

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-295/92032(DRP); 50-304/92032(DRP)

Docket Nos. 50-295; 50-304

License Nos. DPR-39; DPR-48

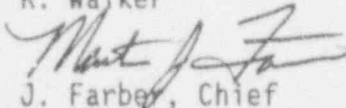
Licensee: Commonwealth Edison Company
Opus West III
1400 Opus Place - Suite 300
Downers Grove, IL 60515

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

Inspection At: Zion, IL

Inspection Conducted:

Inspectors: J. D. Smith
R. J. Leemon
R. B. Landsman
D. E. Jones
F. A. Maura
J. R. Walker

Approved By: 
M. J. Farber, Chief
Reactor Projects Section 1A

1/7/93
Date

Inspection Summary

Inspection from November 10 through December 21, 1992(Report Nos. 50-295/92032 (DRP); 50-304/92032(DRP))

Areas Inspected: Routine, unannounced resident inspection of licensee action on previous inspection findings; summary of operations; operational safety verification and engineered safety feature (ESF) system walkdown; maintenance and surveillance observation; engineering and technical support observations; safety assessment and quality verification; licensee event reports (LERs); resolution of concerns; and management meetings.

Results: Of the six areas inspected, no violations or deviations were identified in five areas, and one non-cited violation was identified in the remaining area.

Plant Operations

Performance in operations slipped as evidenced by increased personnel errors during the first half of this report period. However, overall performance in support of the Unit 2 refueling outage and continued operation of Unit 1 has been good.

Maintenance and Surveillance

Performance during this inspection was excellent. It was demonstrated by the quick repair and return to service of safety equipment and continued success in meeting outage schedule commitments. The efforts of the maintenance group and other departments have kept Zion on schedule for major modifications and work being performed during this outage.

Engineering and Technical Support

The system engineers and on-site engineering group support for the major outage modification work on the Eagle 21 reactor protection system installation, the main control boards modifications, and the 12 percent to 4 percent boric acid system modifications, in addition to support for the operating unit, has been excellent.

Safety Assessment and Quality Verification (SAQV)

Good management oversight and the implementation of Integrated Quality Effort program findings have helped the station continue their improvements in all areas. Teamwork and personal accountability are a major contributor in achieving these improvements.

DETAILS

1. Persons Contacted

R. Tuetken, Vice President, Zion Station
T. Joyce, Station Manager
*D. Wozniak, Superintendent, Technical
*W. Kurth, Superintendent, Production
*R. Budowle, Onsite Nuclear Safety
A. Broccolo, Director, Services
W. Stone, Director, Performance Improvement
D. Redden, Assistant to Production Superintendent
*P. LeBlond, Assistant Superintendent, Operations
L. Simon, Assistant Superintendent, Maintenance
J. LaFontaine, Assistant Superintendent, Work Planning
D. Bump, Nuclear Quality Program, Supervisor
C. Schultz, Quality Control Supervisor
*S. Kaplan, Regulatory Assurance Supervisor
*R. Chrzanowski, Technical Staff Supervisor
K. Moser, Technical Staff
R. Milne, Security Administrator
K. Dickerson, Regulatory Assurance
R. Cascarano, Unit 2 Operating Engineer
W. Demo, Unit 1 Operating Engineer
T. Printz, Unit 0 Operating Engineer

* Indicates persons present at the exit interview on December 24, 1992.
The inspectors also contacted other licensee personnel including members of the operating, maintenance, security, and engineering staff.

2. Licensee Actions on Previous Inspection Findings (92701, 92702)

Unresolved

(Closed) Unresolved Item 295/90018-03; 304/90020-03: AOP Proc. 4.1 not adequate to handle situation. During the 1990 service water inspection, it was noted that AOP-4.1 loss of component cooling water (CCW) was considered weak due to not covering the placing of CCW in a split header configuration. A total loss of CCW would require the tripping of both reactors resulting in entry into the Emergency Operating Procedures. The total loss of all CCW would result from a leak in one system being unisolable, resulting in cavitation on all operating CCW pumps. The licensee has added an appendix to AOP-4.1 to cover split unit operation of the CCW system. This was not a procedure enhancement of a portion of the procedure that was already written, but generation of a new portion of the procedure.

