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December 10, 2025

VIA EMAIL (don.brown@illinois.gov)
Don Brown, Clerk of the Board
Illinois Pollution Control Board
60 E. Van Buren St., Ste 630
Chicago, IL 60605

Re: R2014-22, Proposal of Clifford-Jacobs Forging Co. for an Amendment to the Site-specific Rule at 35 Ill. Adm. Code 901.119

Dear Clerk Brown:

Pursuant to 35 Ill. Adm. Code Section 901.119 (d) and (e); and also as provided in the April 16, 2015 Opinion and Order of the Board in the above-referenced matter; enclosed please find a report on the investigation conducted.

We send this to you pursuant to your December 5, 2025 telephone call with my paralegal Joy Owen. A copy of this correspondence and the report is simultaneously being provided by U.S. mail as follows:

Office of the Attorney General
Division of Legal Counsel
115 S. LaSalle St.
Chicago, IL 60603

IEPA
Division of Legal Counsel
P.O. Box 19276
Springfield, IL 62794-9276

Illinois Department of Natural Resources
Office of General Counsel
1 Natural Resources Way
Springfield, IL 62702

Don Brown, Clerk of the Board
Illinois Pollution Control Board
December 10, 2025

In an abundance of caution we are also mailing a copy to the address specified in 901.119(e).

Please advise if you need anything further from our office.

Very truly yours,

WEBBER & THIES, PC

By: _____
John E. Thies

JET/ejo
Encls.
cc: Phillip R. Van Ness, Esq. (via email)

Office of the Clerk
Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, IL 60601

REVIEW AND ASSESSMENT

CLIFFORD-JACOBS FORGING FACILITY, CHAMPAIGN, IL

Prepared by
John C. Freytag, P.E., INCE Emeritus

For
Webber & Thies, PC

To be reviewed by
ILLINOIS POLLUTION CONTROL BOARD

November 2025

JOHN C. FREYTAG, P.E., INCE Bd. Cert.
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Overview

On November 19, 2015, the Illinois Pollution Control Board (the Board) entered its Opinion and Order [R14-22] adopting amendments to the site-specific rule at 35 Ill. Adm. Code 901.119, which applies to noise emissions from operations at Clifford-Jacobs Forging Company's (CJ Forge) forging facility, located in unincorporated Champaign County, IL. In its Opinion, the Board cited and relied upon a noise study report prepared in May of 2014 by Schomer and Associates, Inc. Among other requirements, which included limitations as to the number of hammers that may be operated at any one time and the hours of hammer operation, the Board required that CJ Forge investigate and submit to the Board, once every ten (10) years after December 15, 2015, a report on the findings of an investigation into new technologies, sound abatement measures, and possible operational changes to mitigate the sound emissions from its forging operations.

This report was prepared by Freytag & Associates LLC at the request of CJ Forge's counsel, Webber & Thies PC. It details our investigation of such new technologies, sound abatement measures and possible operational changes at CJ Forge pursuant to the Board's Opinion and Order.

