

ILLINOIS POLLUTION CONTROL BOARD

May 25, 1978

SHELL OIL COMPANY,)
)
 Petitioner,)
)
 v.) PCB 77-306
)
 ENVIRONMENTAL PROTECTION)
 AGENCY,)
)
 Respondent.)

OPINION AND ORDER OF THE BOARD (by Mr. Goodman):

On November 28, 1978, Shell Oil Company (Shell Oil) filed a Petition for Variance before the Board from Rules 202 and 204 of Chapter 8: Noise Pollution Regulations, for noise emissions from its petroleum refinery located in Wood River, Madison County, Illinois. The Agency filed its Recommendation on January 19, 1978. No hearing has been held in this matter.

The Wood River refinery has a nominal crude oil processing capacity of 295,000 barrels per operating day. The refinery is abutted on its south property line by South Roxana, Illinois which contains numerous Class A and Class B land uses as those uses are defined by Rules 201(a) and (b). The noise emissions from the Wood River refinery to this area exceed the limitations of Rules 202 and 204. Shell Oil included with its petition a record of noise complaints received since 1959. Since that time, the company has received 5 noise complaints, all of which occurred during upset or emergency conditions; the most recent complaint was received in 1971. Furthermore, the Agency in its Recommendation included the results of a noise survey conducted in the vicinity of the refinery. Of 178 inquiries sent out, 6 responses were received - three in favor of granting the variance and three opposed. The Agency also indicated it had received no unsolicited complaints.

Since 1965, Shell Oil has installed 19 vent silencers to eliminate noise from atmospheric vents on various pressure systems. Subsequent to passage of the Noise Regulations, Shell Oil

commenced and completed acoustical treatment of three process heaters and the air blowers on the Catalytic Cracking Unit Number One. Shell Oil has determined that the remaining principal contributors to the sound pressure levels in South Roxana are the process heaters of Catalytic Reformer Number Three (CR-3), Hydrodesulfurizer Unit Number Two (HDU-2), and Catalytic Reformer Number Two (CR-2). Shell Oil has undertaken a combination energy conservation noise abatement project which includes replacement of the burners and addition of acoustically-treated plenums and blowers on the six heaters at CR-3 and HDU-2. Shell Oil indicates in its petition that the noise portion of these projects will cost approximately \$500,000 and will, by June 30, 1979, eliminate approximately 99% of the acoustical power presently being generated by these heaters. The remaining major contributor, CR-2, is an old unit which was unexpectedly reactivated because of current national energy requirements and the gasoline lead reduction program. Its furnace is over 20 years old, contains 96 burners, six tiers high, and presents a complex acoustical treatment problem. Shell Oil has initiated a program to determine if a practical solution to the problem exists. The study will be completed in approximately one to two years; if a solution is found, it will probably require two to four years to implement. Shell Oil also indicates in its petition that any new process facilities will be designed to minimize the emission of sound.

Using an acoustical model, Shell Oil evaluated the effect of the already completed and the projected noise abatement measures on the noise emitted to South Roxana. Shell Oil used its computer model to calculate contour lines showing compliance with Rule 202, Class C to Class A land. Using the results of Shell Oil's evaluation, the Agency determined the approximate land area and number of people affected by the current and projected noise abatement measures, as shown in the following tables:

Area Affected by Noise Emissions in Violation of Rule 202 Now
and After Furnace Noise Abatement

	Acres	% Reduction
Before LF & E Reduction	86.1	---
Now	50.0	42%
After CR-3/HDU-2 Reduction	40.3	53%
After CR-2 Reduction	9.3	89%

The above areas are not indicative of any particular land use, but only of total land area of whatever land use.

People Living in Noise Contour Bands
Now and After Furnace Noise Abatement

	People		
	Noise Contour Band; dB(A)		
	55-60	60-65	65-70
Now	277	182	66
CR-3/HDU-2 Reduction	211	109	13
CR-2 Reduction	142	7	0

The Board finds that Shell Oil has in good faith attempted to comply with the Noise Regulations and that the compliance plan proposed will afford protection to the residents in the South Roxana community. The Board finds that denial of the requested variance would impose an arbitrary and unreasonable hardship upon Shell Oil. We will, therefore, grant Shell Oil a variance from Rules 202 and 204 of Chapter 8 for a period of five years, subject to the conditions listed in the Order below.

This Opinion constitutes the findings of fact and conclusions of law of the Board in this matter.

ORDER

It is the Order of the Pollution Control Board that Shell Oil Company be granted a variance from Rules 202 and 204 of Chapter 8 until June 30, 1979, for the sound emitted from its Wood River refinery to the area shown in Figure 2 of Appendix II to Shell's petition and until May 25, 1983, for the area shown in Figure 3 of Appendix II, corrected to zero wind conditions, subject to the following conditions:

1. Shell Oil's sound emissions shall not exceed the levels depicted as current levels in Appendix IV to its petition;
2. The sound emitted from any new equipment, process or facility at Shell Oil's refinery shall at no time exceed Rules 202 and 204 of Chapter 8;

3. Shell Oil shall submit reports to the Agency every 6 months commencing with the date of this Order and ending on or before June 30, 1979, detailing its progress on the CR-3/HDU-2 noise reduction program, described in its petition and shall forward to the Agency the new plenum design as soon as it is completed;
4. Shell Oil shall submit to the Agency every 6 months commencing with the date of this variance detailing its progress on its CR-2 heater unit noise reduction program, described in its petition, including development of further noise control techniques for the CR-2 heater unit or any alternative plans for its ultimate replacement.
5. Within 45 days of the adoption of this Order, Shell Oil Company shall execute and forward to both the Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois 62706 and the Pollution Control Board a Certification of Acceptance and Agreement to be bound to all terms and conditions of this Order. The 45 day period shall be held in abeyance during any period this matter is being appealed. The form of said Certification shall be as follows:

CERTIFICATION

I (We), _____ having read and fully understanding the Order of the Illinois Pollution Control Board in PCB 77-306 hereby accept said Order and agree to be bound by all of the terms and conditions thereof.

SIGNED _____

TITLE _____

DATE _____

Dr. Satchell abstains.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 25th day of May, 1978 by a vote of 40.

Christan L. Moffett
Christan L. Moffett, Clerk
Illinois Pollution Control Board