No = Peak not identified in gamma spectrum

# L29406

Conestoga-Rovers & Associates

EX001-3ESPBRAID-06

Nauly Viaw													
Sample ID: W	G-BW-207-07.	2806-JL-101			Collect Start:	07/28/2006 14:	:05	<b>P</b>	Matrix: G	ound Wate	-	M)	g
Station:					Collect Stop:			>	volume:				
Description:					Receive Date:	08/01/2006		% W(	oisture:				
LIMS Number: L2	29406-2												1
		Activity	Uncertainty		Run	Aliquot	Aliquot	Reference	Count	Count	Count	:	
Radionuclide	#dos	Conc	2 Sigma	MDC	Units #	Volume	Units	Date	Date	Time	Units	Flag Values	
H-3 (DIST)	2010	4.38E+02	1.33E+02	1.77E+02	pCi/L	10	ml		08/02/06	60	M	+	-
TOTAL SR	2018	8.44E-02	6.60E-01	1.38E+00	pCi/L	450	ml	07/28/06 14:05	08/03/06	80	Σ		
MN-54	2007	-1.27E+00	1.99E+00	3.15E+00	pCi/L	3056.58	ml	07/28/06 14:05	08/01/06	28800	Sec	U No	
CO-58	2007	-5.76E-01	2.10E+00	3.39E+00	pCi/L	3056.58	m	07/28/06 14:05	08/01/06	28800	Sec	U No	
FE-59	2007	3.11E+00	3.98E+00	6.86E+00	pCi/L	3056.58	lm	07/28/06 14:05	08/01/06	28800	Sec	No No	
CO-60	2007	-1.35E+00	1.90E+00	2.96E+00	pCi/L	3056.58	ш	07/28/06 14:05	08/01/06	28800	Sec	U No	
ZN-65	2007	2.60E+00	5.20E+00	7.57E+00	pCi/L	3056.58	lm	07/28/06 14:05	08/01/06	28800	Sec	N N	
NB-95	2007	1.22E+00	2.11E+00	3.55E+00	pCi/L	3056.58	lm	07/28/06 14:05	08/01/06	28800	Sec	No No	-
ZR-95	2007	9.02E-01	3.44E+00	5.72E+00	pCi/L	3056.58	Ш	07/28/06 14:05	08/01/06	28800	Sec	N N	
CS-134	2007	1.59E+00	4.10E+00	3.41E+00	pCi/L	3056.58	ш	07/28/06 14:05	08/01/06	28800	Sec	No No	
CS-137	2007	-1.76E-01	2.18E+00	3.60E+00	pCi/L	3056.58	Ш	07/28/06 14:05	08/01/06	28800	Sec	N N	_
BA-140	2007	-5.88E+00	8.67E+00	1.36E+01	pCi/L	3056.58	m	07/28/06 14:05	08/01/06	28800	Sec	N N	
LA-140	2007	1.98E+00	2.64E+00	4.61E+00	pCi/L	3056.58	'n	07/28/06 14:05	08/01/06	28800	Sec	N No	_

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma, peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification Low recovery High recovery Flag Values U = + U* = High = L = H =

Bolded text indicates reportable value.

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

BROWN ENGINEERING, IN A Teledyne Technologies Company

Kathy Shaw
port of Analysis 08/03/06 13:37	
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r r	

# L29406

Conestoga-Rovers & Associates

Kathy Shaw					EX0	01-3ESI	PBRAID-06						
Sample ID: WG-B Station:	W-207-072	2806-JL-102			Collec Collec	tt Start: 0 st Stop:	7/28/2006 14:	10		Matrix: Gr ⁷ olume:	ound Water	L	(MG)
Description: Duplic	ate				Receiv	e Date: 0	8/01/2006		WI 0%	oisture:			
LIMS Number: L2940	6-3												
Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Time	Units	Flag Values
	7010	1 71 E 107	1 37E+07	1 R0F+07	nCi/I.		10	lm		08/02/06	60	Σ	
H-3 (JGIU) TOT AT CD	2010	1 70F-01	7 88F-01	1 64F.+00	pCi/L		450	ml	07/28/06 14:10	08/03/06	80	M	n –
Nol 54	2002	1 49F+00	2.56E+00	4.27E+00	pCi/L		3240.4	ml	07/28/06 14:10	08/01/06	28800	Sec	U No
	2007	-1 55E+00	2.58E+00	4.07E+00	pCi/L		3240.4	m	07/28/06 14:10	08/01/06	28800	Sec	U No
CO-70 FF_50	2007	2 47E+00	4.76E+00	7.98E+00	pCi/L		3240.4	m	07/28/06 14:10	08/01/06	28800	Sec	U No
	2007	1 33E+00	2.59E+00	4.39E+00	pCi/L		3240.4	m	07/28/06 14:10	08/01/06	28800	Sec	U No
ZN-65	2007	1.98E+01	6.61E+00	1.10E+01	pCi/L		3240.4	ml	07/28/06 14:10	08/01/06	28800	Sec	U* No
NR-95	2007	2.86E+00	2.63E+00	4.50E+00	pCi/L		3240.4	lm	07/28/06 14:10	08/01/06	28800	Sec	No I
7R-95	2007	-4.21E+00	4.66E+00	7.31E+00	pCi/L		3240.4	m	07/28/06 14:10	08/01/06	28800	Sec	No .
CS-134	2007	1.73E+01	4.59E+00	5.51E+00	pCi/L		3240.4	m	07/28/06 14:10	08/01/06	28800	Sec	U* No
CS-137	2007	6.84E-01	2.53E+00	4.23E+00	pCi/L		3240.4	ш	07/28/06 14:10	08/01/06	28800	Sec	
BA-140	2007	3.42E+00	1.07E+01	1.77E+01	pCi/L		3240.4	ш	07/28/06 14:10	08/01/06	28800	Sec	
LA-140	2007	1.62E+00	3.60E+00	6.11E+00	pCi/L		3240.4	m	07/28/06 14:10	08/01/06	28800	Sec	n lvo
	And a subscription of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second												

Flag Values

Compound/Analyte not detected or less than 3 sigma Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only) Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma Activity concentration exceeds customer reporting value MDC exceeds customer technical specification + U* High L H D

Low recovery

High recovery

I

MDC - Minimum Detectable Concentration

Yes = Peak identified in gamma spectrum **** Results are reported on an as received basis unless otherwise noted

No = Peak not identified in gamma spectrum

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TELEDYNE BROWN ENGINEERING, IN A Teledyne Technologies Company

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# QC Results Summary

QC Summ	ary Report		for	L29406					
8/3/20	)06 1:38:04PM							Ledyne Technologies	Company
					H-3 (DIST)				
					Method Blank Summ	lary			
<u>TBE Sample ID</u> WG4273-1	<u>Radionuclide</u> H-3 (DIST)	<u>Matrix</u> WO	Count D. 07/31/20	<mark>ate/Time</mark> 06 17:40		Blank Result < 1.810E+00	<u>Units</u> pCi/Total		<u>Qualifier</u> ] U
					LCS Sample Summa	ary			
<u>TBE Sample ID</u> WG4273-2	<u>Radionuclide</u> H-3 (DIST)	<u>Matrix</u> WO	Count D 07/31/20	ate/Time 06 18:44	<mark>Spike Value</mark> 5.05E+002	LCS Result 4.760E+02	Units Spike   pCi/Total	Recovery 94.3	Range Qualifier ] 70-130 +
Spike ID: 3H-041 Spike conc: 5.05E+ Spike Vol: 1.00E+	706-1 +002 -000								
					Duplicate Summar	y			
<u>TBE Sample ID</u> WG4273-3 L29402-1	<mark>Radionuclide</mark> H-3 (DIST)	<u>Matrix</u> WG	Count D 07/31/20	ate/Time 06 19:03	Original Result < 1.780E+02	DUP Result < 1.820E+02	Units pCi/L	<u>(1)</u>	Range Qualifier ] <30 **

Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated Nuclide not detected Spiking level < 5 times activity Pass Fail Not evaluated + D * * * a r Z

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Page:



QC Sumn: 8/3/200	ary Report 06 1:38:04PM		for L29406			BROV A Teledy	NN ENGINEE AN ENGINEE Ine Technologies Con	ERING mpony
				TOTAL SR				
				Method Blank Sumr	nary			
<u>TBE Sample ID</u> WG4288-1	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WO	Count Date/Time 08/03/2006 13:02		Blank Result < 8.640E-01	<u>Units</u> pCi/Total		<u>Qualifier</u> I U
				LCS Sample Summ	lary			
<u>TBE Sample ID</u> WG4288-2	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WO	Count Date/Time 08/03/2006 13:02	Spike Value 5.84E+001	LCS Result 6.420E+01	<u>Units</u> <u>Spike Rec</u> pCi/Total 110.	<u>:0 70 70</u>	ange Qualifier <u>1</u> 130 +
Spike ID: 90SR-0 Spike conc: 2.34E+ Spike Vol: 2.50E-0	(1905 002 01							
				Duplicate Summa	ry			
<b>TBE Sample ID</b> WG4288-3 L29406-2	<u>Radionuclide</u> TOTAL SR	<u>Matrix</u> WG	Count Date/Time 08/03/2006 13:02	<u>Original Result</u> < 1.380E+00	<u>DUP Result</u> < 1.440E+00	Units RPD pCi/L		ange Qualifier ] <30 **

Positive Result Compound/analyte was analyzed, peak not identified and/or not detected above MDC < 5 times the MDC are not evaluated Nuclide not detected Spiking level < 5 times activity Pass Fail Not evaluated

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# **Raw Data**

Raw Data Sheet (rawdata) Aug 03 2006, 01:52 pm

Work Order: 129406	Cus	tomer: <u>Exelon</u>								Page:	Ц				
Nuclide: <u>H-3 (DIST</u> )	рто	ject : <u>EX001-3</u>	ESPBRAID-06	I									н	есау &	
Sample ID Run Analysis Refe	erence a/+:we	Volume/ 21:500	Scavenge Date/time	Milking Date/time	Mount Weight	Recoverv ]	Count Date/time	Counter ID	Total counts	Sample dt (min) c	Bkg ounts d	Bkg t (min)	BEF. J	ngrowth A actor	Ané
LI29406-1 H-3 DIST					0		02-aug-06	LS7	132	60	1.87	60	.212		
		10 ml					02:15								
WG-BW-208D-072806-JL-100															
Activity: 7.01E+01 Error: 1.11E+	+02 M	DC: 1.75E+02 *													1
L29406-2 H-3 DIST					0		02-aug-06	LS7	235	60	1.87	60	.21		
		10 ml					03:18								
WG-BW-207-072806-JL-101															
Activity: 4.38E+02 * Error: 1.33E	E+02	MDC: 1.77E+02													1
L29406-3 H-3 DIST					0		02-aug-06	LS7	241	60	1.87	60	.206		
		10 ml					04:22								
WG-BW-207-072806-JL-102															
	:														

Activity: 4.71E+02 * Error: 1.37E+02 MDC: 1.8E+02

vdata)	шđ
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et	01
She	06,
цa	20
Da	03
Raw	Aug

	ay k	rowth An	tor											
	Deca	f. Ing	Fact	.358 1				.35 1				.353 1		
		cg Ef	nin)	400				400				400		
		б Б	ts dt(n	284				299				340		
ge: 2		e Bk	a) count	80				80				80		
Ба		Sampl	dt (mi											
		Total	counts	44				62				72		
		Counter	1 L	X4A				X4C				X4D		
		Count	Date/time	03-aug-06	13:02			03-aug-06	13:02			03-aug-06	13:02	
			Recovery 1		87.91				93.13				83.24	
		Mount	Weight	0				0				0		
	1	Milking	Date/time	10										
	ESPBRAID-06	Scavenge	Date/time	03-aug-06	08:30			03-aug-06	08:30			03-aug-06	08:30	
tomer: <b>Exelon</b>	ject : <u>EX001-3</u>	Volume/	Aliquot		450 ml		DC: 1.4E+00 *		450 ml		DC: 1.38E+00 *		450 ml	
Cus	Pro.	Reference	Date/time	28-ju1-06	12:10		92E-01 M	28-ju1-06	14:05		6E-01 M	28-ju1-06	14:10	
	ST)	nalysis		TOTAL SR		-JL-100	Error: 5.	TOTAL SR		JL-101	Error: 6.	TOTAL SR		JL-102
: <u>L29406</u>	R-90 (F2	Run A	#			9-072806	-5.1E-01			-072806-	B.44E-02			-072806-
Work Order	Nuclide: <u>3</u> 1	Sample ID	Client ID	L29406-1		WG-BW-2081	Activity:	L29406-2		WG-BW-207.	Activity: {	L29406-3		WG-BW-207.

