

October 6, 2004

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: NRC INSPECTION REPORT 05000295/2004-002(DNMS) -
ZION NUCLEAR STATION

Dear Mr. Crane:

On September 8, 2004, the NRC completed an inspection at the Zion Nuclear Station. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, the inspectors evaluated organization and management, safety reviews, self assessments, spent fuel safety, maintenance and surveillance, and radiological waste. At the conclusion of the inspection on September 8, 2004, the NRC inspectors discussed the findings with members of your staff.

The inspection consisted of an examination of decommissioning activities at the Zion Nuclear Station as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations.

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C. Crane

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We will gladly discuss any questions you may have regarding this inspection.

Sincerely,

/RA/

Kenneth G. O'Brien, Chief
Decommissioning Branch

Docket No. 05000295
License No. DPR-39

Enclosure: Inspection Report 05000295/2004-002(DNMS)

cc w/encl: Zion Nuclear Power Station Decommissioning Plant Manager
Regulatory Assurance Engineer - Zion
Senior Vice President - Nuclear Services
Vice President of Operations - Mid-West Pressurized Water Reactor
Vice President - Licensing and Regulatory Affairs
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 05000295
License No. DPR-39

Report No. 05000295/2004-002 (DNMS)

Licensee: Exelon Generation Company, LLC

Facility: Zion Nuclear Station

Location: 101 Shiloh Boulevard
Zion, IL 60099

Date: September 8, 2004

IEMA Inspector: Jane Yesinowski

NRC Inspector: Edward L. Kulzer, CIH, CSP
Health Physicist (Inspector)
Division of Nuclear Materials Safety (DNMS)

Approved by: Kenneth G. O'Brien, Chief
Decommissioning Branch, DNMS

EXECUTIVE SUMMARY

Zion Nuclear Station NRC Inspection Report 05000295/2004-002 (DNMS)

This routine decommissioning inspection focused on the evaluation of the licensee's organization and management, safety reviews, decommissioning support activities, spent fuel safety, and radiological safety.

Decommissioning Performance and Status Review at Permanently Shut Down Reactors

- The inspectors determined that the licensee's staffing was adequate for the level of work being performed at the site and that the licensee's training programs, as reviewed, were properly implemented. The inspectors also determined that the Decommissioning Operations Manager met the qualification requirements specified in the Zion Defueled Technical Specifications. (Section 1.1)
- The inspectors determined that the On-site Safety Review Committee was conducting its activities in accordance with the requirements outlined in the Technical Specifications. (Section 1.2)
- The inspectors determined that the licensee implemented appropriate corrective actions to address the causes for recent errors in the annual effluent report and conducted effective audits of its shutdown activities. (Section 1.3)

Spent Fuel Safety

- The inspectors determined that the licensee adequately maintained the general material condition of structures, systems, and components associated with the safe storage of the spent fuel and the equipment necessary for the operation of the spent fuel nuclear island. (Section 2.1)

Radiological Safety

- The inspectors determined that the licensee appropriately controlled personnel exposures associated with its cleanup of approximately 4500 square feet of previously contaminated floor space. (Section 3.1)

Report Details^{1, 2}

Summary of Plant Activities

During the period covered by this inspection, the licensee maintained the spent fuel in a safe storage condition.

1.0 Facility Management and Control

1.1 Organization, Management and Cost Controls (IP 36801)

a. Inspection Scope

The inspectors evaluated the licensee's staffing and the following training programs:

“Nuclear General Employee Training - (NGET)”;
“Certified Fuel Handler Initial Training and Retraining Program”; and
“Non-Certified Operators Initial Training and Retraining Program.”

b. Observations and Findings

The inspectors determined that, with the exception of the recent retirement of the operations manager, there have been no changes in the licensee's staffing of the station.

The Zion Defueled Technical Specifications, Appendix A, Section 5.3.1, “Facility Staff Qualifications,” requires the Decommissioning Operations Manager to meet the requirements of the Operations Manager as specified in American National Standards Institute (ANSI), Standard N18.1, “Selection and Training of Nuclear Power Plant Personnel,” dated March 8, 1971. The ANSI Standard N18.1 requirements for an operations manager are documented in Section 4.2.2 of the standard, and require the individual to have at least eight years experience, with a minimum of three years of nuclear power plant experience.

In May 2004, the licensee appointed a new Decommissioning Operations Manager. The new Decommissioning Operations Manager previously worked as the Assistant Decommissioning Operations Manager and held both an operating license and a senior operating license. The inspectors determined that the new Decommissioning Operations Manager had the required eight years of operations experience.

The inspectors determined that the licensee tracked required training for station personnel using a site training matrix. The inspectors reviewed the site training matrix, associated with the licensee's tracking and implementation of certified fuel handler and NGET training, and determined that the licensee required the certified fuel handlers to receive annual NGET training and conducted biannual testing associated with the training. The inspectors did not identify any concerns with the training

¹A list of acronyms used in these “Details” is provided at the end of the report.

