

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-295/79-07; 50-304/79-08

Docket No. 50-295; 50-304

License No. DPR-39; DPR-48

Licensee: Commonwealth Edison Company  
Post Office Box 767  
Chicago, IL 60690

Facility Name: Zion Nuclear Power Station, Units 1 and 2

Inspection At: Zion Site, Zion, Illinois and Corporate Office,  
Chicago, Illinois

Inspection Conducted: April 10-12, 16 and 18, 1979

*M. J. Oestmann*  
Inspector: M. J. Oestmann

*A. B. Januska*  
Approved By: T. H. Essig, Chief  
for Environmental and Special  
Projects Section

*5/16/79*

*5/18/79*

Inspection Summary

Inspection on April 10-12, 16 and 18, 1979 (Report No. 50-295/79-07  
50-304/79-08)

Areas Inspected: Routine, unannounced inspection of environmental protection of Units 1 and 2 including: administrative and procedural controls; licensee internal audits; implementation and results of the radiological and nonradiological environmental monitoring program; review of meteorological program; review of corrective actions for enforcement items from a previous inspection; review of licensee environmental event reports; and sample collection for the confirmatory measurements program. The inspection involved 30 inspector-hours on site by one NRC inspector.

Results: Of the nine areas inspected, no items of noncompliance or deviations were found in eight areas; one apparent item of noncompliance was identified in one area (infracton - failure to collect and analyze fish semiannually - Paragraph 5.a) and a deviation in the same area (failure to place the TLDs at two onsite stations adequately for air exposure - Paragraph 5.b).

## DETAILS

### 1. Persons Contacted

- \*J. Golden, Administrator, Radiological Environmental Monitoring Program, Production Systems Analysis Department (PSA), CECo
- P. Howe, Supervisor in Biology, Environmental Affairs Department (EAD), CECo
- R. Kunshek, Staff Biologist, (EAD), CECo
- G. Abrell, Manager, Quality Assurance Department (QAD), CECo
- A. Saller, Quality Assurance Engineer, (QAD), CECo
- \*\*L. Soth, Administrative Assistant, Zion Station
- T. Parker, Assistant Technical Staff Supervisor, Zion Station
- \*\*S. Miller, Rad/Chem Supervisor, Zion Station
- \*\*F. Rescek, Lead Health Physicist, Zion Station
- \*\*G. Tryzina, Health Physics Engineer, Zion Station
- \*\*S. Gurunathan, Lead Chemist, Zion Station
- T. Lehmann, Chemist, Zion Station
- T. Prince, Operations Engineer, Zion Station

\*denotes phone contact on April 19, 1979.

\*\*denotes those present at the exit interview on April 18, 1979.

The inspector also interviewed 14 other licensee employees during the course of the inspection, including health physics and chemistry technicians, members of the security force, and general office personnel.

### Other Personnel

F. Magliery, Associate Administrator, Director of General Services Division, Victory Memorial Hospital, Waukegan, Illinois

### 2. Licensee Action on Previous Inspection Findings

(Open) Deficiency (50-295/77-10 and 78-12; 50-304/77-13 and 78-14): Excess annual boric acid use. The licensee continues to operate the Station using more boric acid than provided for by Appendix B, Technical Specification 1.3.B. Request for a Technical Specifications amendment dated September 23, 1978, has not yet been approved. The licensee exceeded Section 1.3.B using 122,700 pounds in 1977, and 3000 pounds as of January 16, 1978. This item will remain open pending action by the Office of Nuclear Reactor Regulation on the request for the amendment.

(Closed) Infraction (50-295/78-12; 50-304/78-14): Prompt notification and subsequent 10-day written report of the excess boric acid usage. Review of licensee event reports, LER Nos. 78-51, 78-76 and 79-17 indicated that the licensee has submitted the required prompt and 10-day written reports in a timely manner in accordance with Section 3.4 of Appendix B, Technical Specifications.

(Closed) Infraction (50-295/78-12; 50-304/78-14): The rate of temperature change of 8 F° per hour limit was exceeded on June 17, 1977. Examination of selective temperature recordings for 1978 indicated no other instances of this rate of temperature change being exceeded in accordance with Section 1.1B of Appendix B, Technical Specifications.

(Open) Unresolved Item (50-295/79-03; 50-304/79-03): Inadequate familiarization training provided for the emergency staff at the Victory Memorial Hospital and poor condition of the decontamination treatment room at the hospital. A visit by the inspector to the hospital on April 16, 1979, indicated the licensee's medical procedures were found. However, the hospital staff had not straightened out the emergency treatment room in that the shipping boxes containing footlockers and plastic bags of medical supplies had not been removed nor placed properly. The hospital staff stated that these items would be removed promptly so that the treatment room would be available to handle a contaminated victim from the plant.