Activity: 1.7E-01 Error: 7.88E-01 MDC: 1.64E+00 *

L29406 23 of 37

Sec. Review: Analyst: LIMS: 💟

VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-AUG-2006 09:47:15.25 TBE10 12892256 HpGe ******* Aquisition Date/Time: 1-AUG-2006 18:27:41.18

LIMS No., Customer Name, Client ID: L29406-1 WG EX/BRAID

Sample ID	:	10L29400	5-1		Smple Date	:	28-JUL-2006 12:10:00.
Sample Type	:	WG			Geometry	:	103L083004
Quantity	:	3.000701	E+00 L		BKGFILE	:	10BG072806MT
Start Channel	:	80	Energy Tol :	1.00000	Real Time	:	0 08:00:04.85
End Channel	:	4090	Pk Srch Sens:	5.00000	Live time	:	0 08:00:00.00
MDA Constant	:	0.00	Library Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.28	271	794	1.24	132.00	7.26E-01	9.42E-03	18.2	1.74E+00
2	1	93.13*	193	1012	2.14	185.75	1.53E+00	6.70E-03	35.2	2.18E+00
3	1	140.00	276	1037	1.57	279.56	1.91E+00	9.58E-03	22.4	4.49E+00
4	1	185.75*	15	589	1.24	371.15	1.77E+00	5.11E-043	324.9	2.84E-01
5	1	198.26*	106	726	1.54	396.20	1.72E+00	3.69E-03	50.6	2.75E+00
6	1	238.55*	229	609	1.65	476.85	1.54E+00	7.97E-03	23.3	3.45E+00
7	1	294.98*	145	450	1.36	589.80	1.33E+00	5.04E-03	29.0	2.96E+00
8	1	351.50*	196	318	1.35	702.94	1.17E+00	6.80E-03	20.5	9.75E+00
9	1	499.78	49	258	2.06	999.78	8.98E-01	1.70E-03	67.4	1.75E+00
10	1	583.16*	59	170	2.51	1166.70	7.99E-01	2.07E-03	50.2	9.90E-01
11	1	595.85	84	171	1.35	1192.10	7.86E-01	2.93E-03	29.7	5.26E-01
12	1	609.11*	203	211	1.68	1218.64	7.73E-01	7.04E-03	18.4	8.05E-01
13	1	767.77	180	307	20.72	1536.27	6.46E-01	6.26E-03	29.3	1.78E+00
14	1	911.05*	22	104	2.18	1823.10	5.65E-01	7.74E-04	98.8	2.75E+00
15	1	1120.19*	42	62	2.47	2241.78	4.79E-01	1.45E-03	45.7	8.07E-01
16	1	1764.92*	23	53	2.24	3532.52	3.39E-01	8.14E-04	73.3	4.94E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

	* *				Uncorrected Decay Corr	2-Sigma
Nuclide	Energy	Area	%Abn	%Eff	pCi/L pĈi/L	%Error
RA-226	186.21	15	3.28*	1.771E+00	7.923E+00 7.923E+00	649.76
AC-228	835.50		1.75	6.047E-01	Line Not Found	
	911.07	22	27.70*	5.647E-01	4.459E+00 4.466E+00	197.51
TH-228	238.63	229	44.60*	1.539E+00	1.046E+01 1.050E+01	46.63
	240.98		3.95	1.529E+00	Line Not Found	
TH-232	583.14	59	30.25	7.987E-01	7.701E+00 7.701E+00	100.32
	911.07	22	27.70*	5.647E-01	4.459E+00 4.459E+00	197.51
	969.11		16.60	5.377E-01	Line Not Found	
U-235	143.76		10.50*	1.905E+00	Line Not Found	
	163.35		4.70	1.860E+00	Line Not Found	
	185.71	15	54.00	1.771E+00	4.813E-01 4.813E-01	649.76
	205.31		4.70	1.684E+00	Line Not Found	

Flag: "*" = Keyline

·

Summary of Sample ID	f Nuclide A : 10L29406	ctivity -1	7	Acquisition	date : 1-AUG-	Page 2006 18:	e: 2 27:41
Total num Number of Number of	nber of lin f unidentif f lines ten	es in s ied lin tativel	spectrum nes Ly identified	16 12 . by NID 4	25.00%		
Nuclide Ty	ype : natur	al					
Nuclide RA-226 1 AC-228 TH-228 TH-232 1. U-235 7.	Hlife 1600.00Y 5.75Y 1.91Y .41E+10Y .04E+08Y Total Activ	Uecay 1.00 1.00 1.00 1.00 1.00 1.00	Jncorrected pCi/L 7.923E+00 4.459E+00 1.046E+01 4.459E+00 4.813E-01  2.778E+01	Decay Corr pCi/L 7.923E+00 4.466E+00 1.050E+01 4.459E+00 4.813E-01  2.783E+01	Decay Corr 2-Sigma Error 51.48E+00 8.820E+00 0.490E+01 8.807E+00 31.27E-01	2-Sigma %Error 649.76 197.51 46.63 197.51 649.76	Flags K
Grand ]	Total Activ	ity :	2.778E+01	2.783E+01			
Flags: "K' "E'	" = Keyline " = Manuall	not fo y edite	ound ed	"M" = Manual "A" = Nuclic	ly accepted le specific abr	ı. limit	

L29406 25 of 37

Unidentified Energy Lines Sample ID : 10L29406-1

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	66.28	271	794	1.24	132.00	129	7	9.42E-03	36.5	7.26E-01	
1	93.13	193	1012	2.14	185.75	181	11	6.70E-03	70.3	1.53E+00	
1	140.00	276	1037	1.57	279.56	274	10	9.58E-03	44.8	1.91E+00	
1	198.26	106	726	1.54	396.20	392	9	3.69E-03	* * * *	1.72E+00	
1	294.98	145	450	1.36	589.80	585	9	5.04E-03	58.0	1.33E+00	
1	351.50	196	318	1.35	702.94	699	10	6.80E-03	41.0	1.17E+00	
1	499.78	49	258	2.06	999.78	995	12	1.70E-03	* * * *	8.98E-01	
1	595.85	84	171	1.35	1192.10	1188	9	2.93E-03	59.3	7.86E-01	
1	609.11	203	211	1.68	1218.64	1214	14	7.04E-03	36.7	7.73E-01	
1	767.77	180	307	20.72	1536.27	1531	31	6.26E-03	58.7	6.46E-01	
1	1120.19	42	62	2.47	2241.78	2237	13	1.45E-03	91.4	4.79E-01	
1	1764.92	23	53	2.24	3532.52	3525	13	8.14E-04	****	3.39E-01	

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total	numk	ber of	lines	in	spe	ectrum			16	
Number	• of	unide	ntified	1 li	ines	3			12	
Number	of	lines	tentat	civ∈	ely	identified	by	NID	4	25.00%

Nuclide Type : natural

			Wtd Mean	Wtd Mean			
			Uncorrected	Decay Corr	Decay Corr	2-Sigma	
Nuclide	Hlife	Decay	pCi/L	pĈi/L	2-Sigma Error	%Error	Flags
RA-226	1600.00Y	1.00	7.923E+00	7.923E+00	51.48E+00	649.76	5
TH-228	1.91Y	1.00	1.046E+01	1.050E+01	0.490E+01	46.63	
TH-232	1.41E+10Y	1.00	6.291E+00	6.291E+00	5.808E+00	92.31	
	Total Acti	vity :	2.467E+01	2.472E+01			
Grand	d Total Acti	vitv :	2.467E+01	2 472E+01			
	· · · · · · · · · · · · · · · · · · ·						

Flags:	"K"	=	Keyline not found	۳M۳	=	Manually	/ accepted	E	
	"E"	=	Manually edited	"A"	=	Nuclide	specific	abn.	limit

Interference Report

Interfe	ring	Interf	ered
Nuclide	Line	Nuclide	Line
TH-232	911.07	AC-228	911.07

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/L)	Act error	MDA (pCi/L)	MDA error	Act/MDA
RA-226	7.923E+00	5.148E+01	8.988E+01	0.000E+00	0.088
TH-228	1.050E+01	4.897E+00	7.040E+00	0.000E+00	1.492

·	Non-Identified	Nuclidea	
	NOU TUCHUTTEU	NUCTTUES	

	Key-Line					
Nuclide	Activity (pCi/L)	K.L. Ided	Act error	MDA (pCi/L)	MDA error	Act/MDA
BE-7	1.047E+01		1.966E+01	3.274E+01	0.000E+00	0 320
NA-24	-4.191E+02		3.273E+02	4.915E+02	0.000E+00	-0.853
K-40	1.197E+01		3.293E+01	6.188E+01	0.000E+00	0.000
CR-51	-1.706E+01		2.217E+01	3.603E+01	0.000E+00	-0.473
MN-54	9.757E-01		2.144E+00	3.595E+00	0.000E+00	0.473
CO-57	1.069E-01		2.272E+00	3.752E+00	0.00000+00	0.271
CO-58	-1.048E+00		2.201E+00	3.532E+00	0.000E+00	-0.227
FE-59	2.146E+00		4.128E+00	7.048E+00	$0.000\pm00$	-0.297
CO-60	1.725E+00		2.274E+00	3.920E+00	0.000E+00	0.304
ZN-65	5.740E+00		5.277E+00	8.037E+00	0.000E+00	0.440
SE-75	-6.424E-01		3.173E+00	5.263E+00	0.000E+00	-0 122
SR-85	1.886E+01		2.670E+00	5.170E+00	0.0005+00	3 649
Y-88	-8.564E-01		2.365E+00	3,788E+00	0.000000000	-0.226
NB-94	2.207E-01		2.191E+00	3,636E+00	0.000E+00	-0.220
NB-95	2.570E+00		2.646E+00	3,912E+00	0.0005+00	0.081
ZR-95	-2.604E+00		4.241E+00	6.371E+00	0.000E+00	-0.409
MO-99	4.179E+00		4.832E+01	8 002E+01	$0.000 \pm 00$	-0.409
RU-103	3.097E+00		2.848E+00	4 147E+00	$0.000 \pm 00$	0.052
RU-106	8.403E+00		2.141E+01	3 470E+01	$0.000 \pm 00$	0.747
AG-110m	-1.569E-01		2.081E+00	3 438E+00	$0.000 \pm 00$	0.242
SN-113	1.624E+00		3.015E+00	5.043E+00	$0.000 \pm 00$	-0.046
SB-124	-2.474E+00	2	5.577E+00	3 722E+00	$0.000 \pm 00$	0.322
SB-125	-1.247E+00	*	6.562E+00	1 070E+01	0.000E+00	-0.665
TE-129M	5.331E+00		2.725E+01	4 490E+01	0.000E+00	-0.117
I-131	1.144E+00		3.266E+00	5 445E+00	0.000E+00	0.119
BA-133	8.394E+00		3.803E+00	5.783E+00	0.000E+00	1 451
CS-134	5.680E+00		4.010E+00	4 388F+00	0.000E+00	1 204
CS-136	-5.464E-02		2.623E+00	4.302E+00	0.000E+00	1.294
CS-137	1.917E+00		2.300E+00	3 945E+00	0.000E+00	-0.013
CE-139	-1.357E+00		2.367E+00	3.837E+00	0.000E+00	0.486
BA-140	-2.888E+00		9.971E+00	1 60/E+01	0.000E+00	-0.354
LA-140	2.915E+00		3 093E+00	5 388E+01	0.000E+00	-0.180
CE-141	2,562E+00		4 934E+00	5.300E+00	0.000E+00	0.541
CE-144	-2.601E+00		$2.064E\pm01$	2 976E+00	0.000E+00	0.367
EU-152	-1.249E+01		8 815E+00	$1 162E_{-01}$	0.000E+00	-0.090
EU-154	5 846E-01		4 7/9E+00	7 8505,00	0.000E+00	-1.075
AC-228	4.466E+00		8 820E+00	1 EEOE+00	0.000E+00	0.074
U-235	2.559E+01		$2.111 F \pm 01$		0.0008+00	0.288
U-238	-6.666E+01		$2 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot $		U.UUUE+00	0.843
AM-241	$-7 631E \pm 00$				0.0008+00	-0.171
	,.051E+00		ム・ムラブ凸+UI	3.∠48E+U1	0.000E+00	-0.235