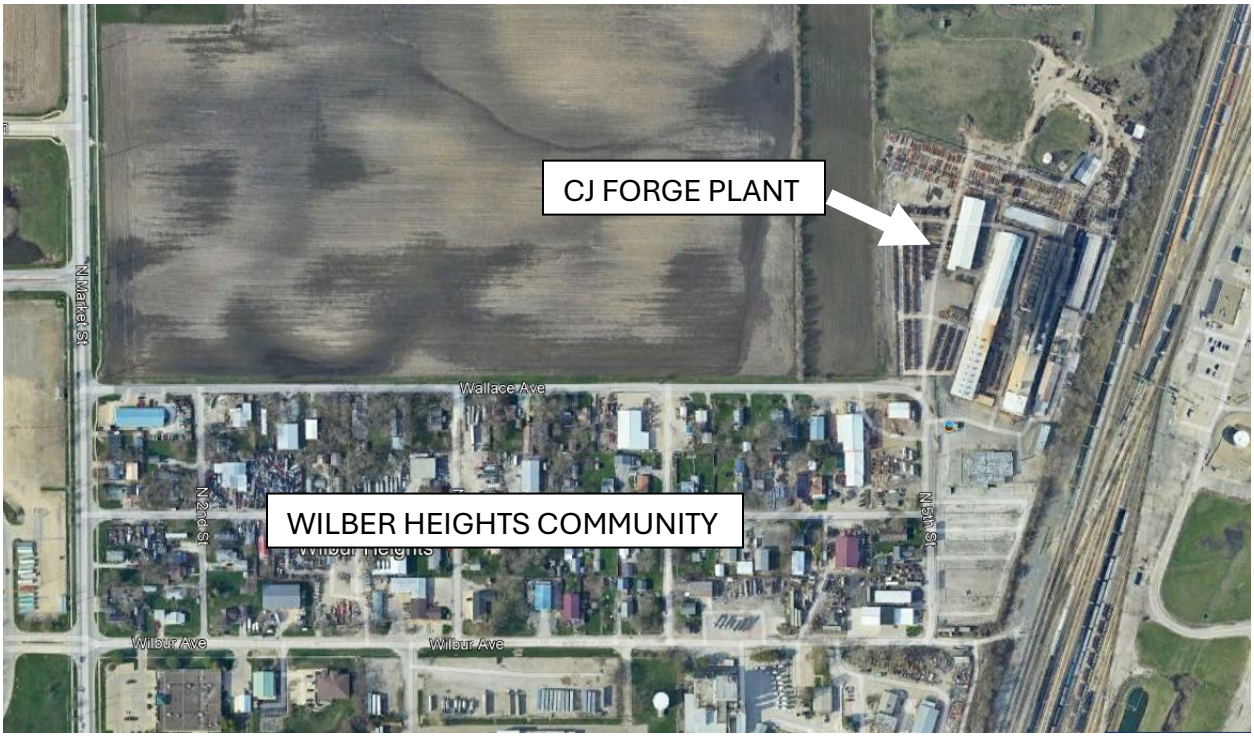

Figure 1: Wilber Heights Community and CJ Forge Plant

To prepare this report, the author visited the plant twice, measured noise levels, interviewed Nick Saupe, Forge Shop Manager, Calvin Brubaker, Engineering Manager, and other members of management, toured the adjacent community, and researched similar forge

operations and technology alternatives. The building and equipment were examined for possible noise reduction treatment. Plant staff explained the forge operation and possible mitigation alternatives. Figure 1 shows the CJ Forge facility and the adjacent community.

The Plant

CJ Forge facilities consist of offices, storage facilities, machine shops, maintenance buildings, and the main forge shop housing nine forge hammers and adjacent furnaces. The forging process involves heating source material, principally steel and related alloys, in a furnace to ~2,350 °F, moving the heated ingot via forklift vehicle to the die beneath the hammer, and then repeatedly hammering it into the die. The heated forged part is then removed by forklift to a cooling and storage area. The Hammer numbers, size, and manufacturer are shown in Table A beside photos of the forging operation.

HAMMER	WEIGHT	MANUFACTURER
2	1,500 LBS.	Erie
6	2,500 LBS.	Erie
8	3,000 LBS.	Erie
10	6,000 LBS.	Erie
12	12,000 LBS.	Erie
13	8,000 LBS.	Erie
14	25,000 LBS.	Erie
15	8,000 LBS.	Erie
16	20,000 LBS.	Chambersburg

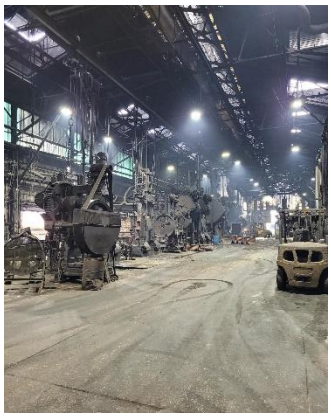

Table A: Hammer Number, Hammer Weight, Manufacturer, and Plant Photos.

CJ Forge is a project-based operation where work is commissioned for specific items rather than an assembly-based manufacturing operation. Therefore, sourse material, staff, forges, and working hours vary with specific projects. Slightly more than one hundred employees are typically employed. However, more or fewer workers may be required with varying workload. Working hours are currently limited by the Board to twenty-four hours per day, six days per week, with a maximum of fourteen hammers operating simultaneously.

Noise

Noise sources throughout the plant include ventilation equipment, forklift vehicles, cranes, machine tools and equipment, and the delivery and shipment of bulk sourse material and products. The dominant noise source is from the nine hammers housed in the forge shop.

During our investigation, the closest we could approach the hammers was 60 feet, as it was necessary to stay clear of the forklift vehicles carrying the ingots to and from the forges. Consequently, our noise measurements record the maximum hammer values at 60 feet with

the background reverberant noise reflected throughout the shop building. This reverberant noise is from all plant noise sources and the impulsive noise from other hammers in the plant. Figure 2 shows a 24-minute time history of Hammer #16 at the nearest building entrance and other impulse noise events from other hammers in the building. The baseline ambient noise is 90 dB.