3. General

The licensee's 1978 radiological and 1977 - 78 nonradiological environmental monitoring programs, including implementation, sampling equipment and locations, and program results, were reviewed during this inspection. Corrective actions performed by the licensee for items of noncompliance from a previous inspection<sup>1/</sup> were reviewed. Environmental event reports were also reviewed. Radioactive samples for the Confirmatory Measurements inspection program were obtained from the licensee. The licensee was also provided spiked samples as discussed in a previous inspection.<sup>2/</sup>

- 1/ IE Inspection Reports No. 50-295/78-12 and No. 50-304/78-14.  
2/ IE Inspection Reports No. 50-295/79-03 and No. 50-304/79-03.

4. Administrative and Procedural Controls

The licensee's administrative and procedural controls for implementation of the radiological and the nonradiological environmental monitoring program were reviewed with the licensee. The radiological and the meteorological program remains under the program management of Dr. J. Golden. Eberline Instrument Company is the licensee's radiological environmental monitoring contractor and Murray and Trettle, Inc. the meteorological contractor.

R. Kunshek is the Staff Biologist in Environmental Affairs Department responsible for the overall direction of the biological monitoring program. The biological program was completed on September 30, 1978, and the final report for the five year program is under preparation. Hazelton Laboratory, who purchased Nalco Environmental Sciences on November 1, 1978, is the licensee's contractor for this program.

No items of noncompliance or deviations were identified.

5. Implementation of the Radiological Environmental Monitoring Program

The inspector examined the licensee's radiological environmental monitoring program results for calendar year 1978 for compliance with monitoring and reporting requirements. This included examination of the annual report submitted to the NRC and detailed monthly reports containing specific analytical data. Examination of the operability, maintenance and calibration of selected radiological environmental monitoring stations was also conducted during a tour of site and environs.

a. Environmental Monitoring Program

The 1978 monitoring results were examined for compliance with the requirements in Table 4.16-1 of the Appendix A, Technical Specifications. The examination revealed that fish samples had not been collected for the second half of 1978 for the semiannual requirement. The gamma isotopic analysis of the fish, therefore, was not conducted as required. This omission constitutes an item of noncompliance and will be examined during a subsequent inspection. The same item was also discussed in a previous inspection report.<sup>3/</sup> The licensee stated that steps will be taken to assure that fish will be collected as required.

<sup>3/</sup> IE Inspection Reports No. 50-295/78-12 and No. 50-304/78-14.

Review of the results indicate the licensee discharged elevated tritium concentrations in its cooling water on May 29 - June 4 and July 3 - 9, 1978. A licensee representative stated that these results were probably a function of the sampling techniques. The sampler is located in the discharge pipe where only a small volume of liquid may be available for dilution when the other unit is shut down. The remaining samples may yield tritium results which do not accurately reflect "environmental" concentrations. An analysis by the licensee to establish a representative "environmental" sampling system will be required. This matter will be examined further in future inspections.

The licensee also reported elevated radioactivity concentrations found in milk, air particulate filters, and charcoal adsorbers due to atmospheric weapons testing by the Republic of China during the fall of 1977 and spring of 1978. The licensee utilizes indicator radionuclides to discriminate weapons fallout from plant effluent effects and provides for a referenced analysis for each determination where quantifiable levels of radioactivity were observed in environmental media.

Other than these items discussed above, review of the results indicated no unusual results or trends ascribable to plant operations were observed.

The licensee also submitted the Environmental Dose Pathway Study in accordance with Section 3.16 of Appendix A, of the Technical Specifications. The report is being evaluated by the Office of Nuclear Reactor Regulation.

b. Sample Collection Stations

The inspector toured selected radiological environmental monitoring stations and observed that thermoluminescent dosimeters (TLDs) at Onsite Stations #1 and 3 were located in the steel air sampler housing, thereby precluding exposure to the 81-kev gamma radiation from Xe-133. As a result, the licensee has not adequately measured any changes in the levels of environmental radioactivity due to plant effluents as required in the Objectives of Section 4.16 of Appendix A, Technical Specification. This item is a deviation and will be examined during a subsequent inspection. The air sampling

stations containing air particulate filters and charcoal adsorbers were operating properly. Municipal water intakes, fish, and cooling water sampling stations were also observed. The licensee representatives expressed a need to accompany the Eberline sample collector during sample collections to be better acquainted with the location and status of the sampling stations. This item will be examined during a future inspection.