A,10L2940	5-1 5-1	,08/02/2006	09:47,07/28/	2006 12:10,	3.001E+00,L29406	-1 WG EX
$C R \Delta = 226$	VFC			/20/2006 09:5	0,1031083004	
$C$ $TU_220$	VEC	1.0500,	5.148E+U1,	8.988E+UI,,	0.088	
$C_{TU}$	, IEO, VEC	1.050E+01,	4.89/E+00,	7.040E+00,,	1.492	
C, IR - 232	, IED, NO	6.29IE+00,	5.808E+00,	1.320E+01,,	0.476	
C, BE = 7	, NO ,	1.047E+01,	1.966E+01,	3.274E+01,,	0.320	
C, NA-24	,NO ,	-4.191E+02,	3.273E+02,	4.915E+02,,	-0.853	
C, K-40	,NO,	1.197E+01,	3.293E+01,	6.188E+01,,	0.193	
C, CR-51	,NO,	-1.706E+01,	2.217E+01,	3.603E+01,,	-0.473	
C, MN - 54	,NO,	9.757E-01,	2.144E+00,	3.595E+00,,	0.271	
C, CO-57	,NO,	1.069E-01,	2.272E+00,	3.752E+00,,	0.029	
C, CO-58	,NO,	-1.048E+00,	2.201E+00,	3.532E+00,,	-0.297	
C,FE-59	,NO ,	2.146E+00,	4.128E+00,	7.048E+00,,	0.304	
C,CO-60	,NO,	1.725E+00,	2.274E+00,	3.920E+00,,	0.440	
C,ZN-65	,NO,	5.740E+00,	5.277E+00,	8.037E+00,,	0.714	
C,SE-75	,NO ,	-6.424E-01,	3.173E+00,	5.263E+00,,	-0.122	
C,SR-85	,NO,	1.886E+01,	2.670E+00,	5.170E+00,,	3.648	
C,Y-88	,NO,	-8.564E-01,	2.365E+00,	3.788E+00,	-0.226	
C,NB-94	,NO ,	2.207E-01,	2.191E+00,	3.636E+00,	0.061	
C,NB-95	,NO,	2.570E+00,	2.646E+00,	3.912E+00.	0.657	
C,ZR-95	,NO,	-2.604E+00,	4.241E+00,	6.371E+00	-0.409	
C,MO-99	,NO,	4.179E+00,	4.832E+01,	8.002E+01.	0.052	
C,RU-103	,NO,	3.097E+00,	2.848E+00,	4.147E+00.	0.747	
C,RU-106	,NO,	8.403E+00,	2.141E+01.	3.470E+01	0 242	
C,AG-110m	,NO,	-1.569E-01,	2.081E+00.	3.438E+00.	-0.046	
C,SN-113	,NO ,	1.624E+00,	3.015E+00.	5.043E+00	0 322	
C,SB-124	,NO,	-2.474E+00,	5.577E+00.	3.722E+00	-0 665	
C,SB-125	, NO	-1.247E+00.	6.562E+00	$1 070E \pm 01$	-0 117	
C, TE-129M	, NO	5.331E+00.	2.725E+01	4 490E±01	0.110	
C,I-131	NO .	1.144E+00	3.266E+00	$5.445F_{-0.0}$	0.210	
C.BA-133	NO .	8.394E+00	3.803E+00	5.783E+00,	1 4 5 1	
C.CS-134	NO .	5.680E+00	4 010E+00	1 299E+00,	1 204	
C.CS-136	NO .	-5.464E-02	2.623E+00	$4.300 \pm 00,,$	1.294	
C.CS-137	NO	1.917E+00	2.025E+00, 2.300E+00	4.30ZE+00,,	-0.013	
$C_{1}CE = 139$	NO ,	-1.357E+00	$2.300 \pm 00,$	3.945E+00,,	0.486	
C.BA-140	NO ,	-2.888E+00	2.307E+00, 9.971E+00	3.03/E+00,,	-0.354	
C I A - 140	NO ,	$2.000 \pm 00,$ $2.915 \pm 00$	3.971E+00,	1.604E+01,,	-0.180	
C CE - 141	NO ,	2.5135+00,	3.093E+00,	5.388E+00,,	0.541	
$C$ $CE_{14}$	, NO ,	2.502E+00,	4.934E+00,	6.976E+00,,	0.367	
$C$ $FII_{-152}$	, NO , NO	-2.001E+00,	2.064E+01,	2.8/6E+UI,,	-0.090	
C, BU = 152	, NO ,	-1.249E+01,	8.815E+00,	1.162E+01,,	-1.075	
C, EC = 154	, NO ,	5.846E-01,	4.749E+00,	7.850E+00,,	0.074	
$C_1 \Pi_{22}$	, NO , NO	4.400E+UU,	Ø.8∠0E+00,	1.552E+01,,	0.288	
C, U=233	, INU , NO	2.559E+01,	∠.⊥⊥⊥E+01,	3.037E+01,,	0.843	
C $M$ $241$	, INO ,	-0.000E+U1,	2.432E+02,	3.897E+02,,	-0.171	
⊂, Ani-241	, INO ,	-/.63IE+00,	2.299E+01,	3.248E+01,,	-0.235	

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sec. keview: Analyst: LIMS: 🛩

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VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-AUG-2006 09:42:16.07 TBE14 P-10933A HpGe ******** Aquisition Date/Time: 1-AUG-2006 18:27:50.30 _ _ _ _ _ _ 

LIMS No., Customer Name, Client ID: L29406-2 WG EX/BRAID

Sample ID	:	14L29406-2			Smple Date	::	28-JUL-2006 14:05:00.
Sample Type	:	WG			Geometrv	:	143L082304
Quantity	:	3.05660E+00 L			BKGFILE	:	14BG072806MT
Start Channel	:	90 Energy	Tol :	1.00000	Real Time	:	0 08:00:04.91
End Channel	:	4090 Pk Srch	Sens:	5.00000	Live time	:	0 08:00:00.00
MDA Constant	:	0.00 Library	Used:	LIBD			

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	1	66.44*	251	1074	2.00	134.27	5.15E-01	8.72E-03	253	1 63E+00
2	1	139.63*	210	961	1.61	281.41	1.89E+00	7.31E-03	28.2	3.13E+00
3	1	198.42*	144	952	1.21	399.51	1.83E+00	5.02E-03	43.9	1.85E+00
4	1	238.89*	69	650	1.46	480.78	1.67E+00	2.41E-03	71.4	6.88E-01
5	1	242.15	135	653	1.69	487.33	1.66E+00	4.70E-03	37.3	
6	1	295.26*	198	576	1.61	593.93	1.46E+00	6.87E-03	26.3	9.55E-01
7	1	352.27*	242	446	1.62	708.32	1.28E+00	8.42E-03	19.7	3.32E+00
8	1	595.69	163	318	2.99	1196.07	8.48E-01	5.67E-03	27.6	1.75E+00
9	1	609.17*	421	265	2.22	1223.05	8.34E-01	1.46E-02	11.1	2.59E+00
10	1	1120.40*	72	127	2.18	2244.02	5.30E-01	2.51E-03	41.6	1.50E+00
11	1	1461.61*	77	81	2.46	2922.97	4.36E-01	2.67E-03	40.8	7.27E-01
12	1	1512.68	172	83	1.24	3024.42	4.25E-01	5.98E-03	11.6	1.07E+02
13	1	1767.08	146	38	3.85	3529.15	3.79E-01	5.07E-03	13.9	4.87E+00

Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide K-40 TH-228	Energy 1460.81 238.63 240.98	Area 77 69	%Abn 10.67* 44.60* 3.95	%Eff 4.361E-01 1.674E+00 1.666E+00	Uncorrected pCi/L 5.072E+01 2.857E+00 Lin	Decay Corr pCi/L 5.072E+01 2.870E+00 ne Not Found	2-Sigma %Error 81.68 142.75
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Flag: "*" = Keyline

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Summary of Nuclide Activity	Page : 2				
Sample ID : 14L29406-2	Acquisition date : 1-AUG-2006 18:27:50				
Total number of lines in spectrum	13				
Number of unidentified lines	11				
Number of lines tentatively identified	by NID 2 15.38%				
Nuclide Type : natural					
Uncorrected 7 Nuclide Hlife Decay pCi/L K-40 1.28E+09Y 1.00 5.072E+01 TH-228 1.91Y 1.00 2.857E+00 Total Activity : 5.357E+01	Decay Corr Decay Corr 2-Sigma pCi/L 2-Sigma Error %Error Flags 5.072E+01 4.142E+01 81.68 2.870E+00 4.096E+00 142.75  5.359E+01				
Grand Total Activity : 5.357E+01	5.359E+01				
Flags: "K" = Keyline not found	"M" = Manually accepted				
"E" = Manually edited	"A" = Nuclide specific abn. limit				

L29406 30 of 37 Unidentified Energy Lines Paqe : 3 Sample ID : 14L29406-2 Acquisition date : 1-AUG-2006 18:27:50 It Energy Bkgnd FWHM Channel Left Pw Cts/Sec %Err Area %Eff Flags 1 66.44 251 1074 2.00 134.27 130 9 8.72E-03 50.6 5.15E-01 1 139.63 210 961 1.61 281.41 278 9 7.31E-03 56.5 1.89E+00 1 198.42 144952 1.21 399.51 394 11 5.02E-03 87.8 1.83E+00 1 242.15 135 653 487.33 476 18 4.70E-03 74.5 1.69 1.66E+00 1 295.26 198 576 1.61 593.93 588 11 6.87E-03 52.6 1.46E+00 1 352.27 242 446 1.62 703 11 8.42E-03 39.4 708.32 1.28E+001 595.69 163 318 1196.07 1186 19 5.67E-03 55.1 2.99 8.48E-01 1 609.17 1223.05 1214 18 1.46E-02 22.3 421 265 2.22 8.34E-01 1 1120.40 72 2244.02 2235 18 2.51E-03 83.3 127 2.18 5.30E-01 1 1512.68 172 83 1.24 3024.42 3016 14 5.98E-03 23.1 4.25E-01 1 1767.08 146 38 3.85 3529.15 3520 20 5.07E-03 27.8 3.79E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 13 Number of unidentified lines 11 Number of lines tentatively identified by NID 2 15.38% Nuclide Type : natural Wtd Mean Wtd Mean Uncorrected Decay Corr Decay Corr 2-Siqma Nuclide Hlife Decay pCi/L pCi/L 2-Sigma Error %Error Flags K-40 1.28E+09Y 1.00 5.072E+01 4.142E+01 5.072E+01 81.68 TH-228 1.91Y 1.00 2.857E+00 2.870E+00 4.096E+00 142.75 _____ _____ Total Activity : 5.357E+01 5.359E+01 Grand Total Activity : 5.357E+01 5.359E+01 Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit Interference Report No interference correction performed Combined Activity-MDA Report ---- Identified Nuclides ----Activity Act error MDA MDA error Act/MDA Nuclide (pCi/L) (pCi/L) K-40 5.072E+01 4.142E+01 3.025E+01 0.000E+00 1.677 TH-228 2.870E+00 4.096E+00 5.988E+00 0.000E+00 0.479 ---- Non-Identified Nuclides ----

> Key-Line Activity K.L. Act error MDA MDA error Act/MDA

Nuclide	(pCi/L)	Ided		(pCi/L)		
BE-7	8.581E+00		1.796E+01	2.969E+01	0.000E+00	0.289
NA-24	-1.338E+02		2.340E+02	3.663E+02	0.000E+00	-0.365
CR-51	-1.925E+01		1.825E+01	2.930E+01	0.000E+00	-0.657
MN-54	-1.265E+00		1.988E+00	3.146E+00	0.000E+00	-0.402
CO-57	-1.120E+00		2.074E+00	3.376E+00	0.000E+00	-0.332
CO-58	-5.756E-01		2.100E+00	3.393E+00	0.000E+00	-0.170
FE-59	3.113E+00		3.979E+00	6.858E+00	0.000E+00	0.454
CO-60	-1.346E+00		1.904E+00	2.959E+00	0.000E+00	-0.455
ZN-65	2.596E+00		5.199E+00	7.565E+00	0.000E+00	0.343
SE-75	-2.750E+00		2.646E+00	4.296E+00	0.000E+00	-0.640
SR-85	1.116E+01		2.525E+00	4.578E+00	0.000E+00	2.439
Y-88	8.089E-01		1.907E+00	3.259E+00	0.000E+00	0.248
NB-94	-9.184E-01		2.028E+00	3.283E+00	0.000E+00	-0.280
NB-95	1.218E+00		2.107E+00	3.546E+00	0.000E+00	0.343
ZR-95	9.024E-01		3.440E+00	5.721E+00	0.000E+00	0.158
MO-99	8.523E+00		4.438E+01	7.362E+01	0.000E+00	0.116
RU-103	1.294E+00		2.171E+00	3.599E+00	0.000E+00	0.360
RU-106	-1.517E+01		1.822E+01	2.919E+01	0.000E+00	-0.520
AG-110m	3.892E-01		1.922E+00	3.207E+00	0.000E+00	0.121
SN-113	7.755E-01		2.649E+00	4.384E+00	0.000E+00	0.177
SB-124	-1.873E+00		4.206E+00	3.104E+00	0.000E+00	-0.603
SB-125	3.726E+00		5.736E+00	9.575E+00	0.000E+00	0.389
TE-129M	2.731E+01		2.440E+01	4.129E+01	0.000E+00	0.661
I-131	-9.679E-01		2.978E+00	4.850E+00	0.000E+00	-0.200
BA-133	3.715E+00		3.335E+00	4.900E+00	0.000E+00	0.758
CS-134	1.587E+00		4.103E+00	3.412E+00	0.000E+00	0.465
CS-136	-2.415E-02		2.431E+00	3.975E+00	0.000E+00	-0.006
CS-137	-1.755E-01		2.184E+00	3.600E+00	0.000E+00	-0.049
CE-139	-7.220E-01		1.996E+00	3.227E+00	0.000E+00	-0.224
BA-140	-5.878E+00		8.673E+00	1.361E+01	0.000E+00	-0.432
LA-140	1.975E+00		2.637E+00	4.614E+00	0.000E+00	0.428
CE-141	-3.378E+00		4.446E+00	6.099E+00	0.000E+00	-0.554
CE-144	-3.742E+00		1.780E+01	2.596E+01	0.000E+00	-0.144
EU-152	-7.046E+00		6.747E+00	9.765E+00	0.000E+00	-0.722
EU-154	-2.678E+00		4.319E+00	7.015E+00	0.000E+00	-0.382
RA-226	6.383E+00		5.281E+01	8.351E+01	0.000E+00	0.076
AC-228	-4.919E+00		8.652E+00	1.272E+01	0.000E+00	-0.387
'l'H-232	-4.912E+00		8.639E+00	1.270E+01	0.000E+00	-0.387
U-235	-1.885E+01		1.933E+01	2.573E+01	0.000E+00	-0.733
U-238	9.297E+01		2.143E+02	3.648E+02	0.000E+00	0.255
AM-241	-3.685E+01		2.885E+01	4.350E+01	0.000E+00	-0.847