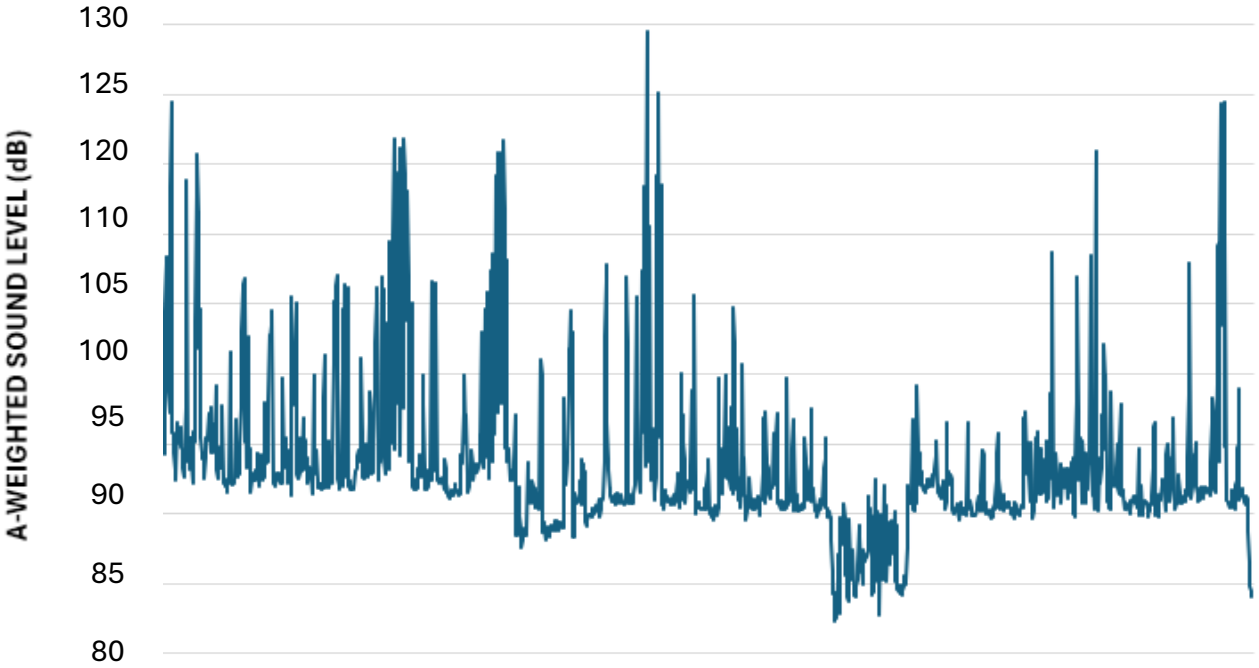

Figure 2: Time History of A-Weighted Sound Level of Hammer #16 At Building Entrance

Nearly all community noise regulation, such as that established by the Board, is controlled by 'equivalent noise level (Leq)' descriptors. Leq values are energy-average values over a specified time. Leq allows for short-term elevated noise events while maintaining a reasonable overall noise environment. These descriptors have proven to provide measureable and reasonable noise control for communities.

The noise environment from the hammer operation, however, is unique and not reasonably controlled or regulated by conventional Leq criteria standards. This is because maximum sound levels above 120 dB prevail for only about one-tenth of a second (100 msec). Sound propagation to the adjacent community varies considerably with forge operations and time of year. Each of the hammers generates a slightly different impulse sound, which reverberates throughout the forge building and produces a different sound level and signature at each building exit. The simultaneous operation of various hammers changes with each concurrent forge project. Furthermore, the heat buildup from the furnaces is substantial and necessitates that all building doors remain open during the warm summer

months. Therefore, the sound propagation that reaches the community varies considerably with the season.

The unincorporated Wilber Heights community located southwest of CJ Forge's primary operations was observed and discussed with plant management. Many of the properties appear to be used for commercial purposes while some are used as residences, as noted in the 2014 Schomer report. The residential portion has been reduced considerably over the past ten years, with the removal of some of the structures.

Safety and Mitigation

Worker health and safety was observed to be carefully controlled by plant management. All personnel and visitors are required to wear hard hats, use effective hearing protection, and wear shoes with steel toes.

Plant management personnel are active members of the Forging Industry Association (FIA, https://www.forging.org) comprised of industry suppliers and industry producers. The organization publishes a magazine and other material, manages a foundation, and conducts training and events. This helps CJ Forge maintain state-of-the-art operations.

Findings

We have evaluated the feasibility of various alternative noise control measures. These include acoustic barriers, sound-absorbing materials, equipment maintenance, vibration isolation process modification, and personal protective equipment.