One apparent item of noncompliance and one deviation were identified.

6. Implementation of the Meteorological Monitoring Program

Review of the CY 1978 meteorological monitoring reports prepared by the licensee's meteorological consultants showed an overall data recovery rate of 98.0%. This inspection revealed that the contractor had maintained and calibrated the meteorological recording equipment on a bimonthly basis. The inspector toured the meteorological tower and observed the monitoring equipment. All equipment was found to be operable and in good order.

No items of noncompliance or deviations were identified.

7. Implementation of the Nonradiological Monitoring Program

The inspector selectively reviewed the results of the nonradiological environmental monitoring program for the second half of 1977 through March 1979 for compliance with monitoring and reporting requirements of Appendix B, Technical Specifications.

a. Boric Acid Usage

Reportable occurrences LER Nos. 78-51, 78-76 and 79-17 for excessive usage of boric acid greater than twice the 1000 pounds per year in accordance with Section 1.3.B, Table B.4 of Appendix B, Technical Specifications were reviewed. The records revealed a total usage of boric acid of 85,500 pounds during CY 1978 and 2,100 pounds as of March 22, 1979. As stated in Paragraph 2, the licensee has requested relief from Table B.4 requirement from NRR. This item will be examined during a subsequent inspection.

These licensee event reports were submitted in a timely manner in accordance with the reporting requirements of Section 3.4 of Appendix B, Technical Specification. This



item was discussed in a previous inspection report.<sup>4/</sup> The inspector has no further questions concerning this matter.

b. Thermal

The inspector noted that the licensee received a technical specification change, effective April 25, 1978, deleting the requirement of reporting the instances of exceeding: (1) the maximum temperature differential of 20 F° and (2) the maximum winter discharge temperature of 55°F.

The inspector selectively reviewed the recordings of rate of temperature change of 8 F°/hr during CY 1978 and found no instances were recorded that exceeded this limit.

c. Biological Monitoring Program

The licensee completed the 5-year biological monitoring program on June 30, 1978 and is in process of writing up a final report for the program. The inspector reviewed selected data in the four-volume report covering data from July 1977 to June 1978, for the fifth year of this program. The data presented included lake current measurements, field chemistry, adult fish, phytoplankton, zooplankton populations, and benthic faunal collections. The requirements for sampling locations and frequencies presented in 2.C of Appendix B, Technical Specifications, have been satisfied by the licensee's contractor.

The inspector also reviewed the licensee's supplemental reports on the environmental monitoring program which extended the program through September 30, 1978. This extension resulted from the technical specification change issued by the NRC on April 25, 1978 deleting the thermal discharge limits. The extended program confirmed the prediction that no measurable effects on the lake biota occurred from station operation.

No items of noncompliance or deviations were identified.

8. Licensee's Internal Audit

The inspector reviewed the licensee internal audits of the environmental monitoring program. The audit conducted by the

<sup>4/</sup> Ibid.

Quality Assurance Department in April 26, 1978 of the 1977 results identified the omission of collection of fish the second half of 1977. An audit of the 1978 program had not been conducted at the time of this inspection but is scheduled for later on in the spring of 1979.

The licensee also conducted an audit on July 27, 1978, of the 1977 results by the licensee's radiological environmental monitoring contractor. The audit traced the paperwork for 30 randomly selected samples from all Commonwealth Edison plants. The audit also reviewed logbooks and calibration procedures. No significant problems were identified.

No items of noncompliance or deviations were identified.

9. Confirmatory Measurements Program

Effluent samples consisting of particulate filter, charcoal adsorber, waste gas and liquid waste were collected from the licensee for the Confirmatory Measurements inspection program. They will be analyzed by the NRC Reference Laboratory and the results compared with the licensee's. In addition, two spiked liquids, two charcoal adsorbers and a particulate filter were provided the licensee for analysis as a further test of the licensee's analytical capability. The results of the comparisons will be reported in a subsequent inspection report.

10. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of this inspection on April 18, 1979. The inspector summarized the purpose and scope of this inspection and its findings. The licensee acknowledged that: (1) Fish should have been collected semiannually (Paragraph 5.a); (2) the TLDs will be properly mounted for complete air exposure (Paragraph 5.b); (3) the plant personnel will accompany the contractor personnel on her rounds to collect environmental samples (Paragraph 5.b).