

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

REGION III

Report No. 50-295/80-11; 50-304/80-11

Docket No. 50-295; 50-304

License No. DPR-39; DPR-48

Licensee: Commonwealth Edison Company  
P. O. Box 767  
Chicago, IL 60690

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

Inspection At: Corporate Office, Chicago, IL (May 27, 1980)  
Zion Site, Zion, IL (May 28-29, 1980)

Inspection Conducted: May 27-29, 1980

Inspectors: *M.J. Oestmann*  
M.J. Oestmann

6/18/80

*CA Roytek*  
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6/20/80

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6/24/80

Inspection Summary

Inspection on May 27-29, 1980 (Report No. 50-295/80-11; 50-304/80-11)

Areas Inspected: Routine, unannounced inspection of (1) 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 programs; review of meteorological program; review of corrective actions from a previous inspection; review of licensee environmental event reports; and (2) quality assurance/quality control of confirmatory measurements program for the nonradiological chemistry program. The inspection involved 18 inspector-hours onsite by one NRC inspector.

Results: Of the six areas inspected, no apparent items of noncompliance or deviations were found in four areas; one apparent item of noncompliance was identified in one area (infracton - excess pH of waste water released to the environment - Paragraph 7.e); and three apparent items of noncompliance in a second area (infracton - failure to standardize

sodium hydroxide solution during boric acid titration; infraction - failure to conduct the required cation conductivity measurements; deficiency - failure to provide documentation for gas bottle surveillance - all Paragraph 9).

## DETAILS

### 1. Persons Contacted

- J. Golden, Administrator, Radiological Environmental Monitoring Program (REMP), Technical Services Nuclear Department, CECo
- P. Hayes, Radioecologist, Technical Services Nuclear Department, CECo
- P. Howe, Supervisor in Biology, Environmental Affairs Department (EAD), CECo
- \*N. Wandke, Plant Superintendent, Zion Station
- \*G. Pliml, Administrative Assistant, Zion Station
- \*D. Howard, Rad/Chem Supervisor, Zion Station
- \*B. Harl, Engineer, Quality Assurance, Zion Station
- \*H. Stedmann, Supervisor, Quality Assurance, CECo
- \*S. Gurunathan, Lead Chemist, Zion Station
- \*F. Reseck, Lead Health Physicist
- R. Aker, Health Physicist
- B. Schramer, Chemist

\*Denotes those present at the exit interview on May 29, 1980.

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

### 2. Licensee Action on Previous Inspection Findings

(Closed) Deficiency (50-295/77-10 and 78      50-304/77-13 and 78-14): Excess annual boric acid use. The licen      received approval of environmental technical specification change from the Office of Nuclear Reactor Regulation (NRR) on September 17, 1979, deleting the requirement to report chemical usages, above limits in Appendix B, Technical Specifications, Table B.4 (e.g., 1000 pounds annual usage of boric acid). Instead the licensee will be required to report annual chemicals released to the environment in the licensee's Annual Operating Report.

(Closed) Deviation (50-295/79-07; 50-304/79-08): Licensee failure to properly place thermoluminescent dosimeters (TLDs) at two onsite environmental monitoring stations. During a tour of the site, the inspector observed the TLDs were properly placed outside the steel housing chamber for the air samplers to allow for adequate exposure to Xe-133 gamma radiation and other plant gaseous effluents. The inspector has no further questions regarding this item.

(Closed) Infraction (50-295/79-07; 50-304/79-08): Licensee failure to collect and analyze fish for gamma isotopic semiannually. The licensee has a subcontractor, Ecological Analysts, Inc., to collect fish semiannually and submit the fish samples to the licensee's contractor,

Eberline Instrument Corporation, for gamma analysis. The inspector's review of the 1979 analytical results of the REMP indicate the fish samples were collected and analyzed semiannually. The inspector has no further questions regarding this item.

### 3. General

The licensee's 1979 radiological and meteorological environmental monitoring program including implementation, sampling equipment and locations, and program results, were reviewed during this inspection. Corrective actions performed by the licensee for items of noncompliance identified in a previous inspection<sup>1/</sup> were reviewed. Internal audits of these programs were also reviewed.

The licensee's nonradiological environmental monitoring program has been substantially reduced because the licensee received a technical specification change from NRR on September 17, 1979, to Appendix B, Environmental Technical Specifications (ETS) removing the nonradiological thermal and certain chemical limits. The licensee has completed and submitted to NRR his eight year nonradiological biological monitoring program in 1979 as discussed in a previous inspection report.<sup>2/</sup> It is presently under review by NRR. The inspector also reviewed several licensee environment event reports.

The inspector also examined the nonradiological chemistry program results and procedures used in the licensee's cold laboratory under the confirmatory measurements inspection program.

The Appendices A and B, Technical Specifications served as primary criteria during this inspection.