The forging operation requires rapid and safe transfer of red-hot ingots from a furnace to a nearby forge via forklifts. This prevents the ability to surround the forges with any type of barriers. The forge shop, like all other plant buildings, was constructed early in the twentieth century with sheet metal over wood framing. It is not possible to enhance the sheet metal facade due to the inability of the framing to withstand further weight. Also, various wiring and other lightweight materials are affixed to the interior walls and must remain accessible for maintenance. Finally, the heat buildup from the furnaces in the forge building is extreme, requiring all doors to remain open for worker relief during the summer months. No barrier solution was found to be feasible.

Sound-absorbing materials are porous by nature. Fiberglass batt is the most common such material employed commercially and industrially. Porous materials will not withstand the elements outdoors or in areas where they may be affected by dirt or moisture. It is not practical to install fiberglass batt or similar material in the forge shop due to the harsh

environment and the need to cover wall-mounted wiring and materials. Also, few sound-absorbing surfaces would remain during the warmer months when the shop is open for cooling. A sound-absorbing solution was not found that could provide substantial noise reduction.

Vibration isolation is a possible option that CJ Forge is exploring for sound mitigation. In this regard, a Vibro/Dynamic pad has been installed beneath Hammer #16 since the YR 2015 Schomer report, and the results for this forge appear so far to be positive. These pads are specialized, heavy-duty anti-vibration solutions engineered to isolate vibrations and control noise from large industrial machinery, such as forges. They also reduce felt floor vibration. They are designed to manage significant loads and provide stability, often incorporating leveling capabilities. CJ Forge is still evaluating whether this approach is a practical option for the other forges where oak wood support is currently being used. We were unable to isolate and measure the noise from Hammer # 16 due to the need to maintain a safe distance from the hammer, thereby exposing the sound level measurement to noise from other hammers within the building.

CJ Forge plant management reports that it constantly monitors the state-of-the-art in forging through their involvement with the FIA. No major changes are currently planned for the forging operation.

Conclusion

As a result of the investigation and findings detailed above, we conclude that the existing CJ Forge facility operates safely, and it efficiently mitigates noise to the extent economically reasonable and technically feasible. No operational changes are recommended.

Attachment: CV

JOHN C. FREYTAG, P.E., FREYTAG & ASSOCIATES, LLC

Experience

Freytag & Assoc., LLC, President 2009-Present

HMMH, Director, 2007-2009

C.M. Salter & Associates, Director, 1986-2007

Bechtel Group, Project Engineer, 1976-1986

Education

M.S., Engineering, Stanford University, Palo Alto, CA, 1976

B.S.M.E., Arizona State University, Tempe, AZ, 1972

Graduate Business Studies, Golden Gate University, San Francisco, CA, 1980

Affiliations

Registered Professional Engineer, CA

Board Certified Member (now Emeritus) Institute of Noise Control Engineering, 1989-present. Past Board Member.

Executive Member, Airport Consultants Council, 1998-2007

American Institute of Architects, Affiliate Member, 1988-2008

Editorial Advisory Board Member, Airport Noise Report, 1999-2007

Senior Member, American Institute of Aeronautics and Astronautics, 1995-2007

Transportation Research Board , Aviation Noise Subcommittee, 1994-2009

Member, Acoustical Society of America, 1985-2024

Member, American Institute of Physics, 1985-present

American National Standards Institute (ANSI), Standards Committee: Draft ANSI S12.62, "Acoustics – Estimation of outdoor sound propagation by calculation", 2003-2007

Freytag & Associates, LLC is a California Certified Disabled Veteran Business Enterprise

John (aka 'Jack') Freytag founded Freytag & Associates, LLC to provide expert consulting services in specific areas of acoustics using affiliated experts throughout the U.S. Previously, he also managed the southern California office of Harris Miller Miller & Hanson. For HMMH, he was responsible for sound insulation projects for Los Angeles International Airport and supported other ongoing sound insulation projects in southern California and around the country.

Mr. Freytag has over 25 years of experience as an acoustical consultant and noise expert. His background includes expert witness in both state and federal courts, management of more than 40 FAA-sponsored sound insulation projects, management of environmental and community noise assessments, aero-acoustic research for NASA, management of several hundred architectural acoustics design projects, engineering of large industrial facilities, digital signal processing, and project management and engineering management of high technology business ventures. He has been a licensed pilot since 1966.