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B,14L29406-2,LIBD,07/31/2006 $09:34,143L082304$ C,K-40,YES, $5.072E+01$ , $4.142E+01$ , $3.025E+01$ , $1.677$ C,TH-228,YES, $2.870E+00$ , $4.096E+00$ , $5.988E+00$ , $0.479$ C,BE-7,NO, $8.581E+00$ , $1.796E+01$ , $2.969E+01$ , $0.289$ C,NA-24,NO, $-1.338E+02$ , $2.340E+02$ , $3.663E+02$ , $-0.365$ C,CR-51,NO, $-1.925E+01$ , $1.825E+01$ , $2.930E+01$ , $-0.657$ C,MN-54,NO, $-1.265E+00$ , $1.988E+00$ , $3.146E+00$ , $-0.402$ C,CO-57,NO, $-1.120E+00$ , $2.074E+00$ , $3.376E+00$ , $-0.170$ C,FE-59,NO, $3.113E+00$ , $3.979E+00$ , $6.858E+00$ , $0.454$ C,CO-60,NO, $-1.346E+00$ , $1.904E+00$ , $2.959E+00$ , $-0.455$
C, K-40 , YES, $5.072E+01$ , $4.142E+01$ , $3.025E+01$ , $1.677$ C, TH-228 , YES, $2.870E+00$ , $4.096E+00$ , $5.988E+00$ , $0.479$ C, BE-7 , NO , $8.581E+00$ , $1.796E+01$ , $2.969E+01$ , $0.289$ C, NA-24 , NO , $-1.338E+02$ , $2.340E+02$ , $3.663E+02$ , $-0.365$ C, CR-51 , NO , $-1.925E+01$ , $1.825E+01$ , $2.930E+01$ , $-0.657$ C, MN-54 , NO , $-1.265E+00$ , $1.988E+00$ , $3.146E+00$ , $-0.402$ C, CO-57 , NO , $-1.120E+00$ , $2.074E+00$ , $3.376E+00$ , $-0.332$ C, CO-58 , NO , $-5.756E-01$ , $2.100E+00$ , $3.393E+00$ , $-0.170$ C, FE-59 , NO , $3.113E+00$ , $3.979E+00$ , $6.858E+00$ , $0.454$ C, CO-60 , NO , $-1.346E+00$ , $1.904E+00$ , $2.959E+00$ , $-0.455$
C,TH-228 ,YES, 2.870E+00, 4.096E+00, 5.988E+00, 0.479 C,BE-7 ,NO , 8.581E+00, 1.796E+01, 2.969E+01, 0.289 C,NA-24 ,NO , -1.338E+02, 2.340E+02, 3.663E+02, -0.365 C,CR-51 ,NO , -1.925E+01, 1.825E+01, 2.930E+01, -0.657 C,MN-54 ,NO , -1.265E+00, 1.988E+00, 3.146E+00, -0.402 C,CO-57 ,NO , -1.120E+00, 2.074E+00, 3.376E+00, -0.332 C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO . 2.596E+00 5.198E+00 7.565E+00 0.243
C,BE-7 ,NO , 8.581E+00, 1.796E+01, 2.969E+01, 0.289 C,NA-24 ,NO , -1.338E+02, 2.340E+02, 3.663E+02, -0.365 C,CR-51 ,NO , -1.925E+01, 1.825E+01, 2.930E+01, -0.657 C,MN-54 ,NO , -1.265E+00, 1.988E+00, 3.146E+00, -0.402 C,CO-57 ,NO , -1.120E+00, 2.074E+00, 3.376E+00, -0.332 C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO 2.596E+00 5.199E+00 7.565E+00 0.243
C,NA-24 ,NO , -1.338E+02, 2.340E+02, 3.663E+02, -0.365 C,CR-51 ,NO , -1.925E+01, 1.825E+01, 2.930E+01, -0.657 C,MN-54 ,NO , -1.265E+00, 1.988E+00, 3.146E+00, -0.402 C,CO-57 ,NO , -1.120E+00, 2.074E+00, 3.376E+00, -0.332 C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO 2596E+00 5.199E+00 7.565E+00 0.243
C,CR-51 ,NO , -1.925E+01, 1.825E+01, 2.930E+01, -0.657 C,MN-54 ,NO , -1.265E+00, 1.988E+00, 3.146E+00,, -0.402 C,CO-57 ,NO , -1.120E+00, 2.074E+00, 3.376E+00,, -0.332 C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00,, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00,, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO 2596E+00 5.188E+00 7.565E+00 0.242
C,MN-54 ,NO , -1.265E+00, 1.988E+00, 3.146E+00, -0.402 C,CO-57 ,NO , -1.120E+00, 2.074E+00, 3.376E+00, -0.332 C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO 2.596E+00 5.188E+00 7.565E+00 0.242
C,CO-57 ,NO , -1.120E+00, 2.074E+00, 3.376E+00, -0.332 C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO 2.596E+00 5.199E+00 7.565E+00 0.343
C,CO-58 ,NO , -5.756E-01, 2.100E+00, 3.393E+00,, -0.170 C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00,, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00,, -0.455 C ZN-65 NO 2.596E+00 5.199E+00 7.565E+00 0.343
C,FE-59 ,NO , 3.113E+00, 3.979E+00, 6.858E+00, 0.454 C,CO-60 ,NO , -1.346E+00, 1.904E+00, 2.959E+00, -0.455 C ZN-65 NO 2.596E+00 5.199E+00 7.565E+00 0.343
C, CO-60 , NO , -1.346E+00 , 1.904E+00 , 2.959E+00 , -0.455 C ZN-65 NO 2.596E+00 5.199E+00 7.565E+00 0.343
$C_{\rm ZN-65}$ NO 2.596 $E_{\pm}00$ 5.199 $E_{\pm}00$ 7.56 $E_{\pm}00$ 0.242
C,SE-75 ,NO , -2.750E+00, 2.646E+00, 4.296E+00, -0.640
C,SR-85 ,NO , 1.116E+01, 2.525E+00, 4.578E+00, 2.439
C,Y-88 ,NO , 8.089E-01, 1.907E+00, 3.259E+00, 0.248
C,NB-94 ,NO , -9.184E-01, 2.028E+00, 3.283E+00, -0.280
C,NB-95 ,NO , 1.218E+00, 2.107E+00, 3.546E+00, 0.343
C,ZR-95 ,NO , 9.024E-01, 3.440E+00, 5.721E+00, 0.158
C,MO-99 ,NO , 8.523E+00, 4.438E+01, 7.362E+01, 0.116
C,RU-103 ,NO , 1.294E+00, 2.171E+00, 3.599E+00, 0.360
C,RU-106 ,NO , -1.517E+01, 1.822E+01, 2.919E+01, -0.520
C,AG-110m,NO, 3.892E-01, 1.922E+00, 3.207E+00, 0.121
C, SN-113 , NO , 7.755E-01, 2.649E+00, 4.384E+00, 0.177
C,SB-124 ,NO , -1.873E+00, 4.206E+00, 3.104E+00, -0.603
C,SB-125 ,NO , 3.726E+00, 5.736E+00, 9.575E+00, 0.389
C, TE-129M, NO, 2.731E+01, 2.440E+01, 4.129E+01, 0.661
C,I-131 ,NO , -9.679E-01, 2.978E+00, 4.850E+00, -0.200
C, BA-133 , NO , 3.715E+00, 3.335E+00, 4.900E+00, 0.758
C,CS-134 ,NO , 1.587E+00, 4.103E+00, 3.412E+00, 0.465
C,CS-136 ,NO , -2.415E-02, 2.431E+00, 3.975E+00, -0.006
C,CS-137 ,NO , -1.755E-01, 2.184E+00, 3.600E+00, -0.049
C,CE-139 ,NO , -7.220E-01, 1.996E+00, 3.227E+00, -0.224
C,BA-140 ,NO , -5.878E+00, 8.673E+00, 1.361E+01,, -0.432
C,LA-140 ,NO , 1.975E+00, 2.637E+00, 4.614E+00, 0.428
C,CE-141 ,NO , -3.378E+00, 4.446E+00, 6.099E+00, -0.554
C,CE-144 ,NO , -3.742E+00, 1.780E+01, 2.596E+01, -0.144
C,EU-152 ,NO , -7.046E+00, 6.747E+00, 9.765E+00, -0.722
C,EU-154 ,NO , -2.678E+00, 4.319E+00, 7.015E+00, -0.382
C,RA-226 ,NO , 6.383E+00, 5.281E+01, 8.351E+01, 0.076
C, AC-228 , NO , -4.919E+00, 8.652E+00, 1.272E+01, -0.387
C,TH-232 ,NO , -4.912E+00, 8.639E+00, 1.270E+010.387
C,U-235 ,NO , -1.885E+01, 1.933E+01, 2.573E+01, -0.733
C,U-238 ,NO , 9.297E+01, 2.143E+02, 3.648E+02, 0.255
C,AM-241 ,NO , -3.685E+01, 2.885E+01, 4.350E+01,, -0.847

Sec. Review: Analyst: LIMS: 🛩 VAX/VMS Teledyne Brown Eng. Laboratory Gamma Report: 2-AUG-2006 09:44:56.60 TBE15 P-10635B HpGe ******** Aquisition Date/Time: 1-AUG-2006 18:27:54.10 LIMS No., Customer Name, Client ID: L29406-3 WG EX/BRAID Sample ID : 15L29406-3 Smple Date: 28-JUL-2006 14:10:00. Sample Type : wg Geometry : 153L082604 : 3.24040E+00 l Quantity BKGFILE : 15BG072806MT Start Channel : 40 Energy Tol : 1.00000 Real Time : 0 08:00:03.03 End Channel : 4090 Pk Srch Sens: 5.00000 Live time : 0 08:00:00.00 Library Used: LIBD MDA Constant : 0.00 Pk It Energy Area Bkgnd FWHM Channel %Eff Cts/Sec %Err Fit 295.11* 1 1 132 494 1.61 580.31 1.18E+00 4.57E-03 37.6 1.96E+00 2 1 351.79* 258 360 1.35 694.31 1.02E+00 8.96E-03 17.0 2.65E+00 3 1 595.37 124 149 2.60 1184.10 6.55E-01 4.30E-03 21.7 1.28E+00 4 1 608.80* 219 1.51 1211.11 231 6.43E-01 7.61E-03 17.5 1.31E+00 5 1 707.64 65 235 5.13 1409.82 5.69E-01 2.27E-03 57.4 1.68E+00 6 1 1119.59* 74 90 2.24 2237.80 3.97E-01 2.57E-03 31.2 9.60E+00 7 1 1764.07* 64 51 3.24 3532.40 2.78E-01 2.21E-03 31.6 1.24E+00

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Flag: "*" = Peak area was modified by background subtraction