### 4. Administrative and Procedural Controls

The licensee's administrative and procedural controls for implementation of the radiological and nonradiological environmental monitoring programs were reviewed. Dr. J. Golden has overall responsibility in the conduct of the REMP and the meteorological monitoring programs. Eberline Instrument Corporation is the licensee's REMP contractor, and Murray and Trettle, Inc., the meteorological contractor.

R. Kunshek is the Staff Biologist in the Environmental Affairs Department responsible for the overall direction of the biological monitoring program. The biological program was completed on September 30, 1978 and the licensee's contractor, Hazleton Environmental Science Corporation, has prepared a summary report for the period January 1970 through September 1978.

No apparent items of noncompliance or deviations were identified.

1/ IE Inspection Reports No. 50-295/79-07 and 50-304/79-08.

2/ Ibid.

5. Implementation of the REMP

The inspector examined the licensee's REMP program for calendar year 1979 for compliance with monitoring and reporting requirements in accordance with Sections 3.16 and 4.16 of the Appendix A, Technical Specifications. This included examination of the annual report submitted by the licensee to the NRC and detailed monthly reports containing specific analytical data. Examination of the operability, maintenance and calibration of selected REM stations was also conducted during a tour of the site and environs. No problems were identified.

Review of the analytical results indicated no unusual results or trends ascribable to plant operations. The licensee did indicate the dates and causes of missing samples in the annual report. Otherwise, all samples were collected and analyzed in accordance with Table 4.16-1 of Appendix A, Technical Specifications. The licensee also performed an annual milch animal census and found no changes from the previous census.

The inspector also reviewed the corrective actions the licensee took regarding the item of noncompliance and deviation identified in a previous inspection and has no further questions regarding these matters.<sup>3/</sup>

The inspector discussed with licensee representatives the discrepancies between the sample numbers as shown on the map in Section 4.16 of the Appendix A, Technical Specifications and those actually utilized in the REMP by the licensee contractor. The licensee stated he would clarify this matter. This item will be examined during a subsequent inspection.

No apparent items of noncompliance or deviations were identified.

6. Meteorological Monitoring Program

Review of the CY 1979 meteorological monitoring reports prepared by the licensee's meteorological consultant showed an overall recovery rate of 98.7%. The inspector determined that the contractor had maintained and calibrated the meteorological measurement and recording equipment on a bi-monthly basis. The inspector observed the meteorological readout in the control room which is taken from a weather vane on top of the containment building. The licensee is in the process of converting the readout from the meteorological tower into the control room. The installation will be completed by the end of CY1980 and the entire system will be computerized so as to be able to calculate offsite doses in the technical support center during emergency situations. This item will be examined during a subsequent inspection.

No apparent items of noncompliance or deviations were identified.

<sup>3/</sup> Ibid.

7. Implementation of the Nonradiological Monitoring Program

a. Biological Monitoring Program

The licensee completed his biological environmental monitoring program in September 1978. The licensee's contractor, Hazleton Environmental Sciences Corporation, submitted a summary report in 1979 to the NRC covering the period January 1970 through September 1978. The data presented in this report included lake current measurements, thermal plume, water quality, phytoplankton, zooplankton, periphyton, benthos, fish eggs and larvae, adult fish, fish impingement and entrainment studies. In general, the conclusion reached from these studies indicates that the operation of the Zion Station has not produced a measurable change in the water quality or aquatic communities of Lake Michigan. The requirements for sampling frequencies and locations presented in Section 2.C of Appendix B, Environmental Technical Specifications (ETS) have been satisfied by the licensee's contractor.

b. Thermal Limits

The licensee received an Appendix B ETS change on April 25, 1978, deleting the thermal limits of 20°F maximum temperature differential and 55°F maximum discharge temperature during the winter months. The licensee also obtained an ETS change on September 17, 1979, deleting the limit on the rate of temperature change of 8°F per hour.

The inspector reviewed the licensee's Annual Operating Report and found that prior to this ETS change, the licensee did exceed this 8°F per hour limit on April 27, 1979. Discussions with licensee representatives indicate that this was a transition involving plant adjustments. This is permitted in accordance with ETS 1.1.B. The inspector found that the licensee had made corrections during the same day to reduce this excess rate of temperature change to below the 8°F per hour limit. The inspector has no further questions regarding this item.

c. Chemical Limits and Usage

The licensee obtained an ETS change from NRR on September 17, 1979, deleting the requirement of limiting the chemical usage as presented in Table B.4. The inspector reviewed the licensee's Annual Operating Report for CY1979 and noted the documentation of summary of chemicals used at Zion Station and discharged to Lake Michigan during CY1979. No problems were noted in this summary table.

d. Other Environmental Information

The inspector reviewed the sections on intake and discharge temperature data, de-icing, malfunction of environmental moni-

toring equipment, and shoreline erosion status as presented in the licensee's Annual Operating Report for CY1979. The only problem identified concerns the shoreline erosion caused by 60 concrete blocks submerged in about 4 feet of water off shore. The licensee is making plans to remove the blocks during 1980. This item will be examined during a future inspection.