As a Director at Charles M. Salter Associates, Inc. for 20 years, he has served as expert witness and was program manager responsible for business development and project management for acoustical consulting projects in aviation. He managed noise studies for civil and military airport clients, cities and counties, noise-impacted residents, land use litigation cases, and crash hazard potential studies. He also acquired and managed the Audio Forensic Center, a wholly-owned subsidiary company specializing in audio enhancement/denoising (for dialog recovery), gunshot analyses and authentication of audio and video recordings. He has been an expert witness in state and federal, both civil and criminal, cases involving audio recordings, environmental noise, airport noise and audibility. He has also been the acoustical expert for the Discovery Channel programs.

From 1976 to 1986 Mr. Freytag held a variety of positions at The Bechtel Group as noise control engineer, venture capital analyst, manager of a 62-member CAD organization, project engineer for a large synthetic fuel project in New Zealand, and Executive Assistant to the vice-president of Bechtel's 3,600-member petroleum division.

From 1974 to 1976 he conducted experimental and theoretical aeroacoustics research at NASA-Ames Research Center for his graduate research work at Stanford University.

Litigation Support and Expert Testimony

While managing the Audio Forensic Center Mr. Freytag analyzed hundreds of evidentiary audio recordings, principally police interviews and wiretaps.

A list of cases involving more thorough investigation, deposition and/or court testimony is attached. Following are a few of the more notable cases:

- Norfolk Railway wrongful death – expert for the plaintiff in railroad fatality. (2024)
- Ethiopian ET 302 Crash – expert for the plaintiff in determining the audibility of pre-crash cockpit conversation in first class cabin. (2023)

- Utah motorcycle park noise – expert for the defendant in neighbor dispute over motocross noise. (2025)
- ShotSpotter research – technical investigation accuracy and validity of the location of Chicago gunshot recording event. (2023)
- Oakland International Airport EIR – expert for the City of Alameda reviewing and commenting on proposed airport expansion. (2024)
- Minneapolis, et. al. v. Minneapolis Airports Commission – expert for the plaintiff resulting in $128M settlement, the largest noise-related settlement in history. (2009)
- Contra Costa County v. Bernstein, et. al. – expert for the prosecution in Frye hearing defending use of the ShotSpotter audio gunshot identification system in gang murder case. (2014)
- Fulton County Internal Affairs – investigation, simulation, measurements, and assessment of gunshot audibility in police shooting in Atlanta, GA, suburb. (2012)
- Citizens for Quiet Skies, et. al. v. Mile-Hi Skydiving Center – expert for the defense in airport noise issue. (2018)
- Ohio v. Brelo – manslaughter case against police officer in shooting. Used recorded audio gunshot signatures to identify shooter. (2019)

Client Quote or Project Highlight

Regarding the Discovery Channel 'Death of Diana' audio simulation of the crash in the Paris tunnel:

"I expected this to work well, but not this well."

Television Programs

- Discovery Channel, Unsolved History:
  "The Boston Massacre" (2001)
  "Death of Princess Diana" (2003)
  "JFK – Beyond the Magic Bullet" (2005)

Representative Publications and Presentations

- Jack Freytag & Paul Schomer, *Minneapolis, et al vs. The Metropolitan Airports Commission*, ACOUSTICS TODAY, October 2009.
- J. C. Freytag and E. M. Reindel, Noise Level Reduction Measurement Methods for Sound-Insulated Structures, NOISE-CON 2008, Dearborn.
- J. C. Freytag and Paul D. Schomer, *Minneapolis et al. v Metropolitan Airports Commission*, N.O.I.S.E. Summer Conference, Dulles, VA.
- J. C. Freytag and E. M. Reindel, *Noise level reduction measurement methods for sound-insulated structures*, TRB Summer Meeting, Key West, FL.
- J. C. Freytag and Paul D. Schomer, *Assessing the relative noise contributions from independent time-varying sources*, Noise-Con 2007, Reno, NV.
- J. C. Freytag and Paul D. Schomer, *What is "Quietude" in an Urban Area?* INTER-NOISE 2007, Istanbul, Turkey.
- J. C. Freytag, D. R. Begault and C. A. Peltier, *The Acoustics of Gunfire, INTER-NOISE 2006*, Honolulu, HI.
- J. C. Freytag, *Noise Insulation Performance of Buildings near Airports: Measurement Issues and Perspectives*, NOISE-CON 2004, Baltimore.
- J. C. Freytag, *Retrofit Sound Insulation: The Morning After*, INTER- NOISE 2002, Dearborn, MI.
- J. C. Freytag, *The Airport Noise Paradox: DNL Drops While Problem Grows, Noise-Con 2001*, Portland, ME.
- J. C. Freytag (co-author), *ACOUSTICS: Architecture, Engineering, the Environment*. (1998, William Stout Publisher).