Nuclide Line Activity Report

Flag: "*" = Keyline

#### L29406 34 of 37

Summary of Nuclide Activity Sample ID : 15L29406-3 Total number of lines in spectrum Number of unidentified lines Number of lines tentatively identified by NID 1 **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines Page : 3 Sample ID : 15L29406-3 Acquisition date : 1-AUG-2006 18:27:54 It Energy Area Bkqnd FWHM Channel Left Pw Cts/Sec %Err %Eff Flags 1 295.11 132 494 1.61 580.31 575 12 4.57E-03 75.1 1.18E+00 351.79 1 258 360 1.35 694.31 688 11 8.96E-03 33.9 1.02E+001 595.37 124 149 2.60 1184.10 1179 12 4.30E-03 43.3 6.55E-01 1 608.80 219 1211.11 1205 13 7.61E-03 35.0 231 1.51 6.43E-01 1 707.64 65 235 5.13 1409.82 1402 19 2.27E-03 **** 5.69E-01 Т 1 1119.59 74 90 2.24 2237.80 2232 12 2.57E-03 62.4 3.97E-01 1 1764.07 64 51 3532.40 3524 17 2.21E-03 63.3 3.24 2.78E-01 Flags: "T" = Tentatively associated Summary of Nuclide Activity Total number of lines in spectrum 7 Number of unidentified lines 6 Number of lines tentatively identified by NID 1 14.29% **** There are no nuclides meeting summary criteria **** Flags: "K" = Keyline not found "M" = Manually accepted "E" = Manually edited "A" = Nuclide specific abn. limit Interference Report No interference correction performed Combined Activity-MDA Report ---- Non-Identified Nuclides ----Key-Line Activity K.L. Act error MDA error MDA Act/MDA Nuclide (pCi/l)Ided (pCi/l)BE-7 -5.335E+00 2.131E+01 0.000E+00 3.479E+01 -0.153 NA-24 -3.263E+02 3.386E+02 5.190E+02 0.000E+00 -0.629 K-40 3.263E+01 3.711E+01 6.920E+01 0.000E+00 0.472 CR-51 -1.035E+01 2.204E+01 3.570E+01 0.000E+00 -0.290 MN-54 1.494E+002.560E+00 4.274E+00 0.000E+00 0.349 CO-57 1.166E+00 2.215E+00 3.736E+00 0.312 0.000E+00 CO-58 -1.553E+00 2.576E+00 4.072E+00 0.000E+00 -0.381 FE-59 2.469E+00 4.755E+00 7.982E+00 0.000E+00 0.309 CO-60 1.325E+00 2.589E+00 4.385E+00 0.000E+00 0.302 ZN-65 1.978E+01 6.612E+00 1.104E+01 1.791 0.000E+00 SE-75 9.883E-02 3.112E+00 5.169E+00 0.000E+00 0.019 SR-85 1.465E+01 2.779E+00 5.228E+00 0.000E+00 2.801 Y-88 2.484E+00 2.620E+00 4.671E+00 0.000E+00 0.532 NB-94 -2.611E+00 2.927E+00 3.828E+00 0.000E+00 -0.682 NB-95 2.860E+00 2.625E+00 4.497E+00 0.000E+00 0.636 ZR-95 -4.213E+00 4.658E+00 7.313E+00 0.000E+00 -0.576 MO-99 -2.366E+01 5.569E+01 8.959E+01 0.000E+00 -0.264 1.307E+00 RU-103 2.622E+00 4.384E+00 0.000E+00 0.298 RU-106 4.899E+00 2.246E+01 3.763E+01 0.000E+00 0.130 AG-110m -5.195E-02 2.296E+00 3.793E+00 0.000E+00 -0.014 SN-113 -4.641E-01

3.200E+00

5.161E+00

0.000E+00

-0.090

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SB-124	2.764E+00	5.310E+00	4.134E+00	0.000E+00	0.669
SB-125	-5.678E-01	6.812E+00	1.127E+01	0.000E+00	-0.050
TE-129M	3.918E-01	2.831E+01	4.678E+01	0.000E+00	0.008
I-131	4.086E-01	3.473E+00	5.675E+00	0.000E+00	0.072
BA-133	4.851E+00	3.938E+00	5.726E+00	0.000E+00	0.847
CS-134	1.726E+01	4.585E+00	5.507E+00	0.000E+00	3.134
CS-136	-1.164E+00	3.079E+00	4.919E+00	0.000E+00	-0.237
CS-137	6.837E-01	2.526E+00	4.225E+00	0.000E+00	0.162
CE-139	4.174E-02	2.226E+00	3.666E+00	0.000E+00	0.011
BA-140	3.419E+00	1.071E+01	1.773E+01	0.000E+00	0.193
LA-140	1.624E+00	3.596E+00	6.110E+00	0.000E+00	0.266
CE-141	-6.294E+00	4.094E+00	6.586E+00	0.000E+00	-0.956
CE-144	-2.506E+01	1.718E+01	2.782E+01	0.000E+00	-0.901
EU-152	-1.061E+01	8.806E+00	1.153E+01	0.000E+00	-0.920
EU-154	-3.608E+00	4.789E+00	7.652E+00	0.000E+00	-0.471
RA-226	2.467E-02	5.857E+01	9.288E+01	0.000E+00	0.000
AC-228	5.312E+00	9.909E+00	1.649E+01	0.000E+00	0.322
TH-228	6.962E+00	4.497E+00	7.551E+00	0.000E+00	0.922
TH-232	5.304E+00	9.894E+00	1.647E+01	0.000E+00	0.322
U-235	-2.298E+01	1.758E+01	2.772E+01	0.000E+00	-0.829
U-238	-3.666E+01	2.983E+02	4.797E+02	0.000E+00	-0.076
AM-241	-2.337E+01	2.569E+01	4.179E+01	0.000E+00	-0.559