²All documents reviewed are listed at the end of this report.

program and noted that the licensee has not significantly altered the programs since the NRC reviewed and approved the programs in July 1998.

c. Conclusions

The inspectors determined that the licensee's staffing was adequate for the level of work being performed at the site and that the licensee's training programs, as reviewed, were properly implemented. The inspectors also determined that the Decommissioning Operations Manager met the qualification requirements specified in the Zion Defueled Technical Specifications.

1.2 Safety Reviews, Design Changes, and Modifications (IP 37801)

a. Inspection Scope

The inspectors reviewed and evaluated the performance of the licensee's On-site Safety Review Committee (SRC). The inspectors reviewed the SRC meetings minutes associated with meetings held on February 24, May 18, and August 19, 2004.

b. Observations and Findings

The inspectors reviewed the SRC minutes and determined that the committee reviewed issues consistent with the performance requirements contained in the licensee's Defueled Technical Specification 5.9.2, "Station Review Committee," including a proposed Technical Specification amendment. The proposed amendment would have eliminated a requirement for the licensee to provide the NRC with monthly operating and annual occupational radiation exposure reports. The SRC determined that the requirement was not appropriate to the shutdown status of the station and its elimination would not impact the ongoing safe storage of used fuel in the spent fuel pool. As a result, the SRC endorsed the proposed Technical Specification Change.

c. Conclusions

The inspectors determined that the On-site Safety Review Committee was conducting its activities in accordance with the requirements outlined in the Technical Specifications.

1.3 Self Assessment, Auditing, and Corrective Actions (IP 40801)

a. Inspection Scope

The inspectors reviewed the licensee's list of corrective action work orders, evaluated Corrective Action Work Order No. 00689348, associated with errors in the 2003 Annual Effluent Report, and evaluated two audits conducted since the last inspection.

b. Observations and Findings

In response to errors identified in the 2003 Annual Effluent Report, the licensee reviewed the information tools used to support development of the annual report and the amount and type of data included in the report. Based upon this review, the licensee determined that a contributory cause for the recent errors in the annual report

was the station's continued development of an annual report that was consistent with an operating versus a shutdown plant. Specifically, the licensee determined that much of the information included in the report was not relevant to the effluents associated with a shutdown facility and that the number of staff available to review and verify the data was significantly reduced following shutdown of the station. As a result, the licensee implemented a corrective action to decrease the amount of data included in the annual report and to modify the information tools used to assemble the data for inclusion in the report. The licensee also planned to assign another individual to provide a third tier of review of the shortened report. The inspectors determined that the licensee's evaluation of the causes for the errors in the 2003 Annual Effluent Report and its proposed corrective actions were appropriate to the circumstances.

The inspectors reviewed the licensee's decommissioning functional area audit report entitled, "Nuclear Oversight (NOS) Audit, Number NOSA-ZN-03-12 (AR 189525)," dated December 18, 2003, and the "Zion Station Electrical Safety Focused Area Self Assessment (FASA) Report," dated June 24-25, 2004. The inspectors determined that the two audits were appropriately focused on the defueled condition structures, components, and systems that implement 10 CFR Part 50, Appendix B, and properly included the Exelon Quality Assurance Topical Report requirements and associated industry assessment guidance.

As a result of the audit activities, the licensee identified issues associated with the control and segregation of measuring and test equipment and the storage of quality records. The inspectors reviewed the licensee's corrective actions for each of the identified issues and determined that corrective actions were responsive to the issues.

c. Conclusions

The inspectors determined that the licensee implemented appropriate corrective actions to address the causes for recent errors in the annual effluent report and conducted effective audits of its shutdown activities.

2.0 Spent Fuel Safety

2.1 Spent Fuel Pool Safety (IP 60801)

a. Inspection Scope

The inspectors conducted a tour of the spent fuel pool (SFP) area, reviewed spent fuel nuclear island (SFNI) instrumentation and alarms; cleanliness control; and SFP chemistry status. The inspectors evaluated several work orders covering SFNI equipment.

b. Observations and Findings

During a tour of the SFP area, the inspectors observed that the SFP level, temperature, and boron concentration were within Defueled Technical Specification 3.1, "Defueled Plant Systems," limits. The current SFP temperature was 90 degrees Fahrenheit (°F) and the SFP level was at 615 feet, 1 inch. The licensee staff informed the inspectors that the SFP heat up rate, if cooling were lost, was 0.6 °F per hour.

Therefore, the time it would take for the SFP to boil, with no SFP cooling, was approximately 200 hours.

The inspectors noted that the licensee had experienced several single electrical bus failures and one total loss of power since the last inspection. The inspectors reviewed the circumstances and consequences of the power losses and determined that in all cases, the licensee restored power to the SFNI within minutes and the power losses did not affect SFP safety. In the event the licensee could not restore normal power immediately, the licensee indicated that a redundant power supply was available, and the licensee could obtain emergency power, in a very short time period, if necessary. The licensee was trending the power losses to determine if any other actions should be taken to improve power reliability.