The Zion Individual Plant Examination/Probabilistic Risk Assessment identifies the core damage frequency for the loss of component cooling water as 4/68 E-13/year. Based on this low core damage risk, this inadequate procedure is considered a Severity Level V violation. In

accordance with agency policy no Notice of Violation is written for Level V violations. This item is closed.

Inspection Follow-up Items (IFI)

(Closed) IFI Item Nos. 295/90015-01; 304/90017-01: Review of Standard Operating Instructions (SOIs) as mandatory in-hand procedures. SOI-68 contained a variety of technically complex, infrequently performed evolutions which had potentially significant consequences if improperly performed. SOI-68 was not considered a "Mandatory In-hand" procedure. The licensee has reviewed this item and as a result divided SOI-68 into its various tasks. SOI-68 G, H, I are now designated as "Mandatory In-hand" procedures. This division of SOI-68 has been reviewed and this item is closed.

(Closed) IFI Item Nos. 295/90030-16; 304/90030-16: Staff awareness of administrative controls. During the Diagnostic Evaluation Team inspection, it was noted that support personnel demonstrated inadequate knowledge of the administrative controls related to the drawing control system. The facility developed and performed training for all support personnel and personnel moving to new positions. In addition, on-going, on-demand training in this area is in place for all personnel assuming new positions. This item is closed.

(Closed) IFI Item 50-295,304/90031-03: Resolution of pump test methodology and acceptance criteria. It was determined that PT-11B, a surveillance test for the EDG Fuel Oil Transfer pump obtained results that were only marginally satisfactory. This was due to inaccuracies in the instrumentation, ASME Code usage, and readings obtained during performance of the test. The licensee, recognizing the need to improve performance, developed a new method of testing the EDG fuel oil transfer pumps using portable ultrasonic flow indicators. In addition, the licensee has developed an alternate method to test these pumps should the ultrasonic flow indicator not be available. The procedures to perform this task have been written, tested and issued. This item is closed.

One non-cited violation was identified.

3. Summary of Operations

Unit 1

At the start of the period, reactor power was limited to 97 percent due to a need for a time delay in the temperature input to the over-temperature and over-power delta temperature trip set points to the Eagle 21 circuitry. This time delay was installed into Eagle 21 on December 8. Power was then increased to 100 percent and the unit was operated in the load-following mode for the remainder of the inspection period.

Unit 2

The inspection period began with Unit 2 at 56 percent power in coastdown to the refueling outage. Unit 2 was taken off-line at 1:15 and the reactor was shut down at 1:32 a.m. (CST) on November 12, 1992 for the start of refueling Z11R12. Full core off-load started on November 30, and was completed on December 6, 1992. The unit remained defueled for the duration of the period.

No violations or deviations were identified.

4. Operational Safety Verification and Engineered Safety Features System Walkdown (71707 & 71710)

The inspectors verified that the facility was being operated in conformance with the licenses and regulatory requirements and that the licensee's management control system was effectively carrying out its responsibilities for safe operation. During tours of accessible areas of the plant, and Unit 2 containment, the inspectors made note of general plant and equipment conditions, including control of activities in progress.

On a sampling basis the inspectors observed control room staffing and coordination of plant activities; observed operator adherence with procedures and technical specifications; monitored control room indications for abnormalities; verified that electrical power was available and observed the frequency of plant and control room visits by station managers. The inspectors also monitored various administrative and operating records. All components observed in safety systems were in their proper positions. Logs and records are becoming more informative and usable.