ΕX

	A,15L29406	5-3	,08/02/2006	09:44,07/28/	2006 14:10,	3.240E+00,L29406-	3 WG
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	B,15L29406	5-3	,LIBD	,07	/31/2006 10:01	L.153L082604	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	C,BE-7	,NO	, -5.335E+00,	2.131E+01,	3.479E+01,	-0.153	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	C,NA-24	,NO	, -3.263E+02,	3.386E+02,	5.190E+02,,	-0.629	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	C,K-40	,NO	, 3.263E+01,	3.711E+01,	6.920E+01,,	0.472	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	C,CR-51	,NO	, -1.035E+01,	2.204E+01,	3.570E+01	-0.290	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	C,MN-54	,NO	, 1.494E+00,	2.560E+00,	4.274E+00.	0.349	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	C,CO-57	,NO	, 1.166E+00,	2.215E+00,	3.736E+00,,	0.312	
C, FE-59, NO, 2.469E+00, 4.755E+00, 7.982E+00, 0.309 C, CO-60, NO, 1.325E+00, 2.589E+00, 4.385E+00, 0.302 C, ZN-65, NO, 9.883E+02, 3.112E+00, 5.169E+00, 0.019 C, SR-85, NO, 1.465E+01, 2.779E+00, 5.228E+00, 2.601 C, Y-88, NO, 2.464E+00, 2.620E+00, 4.671E+00, 0.532 C, NB-94, NO, 2.464E+00, 2.927E+00, 3.828E+00, -0.682 C, NB-94, NO, -2.611E+00, 2.927E+00, 3.828E+00, -0.682 C, NB-95, NO, 2.860E+00, 2.625E+00, 4.497E+00, 0.636 C, ZR-95, NO, -4.213E+00, 2.625E+00, 4.697E+01, -0.264 C, RU-103, NO, -2.366E+01, 5.569E+01, 8.959E+01, -0.264 C, RU-103, NO, -2.366E+01, 2.622E+00, 4.384E+00, -0.298 C, RU-104, NO, -5.195E-02, 2.296E+00, 3.733E+00, -0.014 C, SN-113, NO, -4.641E-01, 3.200E+00, 5.161E+00, -0.090 C, SB-124, NO, 2.764B+00, 5.310E+00, 4.134E+00, 0.669 C, SB-125, NO, -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C, TE-129M, NO, 3.916E-01, 2.831E+01, 4.678E+01, 0.008 C, TE-129M, NO, -1.164E+00, 3.938E+00, 5.726E+00, 3.134 C, CS-134, NO, 4.086E-01, 3.473E+00, 5.507E+00, 0.162 C, CS-134, NO, 1.726E+01, 4.585E+00, 4.919E+00, -0.237 C, CS-134, NO, -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C, CS-134, NO, 1.726E+01, 1.718E+01, 2.782E+00, 0.162 C, CE-139, NO, -2.506E+01, 1.718E+01, 2.782E+00, 0.162 C, CE-139, NO, -2.506E+01, 1.718E+01, 2.782E+01, 0.237 C, CS-136, NO, -1.642E+00, 3.5567E+00, 0.011 C, RA-140, NO, 3.608E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-141, NO, -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-141, NO, -2.506E+01, 1.718E+01, 2.7782E+01, -0.920 C, EU-152, NO, -3.608E+00, 4.998E+00, 7.652E+00, 0.0471 C, RA-226, NO, -3.608E+00, 4.789E+00, 7.652E+00, 0.922 C, EU-154, NO, -3.608E+00, 4.998E+00, 7.652E+00, 0.922 C, TH-232, NO, 5.312E+00, 9.998E+00, 7.652E+00, 0.922 C, TH-232, NO, 5.312E+00, 9.998E+00, 1.647E+01, 0.322 C, TH-232, NO, -3.668E+01, 2.983E+01, 2.772E+01, -0.829 C, U-235, NO, -2.238E+01, 2.568E+01, 2.772E+01, -0.829 C, U-235, NO, -2.238E+01, 2.568E+01, 2.772E+01, -0.829 C, U-235, NO, -2.238E+01, 2.568E+01, 4.797E+02, -0.766 C, AM-241, NO, -2.337E+01, 2.568E+01, 4.797E+0	C,CO-58	,NO	, -1.553E+00,	2.576E+00,	4.072E+00,	-0.381	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	C,FE-59	, NO	, 2.469E+00,	4.755E+00,	7.982E+00.	0.309	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	C,CO-60	, NO	, 1.325E+00,	2.589E+00,	4.385E+00,,	0.302	
C, SE-75 , NO , 9.883E-02, 3.112E+00, 5.169E+00, 0.019 C, SR-85 , NO , 1.465E+01, 2.779E+00, 5.228E+00, 2.801 C, Y-88 , NO , 2.484E+00, 2.620E+00, 4.671E+00, 0.532 C, NB-94 , NO , -2.611E+00, 2.927E+00, 3.828E+00, -0.682 C, NB-95 , NO , 2.860E+00, 4.658E+00, 7.313E+00, -0.576 C, ZR-95 , NO , -4.213E+00, 4.658E+00, 7.313E+00, -0.576 C, MO-99 , NO , -2.366E+01, 5.569E+01, 8.959E+01, 0.298 C, RU-106 , NO , 1.307E+00, 2.246E+01, 3.763E+01, 0.130 C, AG-110m , NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C, SN-113 , NO , -4.641E+01, 3.200E+00, 5.161E+00, -0.090 C, SB-124 , NO , 2.764E+00, 5.310E+00, 1.127E+01, -0.050 C, TE-129M , NO , 3.918E+01, 2.831E+01, 4.678E+01, 0.008 C, I-131 , NO , 4.869E+01, 3.938E+00, 5.726E+00, 3.134 C, CS-134 , NO , 1.726E+01, 3.938E+00, 5.726E+00, 0.647 C, CS-134 , NO , 1.726E+01, 3.938E+00, 5.507E+00, 3.134 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-139 , NO , 1.624E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 4.094E+00, 6.586E+00, 0.011 C, CE-144 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.226 C, CE-144 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.226 C, CE-144 , NO , -2.506E+01, 7.78E+01, 0.990 C, CE-144 , NO , -2.506E+01, 1.778E+01, 0.991 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-144 , NO , -2.506E+01, 1.778E+01, 0.991 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-144 , NO , -2.308E+00, 4.789E+00, 7.652E+00, 0.955 C, CE-144 , NO , -2.506E+00, 4.994E+00, 6.586E+00, 0.956 C, CE-144 , NO , -2.506E+00, 4.789E+00, 7.652E+00, 0.922 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.649E+01, 0.322 C, TH-228 , NO , 5.312E+00 , 9.999E+00, 1.649E+01, 0.322 C, TH-228 , NO , 5.312E+00 , 9.894E+00, 1.649E+01, 0.322 C, TH-228 , NO , 5.312E+00 , 9.894E+00, 1.649E+01, 0.322 C, U-235 , NO , -2.298E+01 , 2.782E+01 , -0.829 C, U-235 , NO , -2.298E+01 , 2.782E+01 , -0.829 C, U-235 , NO , -2.298E+01 , 2.585E+01 , 2.772E+01 , -0.829 C, U-236 , NO , -2.337E+0	C,ZN-65	, NO	, 1.978E+01,	6.612E+00,	1.104E+01.	1,791	
C, SR-85 , NO , 1.465E+01, 2.779E+00, 5.228E+00, 2.801 C, Y-88 , NO , 2.484E+00, 2.620E+00, 4.671E+00, 0.532 C, NB-94 , NO , 2.611E+00, 2.927E+00, 3.828E+00, -0.682 C, NB-95 , NO , 2.860E+00, 2.625E+00, 4.497E+00, 0.636 C, ZR-95 , NO , -4.213E+00, 4.658E+00, 7.313E+00, -0.576 C, MO-99 , NO , -2.366E+01, 5.569E+01, 8.959E+01, -0.264 C, RU-103 , NO , 1.307E+00, 2.622E+00, 3.793E+00, -0.014 C, AG-110m , NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C, SN-113 , NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C, SN-113 , NO , -5.678E+01, 3.200E+00, 5.161E+00, -0.090 C, SB-124 , NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C, SB-124 , NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C, SB-124 , NO , 3.918B-01, 2.831E+01, 4.678E+01, 0.008 C, I-131 , NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C, CS-137 , NO , 6.837E-01, 6.812E+00, 4.919E+00, -0.237 C, CS-136 , NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-141 , NO , 4.174E-02, 2.226E+00, 4.25E+00, 0.112 C, CE-139 , NO , -1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -2.506E+01, 1.718E+01, 2.782E+01, 0.9901 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, 0.9901 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, 0.9901 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, 0.9901 C, CE-144 , NO , -2.506E+01, 1.778E+01, 0.528E+00, 0.011 C, RA-226 , NO , -1.061E+01, 8.806E+00, 1.153E+01, 0.9901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, 0.9920 C, CE-144 , NO , -2.298E+00, 4.094E+00, 6.586E+00, 0.471 C, CR-228 , NO , 5.312E+00 , 9.999E+00, 1.649E+01, 0.322 C, TH-228 , NO , 5.312E+00 , 9.994E+00, 1.647E+01, 0.322 C, TH-228 , NO , 5.312E+00 , 9.894E+00, 1.647E+01, 0.322 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.829 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.829 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.6289 C, U-235 , NO , -2.298E+01, 2.983E+02, 4.797E+02, 0.076 C, AM-241 , NO , -2.337E+01, 2.586E+01, 4.77E+01, 0.829 C, U-235 , NO , -2.298E+	C,SE-75	, NO	9.883E-02,	3.112E+00,	5.169E+00.	0.019	
C, Y-88 , NO , 2.484E+00, 2.620E+00, 4.671E+00, 0.532 C, NB-94 , NO , -2.611E+00, 2.927E+00, 3.828E+00, -0.682 C, NB-95 , NO , -2.860E+00, 2.625E+00, 4.497E+00, 0.636 C, ZR-95 , NO , -4.213E+00, 4.658E+00, 7.313E+00, -0.576 C, MO-99 , NO , -2.366E+01, 5.569E+01, 8.959E+01, -0.264 C, RU-106 , NO , 1.307E+00, 2.622E+00, 4.384E+00, 0.298 C, RU-106 , NO , 4.899E+00, 2.242E+01, 3.763E+01, 0.130 C, AG-110m , NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C, SN-113 , NO , -4.641E-01, 3.200E+00, 5.161E+00, -0.090 C, SB-124 , NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C, SB-125 , NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C, TE-129M , NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C, I-131 , NO , 4.851E+00, 3.938E+00, 5.507E+00, 0.847 C, CS-134 , NO , 1.726E+01, 4.585E+00, 5.507E+00, 0.847 C, CS-134 , NO , 1.726E+01, 4.585E+00, 5.507E+00, 0.847 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-139 , NO , 1.64E+00, 3.079E+00, 4.919E+00, -0.237 C, CS-137 , NO , 6.837E-01, 2.526E+00, 6.110E+00, 0.011 C, BA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -3.608E+00, 4.094E+00, 6.586E+00, 0.471 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -3.608E+00, 4.789E+00, 7.652E+00, 0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.99E+00, 7.551E+00, 0.920 C, EU-152 , NO , -2.306E+01, 1.718E+01, 2.782E+01, 0.322 C, TH-232 , NO , 5.304E+00 , 9.894E+00, 1.649E+01, 0.322 C, TH-232 , NO , 5.304E+00 , 9.894E+00, 1.647E+01, 0.322 C, TH-232 , NO , 5.304E+00 , 9.894E+00, 1.647E+01, 0.322 C, TH-232 , NO , 5.304E+00 , 9.894E+00, 1.647E+01, 0.322 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-235 , NO , -2.298E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.537E+01, 2.582E+02, 4.797E+02, -0.076	C,SR-85	, NO	, 1.465E+01,	2.779E+00.	5.228E+00.	2 801	
C, NB-94 , NO , -2.611E+00 , 2.927E+00 , $3.828E+00$ , -0.682 C, NB-95 , NO , 2.860E+00 , 2.625E+00 , $4.497E+00$ , 0.636 C, ZR-95 , NO , -4.213E+00 , $4.658E+00$ , $7.313E+00$ , -0.576 C, MO-99 , NO , -2.366E+01 , $5.569E+01$ , $8.959E+01$ , -0.264 C, RU-103 , NO , 1.307E+00 , 2.622E+00 , $4.384E+00$ , 0.298 C, RU-106 , NO , $4.899E+00$ , 2.246E+01 , $3.763E+01$ , 0.130 C, AG-110m , NO , -5.195E-02 , 2.296E+00 , $3.793E+00$ , -0.014 C, SN-113 , NO , -4.641E-01 , $3.200E+00$ , $5.161E+00$ , -0.090 C, SB-124 , NO , 2.764E+00 , $5.310E+00$ , $4.134E+00$ , 0.669 C, SB-125 , NO , -5.678E-01 , $6.812E+00$ , $1.127E+01$ , -0.050 C, TE-129M , NO , $3.918E-01$ , $2.831E+01$ , $4.678E+01$ , 0.008 C, I-131 , NO , $4.086E-01$ , $3.473E+00$ , $5.726E+00$ , $0.772$ C, BA-133 , NO , $4.086E-01$ , $3.473E+00$ , $5.507E+00$ , 0.072 C, CS-134 , NO , $1.726E+01$ , $4.585E+00$ , $5.507E+00$ , 0.162 C, CC-139 , NO , $4.174E-02$ , $2.226E+00$ , $4.225E+00$ , 0.011 C, BA-140 , NO , $3.419E+00$ , $1.071E+01$ , $1.773E+01$ , 0.193 C, CC-144 , NO , $1.624E+00$ , $3.596E+00$ , $6.586E+00$ , 0.956 C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.920$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.772E+01$ , $-0.829$ C, TH-228 , NO , $5.312E+00$ , $9.999E+00$ , $1.649E+01$ , $0.322$ C, TH-228 , NO , $-3.608E+00$ , $4.97E+00$ , $7.551E+00$ , $0.922$ C, TH-232 , NO , $-3.298E+01$ , $1.758E+01$ , $2.772E+01$ , $-0.829$ C, U-238 , NO , $-3.666E+01$ , $2.983E+02$ , $4.797E+02$ , $-0.776$	C,Y-88	, NO	2.484E+00,	2.620E+00.	4.671E+00.	0 532	
C, NB-95 , NO , 2.860E+00, 2.625E+00, 4.497E+00, 0.636 C, ZR-95 , NO , -4.213E+00, 4.658E+00, 7.313E+00, -0.576 C, MO-99 , NO , -2.366E+01, 5.569E+01, 8.959E+01, 0.264 C, RU-103 , NO , 1.307E+00, 2.622E+00, 4.384E+00, 0.298 C, RU-106 , NO , 4.899E+00, 2.246E+01, 3.763E+01, 0.130 C, AG-110m , NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C, SN-113 , NO , -4.641E-01, 3.200E+00, 5.161E+00, -0.090 C, SB-124 , NO , 2.764E+00, 5.310E+00, 4.134E+01, 0.0669 C, SB-125 , NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C, TE-129M , NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C, I-131 , NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C, BA-133 , NO , 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C, CS-134 , NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C, CS-134 , NO , 1.726E+01, 4.585E+00, 4.225E+00, 0.011 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.011 C, CC-139 , NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C, BA-140 , NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.80E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.655E+00, 0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.300 C, AL-228 , NO , 5.312E+00, 9.909E+00, 1.647E+01, 0.322 C, TH-232 , NO , 5.312E+00, 9.909E+00, 1.647E+01, 0.322 C, TH-232 , NO , 5.312E+00, 9.909E+00, 1.647E+01, 0.322 C, TH-232 , NO , 5.312E+00, 9.894E+00, 1.647E+01, 0.322 C, U-238 , NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01 2.568E+01 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01 2.568E+	C,NB-94	, NO	, -2.611E+00,	2.927E+00,	3.828E+00.	-0 682	
C, ZR-95 , NO , $-4.213\pm00$ , $4.658\pm00$ , $7.313\pm00$ , $-0.576$ C, MO-99 , NO , $-2.366\pm01$ , $5.569\pm01$ , $8.959\pm01$ , $-0.264$ C, RU-103 , NO , $1.307\pm00$ , $2.622\pm00$ , $4.384\pm00$ , $0.298$ C, RU-106 , NO , $4.899\pm00$ , $2.246\pm01$ , $3.763\pm01$ , $0.130$ C, AG-110m , NO , $-5.195\pm02$ , $2.296\pm00$ , $3.793\pm00$ , $-0.014$ C, SN-113 , NO , $-4.641\pm01$ , $3.200\pm00$ , $5.161\pm00$ , $-0.090$ C, SB-124 , NO , $2.764\pm00$ , $5.310\pm00$ , $4.134\pm00$ , $0.669$ C, SB-125 , NO , $-5.678\pm01$ , $6.812\pm00$ , $1.127\pm01$ , $-0.050$ C, TE-129M , NO , $3.918\pm01$ , $2.831\pm01$ , $4.678\pm01$ , $0.008$ C, I-131 , NO , $4.086\pm01$ , $3.473\pm00$ , $5.5726\pm00$ , $0.847$ C, CS-134 , NO , $1.726\pm01$ , $4.585\pm00$ , $5.5726\pm00$ , $0.072$ C, BA-133 , NO , $4.164\pm02$ , $3.938\pm00$ , $5.5726\pm00$ , $0.162$ C, CS-137 , NO , $6.837\pm01$ , $2.526\pm00$ , $4.225\pm00$ , $0.162$ C, CC=139 , NO , $4.174\pm02$ , $2.226\pm00$ , $3.666\pm00$ , $0.011$ C, EA-140 , NO , $1.624\pm00$ , $3.596\pm00$ , $6.1106\pm00$ , $0.237$ C, CZ=141 , NO , $4.624\pm00$ , $3.596\pm00$ , $6.1106\pm00$ , $0.266$ C, CE-141 , NO , $-2.5066\pm01$ , $1.718\pm01$ , $2.782\pm01$ , $-0.956$ C, CE-144 , NO , $-2.506\pm01$ , $1.718\pm01$ , $2.782\pm01$ , $-0.956$ C, CE-144 , NO , $-2.506\pm00$ , $4.789\pm00$ , $7.652\pm00$ , $-0.471$ C, RA-226 , NO , $2.467\pm02$ , $5.857\pm01$ , $9.288\pm01$ , $0.000$ C, EU-152 , NO , $-1.061\pm01$ , $8.806\pm00$ , $1.649\pm01$ , $0.322$ C, TH-228 , NO , $5.312\pm00$ , $9.909\pm00$ , $1.649\pm01$ , $0.322$ C, TH-232 , NO , $5.304\pm00$ , $4.497\pm00$ , $1.649\pm01$ , $0.322$ C, TH-232 , NO , $5.304\pm00$ , $9.894\pm00$ , $1.649\pm01$ , $0.322$ C, U-235 , NO , $-2.298\pm01$ , $1.758\pm01$ , $2.772\pm01$ , $-0.829$ C, U-235 , NO , $-2.298\pm01$ , $1.758\pm01$ , $2.772\pm01$ , $-0.829$ C, U-235 , NO , $-2.298\pm01$ , $1.758\pm01$ , $2.772\pm01$ , $-0.829$ C, U-235 , NO , $-2.298\pm01$ , $1.758\pm01$ , $2.772\pm01$ , $-0.829$ C, U-235 , NO , $-2.298\pm01$ , $1.758\pm01$ , $2.772\pm01$ , $-0.829$ C, U-235 , NO , $-2.298\pm01$ , $1.758\pm01$ , $2.772\pm01$ , $-0.829$	C,NB-95	, NO	2.860E+00.	2.625E+00.	4.497E+00.	0.636	
C,MO-99 ,NO , -2.366E+01, 5.569E+01, 8.955E+01, -0.264 C,RU-103 ,NO , 1.307E+00, 2.622E+00, 4.384E+00, 0.298 C,RU-106 ,NO , 4.899E+00, 2.246E+01, 3.793E+00, -0.014 C,AG-110m ,NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C,SN-113 ,NO , -4.641E-01, 3.200E+00, 5.161E+00, -0.090 C,SB-124 ,NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C,SB-125 ,NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C,TE-129M ,NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C,I-131 ,NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.847 C,CS-134 ,NO , 1.726E+01, 4.585E+00, 5.726E+00, 0.847 C,CS-136 ,NO , -1.164E+00, 3.079E+00, 4.215E+00, 0.162 C,CS-137 ,NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CS-137 ,NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CE-139 ,NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C,BA-140 ,NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C,LA-140 ,NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141 ,NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 5.312E+00, 9.909E+00, 1.647E+01, 0.322 C,TH-232 ,NO , 5.304E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-235 ,NO , -3.666E+01 , 2.983E+02 , 4.797E+02, -0.076 C,AM-241 ,NO , -2.506E+01 , 1.758E+01 , 2.772E+01, -0.829	C, ZR-95	, NO	-4.213E+00.	4.658E+00.	7.313E+00	-0 576	
C,RU-103 ,NO , 1.307E+00, 2.622E+00, 4.384E+00, 0.298 C,RU-106 ,NO , 4.899E+00, 2.246E+01, $3.763E+01$ , 0.130 C,AG-110m ,NO , -5.195E-02, 2.296E+00, $3.793E+00$ , -0.014 C,SN-113 ,NO , -4.641E-01, $3.200E+00$ , $5.161E+00$ , -0.090 C,SE-124 ,NO , 2.764E+00, $5.310E+00$ , $4.134E+00$ , 0.669 C,SB-125 ,NO , -5.678E-01, $6.812E+00$ , $1.127E+01$ , -0.050 C,TE-129M ,NO , $3.918E-01$ , $2.831E+01$ , $4.678E+01$ , 0.008 C,I-131 ,NO , $4.086E-01$ , $3.473E+00$ , $5.75E+00$ , 0.072 C,BA-133 ,NO , $4.851E+00$ , $3.938E+00$ , $5.726E+00$ , 0.847 C,CS-134 ,NO , $1.726E+01$ , $4.585E+00$ , $5.507E+00$ , $0.162$ C,CE-139 ,NO , $6.837E-01$ , $2.226E+00$ , $4.919E+00$ , -0.237 C,CS-137 ,NO , $6.837E-01$ , $2.526E+00$ , $3.66E+00$ , 0.011 C,BA-140 ,NO , $1.624E+00$ , $3.596E+00$ , $6.110E+00$ , 0.266 C,CE-141 ,NO , $-6.294E+00$ , $4.094E+00$ , $6.586E+00$ , -0.956 C,CE-144 ,NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.901$ C,EU-152 ,NO , $-1.061E+01$ , $8.80E+00$ , $7.652E+00$ , $-0.471$ C,RA-226 ,NO , $2.467E-02$ , $5.857E+01$ , $9.288E+01$ , $-0.920$ C,EU-154 ,NO , $5.312E+00$ , $4.999E+00$ , $1.649E+01$ , $0.322$ C,TH-232 ,NO , $5.304E+00$ , $4.789E+00$ , $7.652E+00$ , $0.322$ C,TH-232 ,NO , $5.304E+00$ , $4.97E+00$ , $7.551E+00$ , $0.322$ C,TH-232 ,NO , $-2.298E+01$ , $1.758E+01$ , $2.772E+01$ , $-0.829$ C,U-235 ,NO , $-2.298E+01$ , $1.758E+01$ , $2.772E+01$ , $-0.829$ C,U-236 ,NO , $-2.2337E+01$ , $2.983E+01$ , $2.772E+01$ , $-0.829$	C, MO-99	, NO	-2.366E+01.	5.569E+01.	8.959E+01	-0 264	