e. Licensee Environmental Event Report LER 79-85 and 79-84

The inspector reviewed the LER 79-85 which indicated that on October 26, 1979, the licensee discharged an effluent from the Waste Water Treatment Facility having a pH of 8.1. The Environmental Technical Specification 1.3.C limits the discharges to a pH range of 6-8. This range is not practical for chemical effluents since the Lake Michigan's pH is normally greater than 8. The licensee's National Pollutant Discharge Elimination System (NPDES) permit does not limit pH. Normally the licensee adds chemical polymers to the cooling water discharged to bring the pH within specifications. This event, however, represents noncompliance with Appendix B, ETS 1.3.C. The licensee has requested relief from this ETS from NRR. This will be examined during a future inspection.

The licensee also exceeded the pH from 4.1 to 4.77 of an effluent from Waste Water Treatment Facility from December 27 to December 29, 1979. The Waste Neutralization Tank had an acidic solution leak which drained via bad packing glands to the Treatment Facility. Corrective actions of neutralizing and discharging the Neutralizing Tank were reviewed and appeared to be adequate. This event also represents noncompliance with Appendix B, ETS 1.3.C.

One apparent item of noncompliance was identified.

8. Licensee's Internal Audits

The inspector reviewed the licensee internal audits of the environmental monitoring program. The licensee evaluated the quality assurance program of his contractor, Eberline Instrument Corporation, on July 18, 1979, and plans to include the quality assurance articles presented in the licensee's contract with Eberline in the contractor's QA program. These articles will be effective January 1980. The licensee also offered two recommendations to improve the quality of the contractor's work. The inspector determined that these recommendations had been implemented in a timely manner. The licensee's Quality Assurance Department also found, in an audit of the Production System Analysis Department on June 15, 1979, that the PSA auditors of the REMP contractor would not meet the training requirements for auditors. Thus the Quality Assurance Department will conduct all future audits of contractor's performance.

An audit of the licensee's meteorological contractor, Murray and Trettle, Inc., conducted by PSA on July 17, 1979, resulted in two findings which have since been resolved.

No apparent items of noncompliance or deviations were identified.

9. Confirmatory Measurements Program-Quality Assurance and Quality Control of Analytical Measurements

The inspector reviewed selected licensee laboratory procedures for nonradiological effluent and sampling and chemical analysis of reactor and secondary coolant to determine their adequacy and completeness. Procedures reviewed and updated during CY1979 covered analysis for chromate, dissolved oxygen, (three different methods), weighing of samples, boron for normal and post-accident situations, conductivity, sulfuric acid, and sulfite analysis. The licensee is reviewing chemical procedures for all plants and plans to consolidate and standardize the procedures in the near future. This item will be examined in a future inspection. All procedures had been reviewed in December 1979 by the lead chemist to assure they were current and deemed technically adequate.

The inspector also examined selected log sheets, check sheets, and other analytical results for the period of 1980 to date. These results are reviewed daily by the chemistry foremen and lead chemist. (The records of 1979 are in the process of being microfilmed). Licensee management is also informed of any unusual results.

During review of the procedures and corresponding check sheets, the inspector found the following items:

- a. The standardization of sodium hydroxide was conducted only once (7:30 a.m.) on March 6, 1980, and twice on May 23, 1980, contrary to procedure ZCP-23 which requires standardization to be conducted once per shift and logged on the boric acid titration sheets.
- b. Cation conductivity measurements of the reactor and secondary coolant conducted on seven different occasions in April and May 1980 at a frequency less than the required frequency of once every four hours, three shifts per day, seven days a week (six times per day as required) in accordance with ZCP-213. These occasions were twice on April 23, 1980, four times on May 9, and May 20, 1980, and five times on May 10, 17, and 18, 1980, and three on May 25, 1980.
- c. No documentation was available for January and February 1980 for surveillance of gas bottles which is required to be done monthly in accordance with ZCP-216.

These findings constitute apparent items of noncompliance with the plant procedure requirements in accordance with Appendix A, Technical Specifications 6.2.A.7.



The licensee also agreed during procedure revisions to clarify procedure ZCP-217 on secondary system chemical addition pertaining to verifying and documenting the pumping of the hydrazine pump. This item will be examined during a future inspection.

The inspector also toured the licensee's nonradiological chemistry laboratory and observed all laboratory instruments appeared to be functional and operable and chemical solutions dated currently. Calibrations of laboratory instruments are verified on a monthly schedule except colorimeters and pH meters which are checked during usage. No technical weaknesses were observed.

Three apparent items of noncompliance were identified.

10. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of this inspection on May 27, 1980. A telephone discussion was also held with Mr. C. Pliml on June 4, 1980. The inspector discussed the purpose and scope of its findings with licensee representatives. In response to certain remarks made by the inspector, the licensee stated that an attempt would be made to make sure the required chemical analyses would be conducted and results properly documented in accordance with laboratory procedures (Paragraph 9).