The specific areas observed were Unit 2 containment, auxiliary building and turbine building:

- Engineered Safety Features (ESF) Systems

Accessible portions of ESF systems and their support systems components were inspected to verify operability through observation of instrumentation and proper valve and electrical power alignment. The inspectors also visually inspected components for material conditions. The material condition of the auxiliary building, with the exception of pump skids, has greatly improved.

- Radiation Protection Controls

The inspectors verified that workers were following health physics procedures and randomly examined radiation protection instrumentation for operability and calibration. A major effort has been undertaken to reduce the man-rem received during Unit 2 outage along with reducing the potential spread of contamination.

- Security

During the inspection period, the inspectors monitored the licensee's security program to ensure that observed actions were being implemented according to their approved security plan. The security force performed their duties in a professional manner.

- Housekeeping and Plant Cleanliness

The inspectors monitored the status of housekeeping and plant cleanliness for fire protection and protection of safety-related equipment from intrusion of foreign matter. Housekeeping in the turbine building is not at the same level as established in the auxiliary building.

- a. Operational Events

- Training Error

The output breaker for 1A emergency diesel generator (EDG) was tripped on reverse power due to a trainee personnel error when loading the EDG during a surveillance test on December 15, 1992. The trainee went the wrong direction with the KW switch after closing the generator breaker. The trainee was instructed as to the correct operation of the switch and conducted the synchronizing successfully.

- Plant Material Conditions

The licensee continues to improve plant material condition. Auxiliary building conditions continue to improve. The turbine building, particularly the bottom floor and the hydraulic units for the main steam isolation valves, continues to need improvement. It is apparent that the turbine building has not received the attention that the auxiliary building has.

- b. Assessment of Plant Operations

Performance in operations slipped in the area of personnel errors during the first half of this report period. However, overall performance in support of the outage and continued operation of the other unit has been good.

No violations or deviations were identified.

5. Monthly Maintenance and Surveillance (62703 and 61726)

Routinely, station maintenance and surveillance activities were observed and/or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with technical specifications.

The following items were also considered during this review: approvals were obtained prior to initiating the work and testing and that operability requirements were met during such activities; functional testing and calibrations were performed prior to declaring the component operable; discrepancies identified during the activities were resolved prior to returning the component to service; quality control records were maintained; and activities were accomplished by qualified personnel.

a. Maintenance/Surveillance Related Activities

Cold Weather Preparations (71714)

The inspectors reviewed the licensee's program to protect safety-related systems against cold weather. The stations winter operation checklist, PT-35W, is in the process of being completed with anticipated completion scheduled for early January. Only a few protective safety valve covers and local unit heater verifications remain.

Emergency Diesel Generator Work Completed

The EDG work completed during this inspection period included the following:

2A Diesel:

Eighteen month surveillance; cleaned and inspected the lube oil, jacket water, and intercoolers; replaced all cylinder to block expansion bellows (wrinkle bellies); replaced a cracked exhaust manifold; installed a new design for high pressure fuel oil lines; made modifications related to air start, bus cross trip, day tank level alarm, and installation of additional isolation valves for the coolers.

0 Diesel

Eighteen month surveillance; cleaned and inspected lube oil and jacket water coolers; repaired intake air adaptor for turbocharger to air filter leaks; and rebuilt 1 left, 2 left, 2 right and 3 right cylinders. This work was executed under a limiting condition for operation and was completed on time or within a day of the pre-planned schedule. Testing was completed on time; the diesel was returned to service as scheduled.

Eagle 21 Reactor Protection System

The Eagle 21 digital reactor protection system was fully installed on Unit 2 on December 11, 1992. It was installed in less time than Unit 1 due to fewer procedure and installation problems, along with the crew being more experienced.

b. Assessment of Maintenance and Surveillance

Performance during this inspection was excellent. It was demonstrated by the quick repair and return to service of safety equipment and continued success in meeting outage schedule commitments. The efforts of the maintenance group and other departments have kept Zion on schedule for the major modifications and work being performed during this outage.