C,RU-106 ,NO , 4.899E+00, 2.246E+01, 3.763E+01, 0.130 C,AG-110m ,NO , -5.195E-02, 2.296E+00, 3.793E+00, -0.014 C,SN-113 ,NO , -4.641E-01, 3.200E+00, 5.161E+00, -0.090 C,SE-124 ,NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C,SE-125 ,NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C,TE-129M ,NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C,I-131 ,NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C,BA-133 ,NO , 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C,CS-134 ,NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C,CS-136 ,NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C,CS-137 ,NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CE-139 ,NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C,BA-140 ,NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141 ,NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.63E+00, -0.471 C,EA-26 ,NO , 5.312E+00 , 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 5.312E+00 , 9.909E+00, 1.649E+01, 0.322 C,TH-232 ,NO , 5.304E+00 , 9.894E+00 , 1.647E+01, 0.322 C,TH-232 ,NO , 5.304E+00 , 9.894E+00 , 1.647E+01, 0.322 C,TH-232 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.522 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.522 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.522 C,U-234 ,NO , -3.666E+01, 2.983E+02 , 4.797E+02, -0.076 C,EU-241 ,NO , -3.666E+01 , 2.983E+01 , 4.797E+02, -0.076 C,EN-241 ,NO , -3.666E+01 , 2.983E+01 , 4.797E+02, -0.076	C,RU-103	, NO	1.307E+00,	2.622E+00.	4.384E+00.	0 298	
C, AG-110m, NO, -5.195E-02, 2.296E+00, 3.793E+00,, -0.014 C, SN-113, NO, -4.641E-01, 3.200E+00, 5.161E+00,, -0.090 C, SB-124, NO, 2.764E+00, 5.310E+00, 4.134E+00,, 0.669 C, SB-125, NO, -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C, TE-129M, NO, 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C, I-131, NO, 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C, BA-133, NO, 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C, CS-134, NO, 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C, CS-137, NO, 6.837E-01, 2.526E+00, 4.919E+00, -0.237 C, CS-137, NO, 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-139, NO, 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C, BA-140, NO, 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140, NO, 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-144, NO, -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144, NO, -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, FA-226, NO, 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228, NO, 5.312E+00, 9.999E+00, 1.649E+01, 0.322 C, TH-228, NO, 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C, TH-232, NO, -2.298E+01, 1.778E+01, 2.772E+01, 0.322 C, TH-232, NO, -3.606E+01, 1.758E+01, 2.772E+01, 0.322 C, TH-232, NO, -3.666E+01, 2.983E+02, 7.551E+00, 0.922 C, TH-232, NO, 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C, TH-232, NO, -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, EU-124, NO, -2.237E+01, 2.772E+01, -0.829 C, U-235, NO, -2.237E+01, 2.772E+01, -0.829 C, U-234, NO, -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, EM-241, NO, -2.337E+01, 2.56E+01, 4.777E+02, -0.076 C, EM-241, NO, -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, EM-241, NO, -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, M-241, NO, -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, M-241, NO, -2.337E+01, 2.566E+01, 4.779E+01, -0.529 C, H-241, NO, -2.337E+01, 2.566E+01, 4.779E+01, -0.569	C,RU-106	, NO	4.899E+00.	2.246E+01.	3.763E+01.	0 130	
C,SN-113 ,NO , -4.641E-01, 3.200E+00, 5.161E+00,, -0.090 C,SB-124 ,NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C,SB-125 ,NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C,TE-129M ,NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C,I-131 ,NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C,BA-133 ,NO , 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C,CS-134 ,NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C,CS-136 ,NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C,CS-137 ,NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CE-139 ,NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C,BA-140 ,NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C,LA-140 ,NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141 ,NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , 3.608E+00, 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.322 C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,TH-232 ,NO , -2.298E+01, 1.778E+01, 2.772E+01, -0.829 C,U-235 ,NO , -2.298E+01, 1.778E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.676 C,M-241 ,NO , -2.337E+01, 2.598E+01 , 4.797E+02, -0.676	C,AG-110m	, NO	-5.195E-02,	2.296E+00,	3.793E+00.	-0 014	
C,SB-124 ,NO , 2.764E+00, 5.310E+00, 4.134E+00, 0.669 C,SB-125 ,NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C,TE-129M ,NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C,I-131 ,NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C,BA-133 ,NO , 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C,CS-134 ,NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C,CS-136 ,NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C,CS-137 ,NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CE-139 ,NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C,BA-140 ,NO , 1.624E+00, 1.071E+01, 1.773E+01, 0.193 C,LA-140 ,NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141 ,NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.322 C,TH-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,TH-232 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.322 C,TH-232 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.829 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.829 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, 0.529 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.568E+01 , 0.765E+01 , 0.565E	C,SN-113	, NO	-4.641E-01,	3.200E+00.	5.161E+00.	-0.090	
C,SB-125 ,NO , -5.678E-01, 6.812E+00, 1.127E+01, -0.050 C,TE-129M ,NO , 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C,I-131 ,NO , 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C,BA-133 ,NO , 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C,CS-134 ,NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C,CS-136 ,NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C,CS-137 ,NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CE-139 ,NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C,BA-140 ,NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C,LA-140 ,NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141 ,NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , -3.606E+01, 1.758E+01, 2.772E+01, 0.322 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.568E+01 , 4.797E+01, -0.569	C,SB-124	, NO	2.764E+00.	5.310E+00.	4.134E+00	0 669	
C,TE-129M,NO, 3.918E-01, 2.831E+01, 4.678E+01, 0.008 C,I-131,NO, 4.086E-01, 3.473E+00, 5.675E+00, 0.072 C,BA-133,NO, 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C,CS-134,NO, 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C,CS-136,NO, -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C,CS-137,NO, 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C,CE-139,NO, 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C,BA-140,NO, 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C,LA-140,NO, 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141,NO, -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144,NO, -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152,NO, -1.061E+01, 8.806E+00, 7.652E+00, -0.471 C,RA-226,NO, 2.467E-02, 5.857E+01, 9.288E+01, 0.322 C,TH-228,NO, 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228,NO, 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,TH-232,NO, -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-235,NO, -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238,NO, -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241,NO, -2.637E+01, 2.582E+00, 1.647E+01, 0.522 C,AM-241,NO, -2.637E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241,NO, -2.237E+01, 2.582E+01, 4.772E+01, -0.829 C,AM-241,NO, -2.637E+01, 2.566E+01, 4.772E+01, -0.829 C,AM-241,NO, -2.637E+01, 2.566E+01, 4.772E+01, -0.676 C,AM-241,NO, -2.637E+01, 2.566E+01, 4.772E+01, -0.550 C,AM-241,NO, -2.637E+01, 2.566E+01,	C,SB-125	, NO	-5.678E-01,	6.812E+00.	1.127E+01.	-0.050	
C, I-131 , NO , 4.086E-01, 3.473E+00, 5.675E+00,, 0.072 C, BA-133 , NO , 4.851E+00, 3.938E+00, 5.726E+00,, 0.847 C, CS-134 , NO , 1.726E+01, 4.585E+00, 5.507E+00,, 3.134 C, CS-136 , NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-139 , NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C, BA-140 , NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228 , NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C, TH-232 , NO , -3.004E+00, 9.894E+00, 1.647E+01, 0.322 C, TH-232 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-235 , NO , -2.298E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01 2.569E+01 4.179E+01 -0.559	C, TE-129M	, NO	, 3.918E-01,	2.831E+01.	4.678E+01.	0 008	
C, BA-133 , NO , 4.851E+00, 3.938E+00, 5.726E+00, 0.847 C, CS-134 , NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C, CS-136 , NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-139 , NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C, BA-140 , NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228 , NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C, TH-232 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-235 , NO , -2.298E+01, 2.798E+02, 4.797E+02, -0.076 C, AM-241 , NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076	C,I-131	, NO	4.086E-01,	3.473E+00.	5.675E+00.	0 072	
C, CS-134 , NO , 1.726E+01, 4.585E+00, 5.507E+00, 3.134 C, CS-136 , NO , -1.164E+00, 3.079E+00, 4.919E+00, -0.237 C, CS-137 , NO , 6.837E-01, 2.526E+00, 4.225E+00, 0.162 C, CE-139 , NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C, BA-140 , NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228 , NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C, TH-232 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-235 , NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01 , 2.569E+01 4.179E+01 -0.559	C, BA-133	, NO	4.851E+00,	3.938E+00.	5.726E+00.1	0 847	
C, CS-136 , NO , $-1.164E+00$ , $3.079E+00$ , $4.919E+00$ , $-0.237$ C, CS-137 , NO , $6.837E-01$ , $2.526E+00$ , $4.225E+00$ , $0.162$ C, CE-139 , NO , $4.174E-02$ , $2.226E+00$ , $3.666E+00$ , $0.011$ C, BA-140 , NO , $3.419E+00$ , $1.071E+01$ , $1.773E+01$ , $0.193$ C, LA-140 , NO , $1.624E+00$ , $3.596E+00$ , $6.110E+00$ , $0.266$ C, CE-141 , NO , $-6.294E+00$ , $4.094E+00$ , $6.586E+00$ , $-0.956$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.901$ C, EU-152 , NO , $-1.061E+01$ , $8.806E+00$ , $1.153E+01$ , $-0.920$ C, EU-154 , NO , $-3.608E+00$ , $4.789E+00$ , $7.652E+00$ , $-0.471$ C, RA-226 , NO , $2.467E-02$ , $5.857E+01$ , $9.288E+01$ , $0.000$ C, AC-228 , NO , $5.312E+00$ , $9.909E+00$ , $1.649E+01$ , $0.322$ C, TH-232 , NO , $5.304E+00$ , $9.894E+00$ , $1.647E+01$ , $0.322$ C, U-235 , NO , $-2.298E+01$ , $1.758E+01$ , $2.772E+01$ , $-0.829$ C, U-238 , NO , $-3.666E+01$ , $2.983E+02$ , $4.797E+02$ , $-0.076$	C,CS-134	, NO	, 1.726E+01,	4.585E+00.	5.507E+00.	3 134	
C, CS-137 , NO , $6.837E-01$ , $2.526E+00$ , $4.225E+00$ , $0.162$ C, CE-139 , NO , $4.174E-02$ , $2.226E+00$ , $3.666E+00$ , $0.011$ C, BA-140 , NO , $3.419E+00$ , $1.071E+01$ , $1.773E+01$ , $0.193$ C, LA-140 , NO , $1.624E+00$ , $3.596E+00$ , $6.110E+00$ , $0.266$ C, CE-141 , NO , $-6.294E+00$ , $4.094E+00$ , $6.586E+00$ , $-0.956$ C, CE-144 , NO , $-2.506E+01$ , $1.718E+01$ , $2.782E+01$ , $-0.901$ C, EU-152 , NO , $-1.061E+01$ , $8.806E+00$ , $1.153E+01$ , $-0.920$ C, EU-154 , NO , $-3.608E+00$ , $4.789E+00$ , $7.652E+00$ , $-0.471$ C, RA-226 , NO , $2.467E-02$ , $5.857E+01$ , $9.288E+01$ , $0.000$ C, AC-228 , NO , $5.312E+00$ , $9.909E+00$ , $1.649E+01$ , $0.322$ C, TH-228 , NO , $6.962E+00$ , $4.497E+00$ , $7.551E+00$ , $0.922$ C, TH-232 , NO , $5.304E+00$ , $9.894E+00$ , $1.647E+01$ , $0.322$ C, U-235 , NO , $-2.298E+01$ , $1.758E+01$ , $2.772E+01$ , $-0.829$ C, U-238 , NO , $-3.666E+01$ , $2.983E+02$ , $4.797E+02$ , $-0.076$ C, AM-241 , NO , $-2.337E+01$ , $2.569E+01$	C,CS-136	, NO	-1.164E+00,	3.079E+00.	4.919E+00	-0 237	
C, CE-139 , NO , 4.174E-02, 2.226E+00, 3.666E+00, 0.011 C, BA-140 , NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228 , NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C, TH-232 , NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-238 , NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01, 2.569E+01 4.179E+01 0.052	C,CS-137	, NO	6.837E-01.	2.526E+00.	4.225E+00	0 162	
C, BA-140 , NO , 3.419E+00, 1.071E+01, 1.773E+01, 0.193 C, LA-140 , NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228 , NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C, TH-232 , NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-238 , NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,CE-139	, NO	4.174E-02.	2.226E+00.	3.666E+00.	0 011	
C,LA-140 ,NO , 1.624E+00, 3.596E+00, 6.110E+00, 0.266 C,CE-141 ,NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,TH-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,BA-140	, NO	, 3.419E+00,	1.071E+01,	1.773E+01.	0 193	
C, CE-141 , NO , -6.294E+00, 4.094E+00, 6.586E+00, -0.956 C, CE-144 , NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C, EU-152 , NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C, EU-154 , NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C, RA-226 , NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C, AC-228 , NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C, TH-228 , NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C, TH-232 , NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C, U-235 , NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C, U-238 , NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C, AM-241 , NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,LA-140	, NO	1.624E+00.	3.596E+00.	6.110E+00.	0 266	
C,CE-144 ,NO , -2.506E+01, 1.718E+01, 2.782E+01, -0.901 C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-232 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,CE-141	, NO	-6.294E+00,	4.094E+00,	6.586E+00.	-0 956	
C,EU-152 ,NO , -1.061E+01, 8.806E+00, 1.153E+01, -0.920 C,EU-154 ,NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,CE-144	, NO	-2.506E+01,	1.718E+01,	2.782E+01.	-0 901	
C,EU-154 ,NO , -3.608E+00, 4.789E+00, 7.652E+00, -0.471 C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C, EU-152	, NO	-1.061E+01,	8.806E+00.	1.153E+01	-0 920	
C,RA-226 ,NO , 2.467E-02, 5.857E+01, 9.288E+01, 0.000 C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,EU-154	, NO	-3.608E+00.	4.789E+00,	7.652E+00	-0 471	
C,AC-228 ,NO , 5.312E+00, 9.909E+00, 1.649E+01, 0.322 C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C, RA-226	, NO	2.467E-02.	5.857E+01.	9.288E+01	0 000	
C,TH-228 ,NO , 6.962E+00, 4.497E+00, 7.551E+00, 0.922 C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C, AC-228	, NO	5.312E+00.	9,909E+00,	1.649E+01	0 322	
C,TH-232 ,NO , 5.304E+00, 9.894E+00, 1.647E+01, 0.322 C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01, 2.569E+01 4.179E+01 -0.559	C,TH-228	, NO	6.962E+00.	4.497E+00.	7.551E+00	0 922	
C,U-235 ,NO , -2.298E+01, 1.758E+01, 2.772E+01, -0.829 C,U-238 ,NO , -3.666E+01, 2.983E+02, 4.797E+02, -0.076 C,AM-241 ,NO , -2.337E+01 2.569E+01 4.179E+01 -0.559	C,TH-232	, NO	5.304E+00	9.894E+00	1.647E+01	0 322	
C, U-238 , NO , $-3.666E+01$ , $2.983E+02$ , $4.797E+02$ , $-0.076$ C, AM-241 , NO , $-2.337E+01$ , $2.569E+01$ , $4.179E+01$ , $-0.559$	C,U-235	, NO	-2.298E+01	1.758E+01	2.772E+01	-0 829	
C, AM - 241 NO $-2.337E + 01$ $2.569E + 01$ $4.179E + 01$ $-0.559$	C, U-238	, NO	-3.666E+01.	2.983E+02	4.797E+02	-0.076	
-/	C,AM-241	, NO	, -2.337E+01,	2.569E+01.	4.179E+01	-0.559	