The inspectors evaluated several work orders associated with SFNI equipment and determined that the maintenance was appropriate to the circumstances. The inspectors observed that there were redundant systems to support safe fuel storage and the systems were functional.

c. Conclusions

The inspectors determined that the licensee adequately maintained the general material condition of structures, systems, and components associated with the safe storage of the spent fuel and the equipment necessary for the operation of the spent fuel nuclear island.

3.0 Radiological Safety

3.1 Radioactive Waste Treatment, and Effluent and Environmental Monitoring (IP 84750)

a. Inspection Scope

The inspectors reviewed the licensee's "Decontamination Project for 2004" which outlined the licensee's plans to decontaminated over 4000 square feet of a previously contaminated area. The inspectors also reviewed the monthly dose summary reports for both liquid and gaseous releases.

b. Observations and Findings

The inspectors evaluated the results of the work conducted under the "Decontamination Project for 2004." The As-Low-As-Reasonably-Achievable Review Board estimated the decontamination work would result in an approximate 322 person-millirem dose. Upon completion of the project, the licensee staff decontaminated 4520 square feet with a total dose of 40 person-millirem (12 percent of the expected dose).

The inspectors determined that the doses associated with the licensee's liquid and gaseous releases were reasonable and appropriate for a facility in a safe storage condition.

c. Conclusions

The inspectors determined that the licensee appropriately controlled personnel exposures associated with its cleanup of approximately 4500 square feet of previously contaminated floor space.

4.0 Exit Meeting

The inspectors presented the inspection results to licensee management at the conclusion of the inspection on September 8, 2004. The licensee acknowledged the findings presented did not identify any of the documents or processes reviewed by the inspectors as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

- * A. Daniels, Plant Manager
 - * J. Ashley, Design Engineering
 - * R Adams, Operations and Engineering Manager
 - * R. Schuster, Radiation Protection and Chemistry Supervisor
 - * L. Cunningham, Security
 - * M. Petersen, Administration/Training Supervisor
- * Present at the September 8, 2004, exit meeting.

INSPECTION PROCEDURES (IP) USED

IP 36801	Management, Organization, and Cost Control
IP 37801	Safety Reviews, Design Changes, and Modifications
IP 40801	Self-Assessment, Auditing, and Corrective Actions
IP 60801	Spent Fuel Pool Safety
IP 62801	Maintenance and Surveillance
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	None
Closed	None
Discussed	None

LIST OF ACRONYMS USED

ANSI	American National Standards Institute
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Materials Safety

DSAR	Decommissioning Safety Analysis Review
IEMA	Illinois Emergency Management Agency
NGET	Nuclear General Employee Training
NRC	Nuclear Regulatory Commission
SFNI	Spent Fuel Nuclear Island
SFP	Spent Fuel Pool
SRC	Safety Review Committee

LICENSEE DOCUMENTS REVIEWED

Commonwealth Edison letter to NRC, dated March 16, 1998, Subject: Request for Approval of the Certified Fuel Handler Training and Retraining Program;

NRC letter to Commonwealth Edison, dated July 20, 1998, Subject: Acceptance of Certified Fuel Handlers Program (TAC NOS. MA 1313 and MA 1314);

“Certified Fuel Handler Initial Training and Retraining Program Description,” Revision 2, with an effective date of February 29, 2004;

“Non-certified Fuel Handler Initial Training and Retraining Program Description,” Revision 1, with an effective date of April 5, 1999;

“Nuclear General Employee Training - NGET,” Revision 4, dated April 20, 2004;

LZDO Operating Training Matrix;

NGET Training Matrix;

Attachment A, “Certification of Participants to ANSI-Recognized Requirements,” Revision 8, dated April 21, 2004, Zion Administrative Procedure (ZAP)-500-09;

Zion memorandum, dated February 26, 2004, Subject: Minutes for the February 24, 2004, Station Review Committee (SRC) Meeting;

Zion memorandum, dated May 18, 2004, Subject: Minutes for the May 18, 2004, Station Review Committee (SRC) Meeting;

Zion memorandum, dated August 19, 2004, Subject: Minutes for the August 19, 2004, Station Review Committee (SRC) Meeting;

Corrective action work orders for 2004;

Work Order 00689348, “Errors in the 2003 Annual Effluent Report;”

Decommissioning Functional Area Audit Report “Nuclear Oversight (NOS) Audit Number NOSA-ZN-03-12 (AR 189525),” dated December 18, 2003;

Zion Station Electrical Safety Focused Area Self Assessment Report, dated June 24-25, 2004;

“Spent fuel pool heat up data collection procedure,” Revision 0, dated August 16, 2001;

“Spent Fuel Pool Chemical Data,” August 2004;

Work Order 668650-02, “B” Spent Fuel System Cooling Tower Pump;

Work Order 99220993-03, “Close the Training Trailers;”

Work Order 613811-01, “SFNI Cooling Loop B Lubricate Pump Motor Bearings;”

Zion memorandum, dated April 2, 2003, Subject: Decon Project for 2004;

“Liquid Release and Dose Summary Report,” August 2004;

“Gaseous Release and Dose Summary Report,” August 2004.