No violations of deviations were identified.

6. Engineering and Technical Support (37828)

The inspectors evaluated the extent to which engineering principles and evaluations were integrated into daily plant activities. This was accomplished by assessing the technical staff involvement in non-routine events, outage-related activities, and assigned TS surveillances; observing on-going maintenance work and troubleshooting; and reviewing deviation investigations and root cause determinations.

a. Engineering and Technical Support Events

Unit 1 - Entered Technical Specification 3.03 for 37 Minutes

On December 4, 1992 at 1:00 p.m., Unit 1 entered Technical Specification 3.03 due to the containment penetration pressurizing (PP) system being inoperable. The No. 1 containment pressurization air compressor was being tested for return to service after maintenance when service water was found backing up from the aftercooler into the air line due to a drain valve being left open. The No. 1 PP air compressor was declared inoperable. The No. 0 PP air compressor was tested, and when it would not shut off at its high pressure set point of 110 psig, was also declared inoperable. Technical Specification 3.9.2.b requires verifying the operability of the nitrogen system. Each penetration zone has a nitrogen bottle which is required to be at 1970 psig when a PP air compressor is out of service; however, the nitrogen bottles were found at 1700 psi. With the nitrogen system also inoperable, the Unit 1 entered TS 3.03. The licensee pressurized the nitrogen bottles to greater than 1970 psig and the Unit exited TS 3.03 at 1:37 p.m.

The instrumentation on the No. 0 and No. 1 compressors was drained and the unloader pressure switches were calibrated. The compressors were tested and returned to service. The source of water in the air lines was from a partially open service water drain valve 1AD0042. This water in the air caused unnecessary re-inspection of the No. 1 PP air compressor aftercooler which was repaired earlier.

Subsequent to the above event, the No. 2 PP air dryer was being returned to service on December 7, 1992, when water was found in the drain lines. Investigation found that the SW drain valve 2AD0044

was not fully closed. The resident staff will follow the root cause investigation for the drain valves not being fully closed.

b. Assessment of Engineering and Technical Support

The system engineers and on-site engineering group support for the major outage modification work on the Eagle 21 reactor protection system installation, the control room control boards modifications and the 12 percent to 4 percent boric acid system modifications in addition to support for the operating unit has been excellent.

No violations or deviations were identified.

7. Safety Assessment and Quality Verification (40500)

The effectiveness of management controls, verification, and oversight activities in the conduct of jobs observed during this inspection was evaluated. Management and supervisory meetings involving plant status were attended to observe the coordination between departments. The results of licensee corrective action programs were routinely monitored by attendance at meetings, discussion with the plant staff, review of deviation reports, and root cause evaluation reports.

a. SAQV Related Events

Appointment of Zion Station Site Vice President

On November 12, 1992, Commonwealth Edison announced the selection of 5 of the 6 site Vice Presidents. Richard Tuetken, the General Manager for Zion Station, was selected as the Zion Station Site Vice President. Mr. Tuetken brings over twenty years of nuclear and utility experience to the position.

Zion Station Site Reorganization

The planned Zion Station Site organization was announced on December 16, 1992 by R. Tuetken, Site Vice President. The new organization will be phased in slowly to ensure the transition does not impact the Unit 2 refueling outage. The complete organization will be available after January 29, 1993. The most significant change is the management of the operation department where the Operations Manager now reports directly to the Station.

Accountability

Management changes at Zion Station has focused the emphasis on accountability down to the individual level. This is being seen with the station completing planned activities on schedule and on time.

Shutdown Risk Management

The station's Shutdown Risk Review Board approved the Z2R12 outage schedule after assessing 175 items. Five strengths and eleven weaknesses were noted. Management controls in the planning process to minimize risk through scheduling of activities include review of schedule changes and emergency work for their effects on risk and daily assessments of actual plant conditions to determine the risk level. Identification and communication of "Protected Electrical Paths," to ensure a power supply for equipment required for maintaining safe shutdown, is kept current.