**Revision 1** 

# APPENDIX E

# DATA VALIDATION MEMORANDUM



45 Farmington Valley Drive Plainville, Connecticut 06062 Telephone: (860) 747-1800 www.CRAworld.com

Fax: (860) 747-1900

MEMORANDUM							
To:	Steve Quigley	Ref. No.:	45136-20				
FROM:	Kathy Shaw/ks/1/CT////	Date:	June 12, 2006				
	,	Revision Date:	August 23, 2006				
Re:	Data Quality Assessment and Verification Fleetwide Assessment – Hydrogeologic Investigation Braidwood Station, Braceville, Illinois						

This memorandum details a data verification of the radiochemical data resulting from the collection of 47 groundwater, 10 surface water and seven (7) quality control samples from the Braidwood Station in Braceville, Illinois. The sample summary detailing sample identification, sample location, quality control samples, and analytical parameters is presented in Table 1. Sample analysis was completed at Teledyne Brown Engineering in Knoxville, Tennessee (TBE) in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods.¹

# Sample Quantitation

The laboratory reported several radionuclides with activity concentrations above the minimum detectable concentration (MDC) and greater than the three (3) sigma critical level (99% confidence interval), but qualified them as not detected due to the presence of interference preventing identification of the major peaks, with a U* flag. Based on the laboratory qualification definition these concentrations should be qualified as not-detected (U*) above MDC reported by the laboratory.

## Sample Preservation

Samples collected for gamma scan and total strontium analyses are to be preserved to a pH of less than or equal to two (2) during shipment and laboratory storage with nitric acid at the time of collection. The samples were shipped and maintained in accordance with the sample preservation requirements.

### Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. The method blank samples were reported to be free of radioactive material contamination produced by the laboratory conditions or procedures.

¹ Prescribed Procedure for Measurement of Radioactivity in Drinking Water EPA-600/4-80-032

# Laboratory Control Sample Analysis

The laboratory control sample (LCS) is a sample containing a known amount of a radionuclide that is equivalent to internal or external control samples prepared by the analytical laboratory or a Federal/State agency. The LCS percent recoveries were within the laboratory or agency control limits, indicating that an acceptable level of overall performance was achieved.

# Duplicate Sample Analyses

The laboratory precision of matrix-specific measurement system was monitored by the analyses of duplicate samples. The duplicate relative percent difference (RPD) data were within the acceptance criteria. No targeted analytes were reported as detected in the laboratory duplicate sample sets.

# Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of seven (7) field duplicate sample sets. Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. Table 3 summarizes the results of the detected analytes in the field duplicate sample set. The data indicate that an adequate level of precision was achieved for the sampling event.

# **Overall Assessment**

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

### SAMPLE KEY FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Identification	QC Sample	Date	Matrix	Analysis
TB-1-9D	WG-BW-050906-JL-001		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-6	WG-BW-050906-MS-002		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-5D	WG-BW-050906-JL-003		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-3D	WG-BW-050906-MS-004		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-1D	WG-BW-050906-JL-005		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-8	WG-BW-050906-MS-006		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-16	WG-BW-050906-JL-007		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-6	WG-BW-050906-MS-008		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-10D	WG-BW-051006-JL-009		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-5	WG-BW-050906-MS-010		5/9/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-10D	WG-BW-051006-JL-011	Duplicate (009)	5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-11	WG-BW-051006-MS-012		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-4D	WG-BW-051006-JL-013		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-23	WG-BW-051006-MS-014		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-3	WG-BW-051006-JL-015		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-10	WG-BW-051006-MS-016		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-2	WG-BW-051006-JL-017		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-13	WG-BW-051006-MS-018		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-2D	WG-BW-051006-JL-019		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-15	WG-BW-051006-MS-020		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-7D	WG-BW-051006-JL-021		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-15	WG-BW-051006-MS-022	Duplicate (020)	5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-14	WG-BW-051006-MS-024		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-8D	WG-BW-051006-JL-025		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-12	WG-BW-051006-MS-026		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-22	WG-BW-051106-JL-027		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-24	WG-BW-051006-MS-028		5/10/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-9	WG-BW-051106-JL-029		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-4	WG-BW-051106-MS-030		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-9	WG-BW-051106-JL-031	Duplicate (029)	5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-7	WG-BW-051106-MS-032		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TB-1-6D	WG-BW-051106-JL-033		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-21	WG-BW-051106-MS-034		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-202I	WG-BW-051106-JL-035		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum

#### SAMPLE KEY FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Sample Location	Sample Identification	QC Sample	Date	Matrix	Analysis
MW-BW-203S	WG-BW-051106-MS-036		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-202S	WG-BW-051106-JL-037		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-203I	WG-BW-051106-MS-038		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-201S	WG-BW-051106-JL-039		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2011	WG-BW-051106-MS-040		5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-204I	WG-BW-051206-JL-041		5/12/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2011	WG-BW-051106-MS-042	Duplicate (040)	5/11/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-2051	WG-BW-051206-JL-043		5/12/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-26	WG-BW-051206-MS-044		5/12/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-18	WG-BW-051206-MS-046		5/12/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-206I	WG-BW-051206-MS-048		5/12/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-24	WG-BW-051506-MB-050		5/15/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-24	WG-BW-051506-MB-052	Duplicate (050)	5/15/06	Groundwater	Tritium/Strontium/Gamma Spectrum
SG-BW-101	SW-BW-051706-MB-101		5/17/06	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-102	SW-BW-051706-MB-102		5/17/06	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-103	SW-BW-051706-MB-103		5/17/06	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-104	SW-BW-051706-MB-104		5/17/06	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-105	SW-BW-051706-MB-105		5/17/06	Surface Water	Tritium/Strontium/Gamma Spectrum
SG-BW-106	SW-BW-051706-MB-106		5/17/06	Surface Water	Tritium/Strontium/Gamma Spectrum
TW-25	WG-BW-051906-MB-054		5/19/06	Groundwater	Tritium/Strontium/Gamma Spectrum
TW-26	WG-BW-051906-MB-055		5/19/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-201BD	WG-BW-052206-MB-056		5/22/06	Groundwater	Tritium/Strontium/Gamma Spectrum
MW-BW-201BD	WG-BW-052206-MB-057	Duplicate (056)	5/22/06	Groundwater	Tritium/Strontium/Gamma Spectrum
BW-208D	WG-BW-208D-072806-JL-100		7/28/06	Groundwater	Tritium/Strontium/Gamma Spectrum
BW-207	WG-BW-207-072806-JL-101		7/28/06	Groundwater	Tritium/Strontium/Gamma Spectrum
BW-207	WG-BW-207-072806-JL-102	Duplicate (101)	7/28/06	Groundwater	Tritium/Strontium/Gamma Spectrum

QC - Quality Control

Gamma Spec - Barium-140, Cesium-134, Cesium-137, Cobalt-58, Cobalt-60, Iron-59, Lanthanum-140,

Manganese-54, Niobium-95, Zinc-65, Zirconium-95

Isotopes not listed in Table 1, but typically detected in environmental samples

(i.e. K-40, Be-7, Ra-226, Th-232, etc.) may also be present.

#### SUMMARY OF ANALYTICAL METHODS, HOLDING TIME PERIODS, AND PRESERVATIVES FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Parameter	Method ¹	Matrix	Holding Time	Preservation
Tritium	EPA 906.0	Water	- 6 months	None
Strontium - 89/90 (Total)	EPA 905.0	Water	~ 6 months	HNO3 to pH<2
Gamma Spectrum	EPA 901.1	Water	- 6 months	HNO3 to pH<2

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¹ EPA-60/40-80-032 August 1980 "Precribed Procedures For Measurement of Radioactivity In Drinking Water

#### SUMMARY OF DETECTED ANALYTES IN FIELD DUPLICATE SAMPLE SETS FLEETWIDE ASSESSMENT BRAIDWOOD GENERATING STATION BRACEVILLE, ILLINOIS

Parameter	Original Sample ID	Original Result	Uncertainty @ 2 sigma	Duplicate Sample ID	Duplicate Result	Uncertainty @ 2 sigma	RPD	Units
Tritium	WG-BW-051106-MS-040	261	+/-104	WG-BW-051106-MS-042	182	+/- 97.5	36	pCi/L
Tritium	WG-BW-207-072806-JL-101	438	+/- 133	WG-BW-207-072806-JL-102	471	+/-137	7.3	pCi/L

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RPD Relative Percent Difference