Shutdown risk is reviewed daily by the Shutdown Risk Review Board after which an independent review is performed by the Quality Verification Group.

The protected path and risk assessment evaluation forms are discussed in the morning meeting notes and outage planning. They are displayed on the TV monitors throughout the station so that all station personnel are aware of the power supplies and equipment required to keep the unit safe.

New President of Commonwealth Edison

On December 16, 1992, Chairman O'Connor announced that the company's Board of Directors had elected Samuel Knox Skinner as President of Commonwealth Edison and as a member of the Board of Directors.

b. Assessment of SAQV

Good management oversight and the implementation of the Integrated Quality Effort program findings have helped the station to continue their improvements in all areas. The teamwork and personal accountability is a major contribution to achieving these improvements.

No violations or deviations were identified.

8. Licensee Event Reports (LERs) Followup (92700)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications. The LERs listed below are considered closed:

UNIT 1:

295/ 0011-00
-01

2W Main Transformer Failure

295/90015-00	Incorrect Containment Flood Level is Specified in USFAR.
295/90024-00	Missed Pressurizer Boron Sample due to Personnel Error.
295/91005-00	111 AC Instrument Invertor Spike Causing Loss of RHR.
295/91007-00 -01	Control Room HVAC Envelope Unfiltered Inleakage Found to be Higher than the Value Assumed in the Docket Analysis.
295/91008-00	Inadvertent Safety Injection due to A. C. Instrument Invertor Failure.
295/91012-00 -01 -02 -03	Snubber Modification Misinterpretation.
295/91016-00	Reactor Trip and Safety Injection Due to AC Instrument Invertor Failure.
295/91017-00	Loss of Service Bus 142 due to a Personnel Error.
295/91019-00	Reactor Trip Due to Accidental Deenergization of AC Instrument Bus 111.
295/92002-00	Reactor Trip Signal Generated in Hot Shutdown with Reactor Trip Breakers Open.
295/92004-00	Insufficient Technical Specification Testing of Bypass Reactor Trip Breakers Control Room Trip Switch Contacts.

UNIT 2:

304/89006-00 -01	Missed QPTR Surveillance Due to Personnel Error.
304/89009-00 -01 -02	Missed Radiation Monitor Action Statement Due to a Programmatic Deficiency.
304/90015-00 -01 -02	Seal Injection Line Not Adequately Supported

No violations or deviations were identified.

In addition to the foregoing, the inspectors reviewed the licensee's Problem Identification Forms (PIFs) generated during the inspection period. This was done in an effort to monitor the conditions related to plant or personnel performance and potential trend. Problem identification Forms and the results of the investigations were also reviewed to ensure that they were generated appropriately and dispositioned in a manner consistent with the applicable procedures and the quality assurance manual. In response to the large number of personnel errors during this period, the residents reviewed all PIFS, found excellent root cause evaluations, and management actions to implement corrective actions.

No violations or deviations were identified.

9. Management Meetings (30703)

On November 18 and 19, 1992, Mr. J. M. Taylor, Executive Director of Operations (EDO), accompanied by Mr. A. B. Davis, Regional Administrator, Region III, met with the Zion Review Team, resident inspectors and Commonwealth Edison's management. Utility management included Messrs. J. J. O'Connor, Chief Executive Officer, CECO; C. Reed, Chief Nuclear Officer; and M. J. Wallace, Chief Nuclear Operating Officer. Overall performance improvements were acknowledged and management was challenged to continue to provide resources and close overview of Zion Station.

On December 7, 1992, Mr. E. Jordan, Director, Office of Analysis and Evaluation of Operational Data (AEOD), accompanied by Mr. E. G. Greenman, Director, Division of Reactor Projects, Region III, toured the Zion site. They met with station management and staff who presented current status of plant programs. Their overall view was that Zion understands the challenges in front of them and these challenges appeared to be well managed.

On December 9, 1992, Messrs. J. G. Partlow, Associate Director for Projects, J. E. Dyer, Director, Project Directorate III-2, NRR and S. Rubin, AEOD met with R. Tuetken, Zion Site Vice President and toured the site with the resident staff. Their overall impression was that Zion station is improving.

On December 14, 1992, Dr. T. E. Murley, Director, Office of Nuclear Reactor Regulation, and Mr. A. B. Davis, Regional Administrator, Region III, held discussions at the Zion Station with the Zion management staff to discuss the status of Zion Station and the new management team.

No violations or deviations were identified.

10. Resolution of Concerns

AMS No. RIII-92-A-0044 Inadequate Nuclear Quality Audits

Concerns were raised that portions of Audit No. QAA-22-92-13, on contractor ABB Combustion Engineering, were done incorrectly through the use of Field Monitoring Reports (FMRs). ABB Combustion Engineering was contracted by the licensee to perform steam generator eddy current examinations, plugging, sleeving, etc. on the Unit 1 steam generators during the 1992 refueling outage.

To address this issue, the NRC conducted a review of Audit No. QAA-22-92-13, the FMRs in question, NRC regulations and guidance on the conduct of audits, all applicable industry standards, and relevant licensee procedures. In addition, the inspector interviewed the audit team leader. The other two members of the audit team are no longer employed by the licensee.

a. (Closed) Concern - The Use of FMRs to Answer Specific Audit Items

(1) Conclusion

The inspector concluded that FMRs could be used to answer specific audit items, provided the FMR was performed by the same auditor and covered the requirements of the specific audit item.

(2) NRC Review

The inspector reviewed the following documents which directly or indirectly controlled the performance of the audit:

- Commonwealth Edison Company Quality Assurance Program, Topical Report CE-1-A, Revision 61.
- Commonwealth Edison Company Quality Assurance Manual Quality Procedure Q.P. 18-51, Rev. 24.
- American National Standards ANSI N45.2-1977, ANSI N45.2.10-1973, ANSI N18.7-1972, and ANSI/ASME NQA-1-1986.
- Nuclear Quality Program Instruction, NQPI No. 22, Revision 3.
- Appendix A to NQPI No. 22 (Unapproved, draft).
- 10 CFR Part 50, Appendix B.

- Regulatory Guides 1.28, Rev 3; 1.33 Rev. 0; 1.74, Rev. 0.

In general, the purpose of an audit is to determine by investigation, examination, or evaluation of objective evidence the degree of compliance with, and the effectiveness of, the quality assurance program. None of the regulations, guides, or industry standards reviewed restricted the methodology used to perform an audit. The licensee's Quality Procedure Q.P. 18-51 defines field monitoring as being similar to an auditing function, usually limited to observing specific work against documented requirements. It also stated that an audit item may require observation of work in progress to verify that work was being performed in accordance with documented instructions. Instruction NQPI No. 22, Rev. 3, provided guidance on the implementation of FMRs, however, it did not address the use of FMRs during audits. Appendix A to NQPI No. 22 was the only document reviewed which stated that the use of FMRs to close an audit item was not allowed, however, Appendix A was an unapproved draft document.

A review of Audit No. QAA-22-92-13 showed that FMRs were used to close audit items 5B, 5D, 6B, 6C, 6D, 10A, 10B, 10C, and 14A. In each instance the audit items involved observation of work in progress and the observation was performed by the auditor who wrote the FMRs. A review of the FMRs in question showed that there was enough objective evidence (identification of activity observed, personnel or documents involved, and conclusions) to answer the specific audit item. The inspector did not identify any concerns regarding the use of FMRs in Audit No. QAA-22-92-13.

11. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and at the conclusion of the inspection on December 24, 1992, to summarize the scope and findings of the inspection activities. The licensee acknowledged the inspectors' comments. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.