

July 1, 2005

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 050-00295/2005-001(DNMS) -
ZION NUCLEAR STATION

Dear Mr. Crane:

On June 8, 2005, 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 controls, safety reviews, self assessments, spent fuel safety, maintenance and surveillance, and radiological waste. At the conclusion of the inspection, the NRC inspectors discussed the findings with members of your staff.

The inspection consisted of an examination of activities at the facility 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, field observations of activities in progress, and interviews with personnel

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

C. Crane

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

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Decommissioning Branch

Docket No. 05000295
License No. DPR-39

Enclosure: Inspection Report 050-00295/2005-001(DNMS)

cc w/encl: Zion Nuclear Power Station Decommissioning Plant Manager
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Vice President of Operations - Mid-West Pressurized Water Reactor
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 050-00295
License No. DPR-39

Report No. 050-00295/2005-001 (DNMS)

Licensee: Exelon Generation Company, LLC

Facility: Zion Nuclear Station

Location: 101 Shiloh Boulevard
Zion, IL 60099

Date: June 7 through 8, 2005

IEMA Inspector: Jane Yesinowski

NRC Inspector: Peter J. Lee, Ph.D., CHP, Health Physicist
Eugenio Bonano, Health Physicist

Approved by: Jamnes L. Cameron, Chief
Decommissioning Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Zion Nuclear Station NRC Inspection Report 050-00295/2005-001(DNMS)

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

Facility Management and Control

- The inspectors determined that the licensee's staffing was adequate for the level of work being performed at the site and met the requirements established in licensee procedures. The licensee properly implemented training programs for general employee training and fuel handling. (Section 1.1)
- The licensee adequately maintained the material condition of the facilities and equipment observed. (Section 1.2)
- The inspectors determined that the licensee's process for evaluating the safety impacts of facility changes was in compliance with the requirements of 10 CFR 50.59. (Section 1.3)
- The inspectors determined that the licensee adequately implemented the audit and corrective action programs in accordance with its Quality Assurance Program, and met the regulatory requirements. (Section 1.4)

Decommissioning Support Activities

- The licensee's annual assessment of the Maintenance Rule program for 2004 was adequate, and corrective actions had been satisfactory and performed in a timely manner. The inspectors determined that the licensee implemented its maintenance and surveillance programs in accordance with its procedures and NRC regulations. (Section 2.1)

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 3.1)

Radiological Safety

- The licensee effectively implemented its radiological effluent control programs and processes. (Section 4.1)

Report Details

Summary of Plant Activities

During the period covered by this inspection, the licensee maintained the spent fuel in storage within the spent fuel pool.

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 two training programs: "Nuclear General Employee Training - (NGET);" and "Certified Fuel Handler Initial Training and Retraining Program." The inspectors reviewed the site training matrix, and the licensee's tracking and implementation of certified fuel handler and NGET training

b. Observations and Findings

The licensee made changes to its staffing at the station since the last inspection. The changes included the filling of three positions: Decommissioning Plant Manager, Maintenance Coordinator, and Synchronous Condenser Engineer. Each of the positions were described in licensee procedure ZAP 200-01, "Zion Decommissioning Organization," Revision 9.

The licensee tracked required training for station personnel using the site training matrix. Licensee personnel received annual operating examinations, and biennial written examinations in accordance with Training Procedure Description (TPD)-312, "Certified Fuel Handler Initial Training and Retraining Program Description," Revision 0, dated May 22, 1998; and annual NGET training documented on TQ-AA-210-4105, "Course Attendance Sheet, Revision 1." All personnel taking the examinations reviewed during this inspection period scored passing grades on the exams.

c. Conclusions

The inspectors determined that the licensee's staffing was adequate for the level of work being performed at the site and met the requirements established in licensee procedures. The licensee properly implemented training programs for general employee training and fuel handling.

1.2 Decommissioning Performance and Status Review (71801)

a. Inspection Scope

The inspectors conducted a plant tour to assess field conditions, and evaluated the material condition of structures, systems, and components important for the safe storage of spent fuel.

b. Observations and Findings

During the plant tour, the inspectors did not identify any conditions adverse to plant equipment or personnel safety. The inspectors did not identify any transient materials that would impact the function of structures, systems, and components important for the safe storage of spent fuel or hinder plant personnel access to important equipment.

c. Conclusions

The licensee adequately maintained the material condition of the facilities and equipment observed.

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

a. Inspection Scope

The inspector reviewed the licensee's safety screening reviews to verify that completed reviews were consistent with the requirements of 10 CFR 50.59. The review included selected screening reviews completed since January 2005.

b. Observations and Findings

The licensee's Administrative Procedure ZAP-100-06 was consistent with the NRC's guidance on 10 CFR 50.59 screening reviews. The licensee conducted several safety screening reviews of facility changes and none of the changes required a formal 10 CFR 50.59 safety evaluation.

During the inspection, the licensee modified the plant pager system to alert operating personnel when abnormal spent fuel pool conditions are present. The pager system relieved the operators from continuously manning the control room. In one of the screening reviews evaluated, the licensee was developing the functional tests for the alarm system and site auto dial page system. A designated pager, worn by operating personnel, was designed to alarm for spent fuel pool high and low water level, high water temperature, fuel building high radiation, cooling tower pump trip, and abnormal fuel building ventilation system operation, among other key parameters. The licensee established 22 functional tests to verify proper pager function in response to anticipated control room alarms affecting spent fuel pool safety. The licensee committed to perform those tests at least annually. At the time of the inspection, the licensee was establishing more frequent test periods for each alarm function to ensure the abnormal conditions would be made known to the operators in the timely fashion.

c. Conclusions

The inspectors determined that the licensee's process for evaluating the safety impacts of facility changes was in compliance with the requirements of 10 CFR 50.59.

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

a. Inspection Scope

The inspectors reviewed an annual audit (NOSA-ZIN-04-14) conducted from December 6 through December 10, 2004, and reviewed the selected corrective action work orders associated with the deficiencies identified.

b. Observations and Findings

The audit included the activities affecting the systems, structures and components necessary for the safe storage of spent fuel. The audit was appropriately focused in both scope and level of detail, and the licensee initiated appropriate corrective actions to resolve the audit findings.

c. Conclusions

The inspectors determined that the licensee adequately implemented the audit and corrective action programs in accordance with its Quality Assurance Program, and met the regulatory requirements.

2.0 **Decommissioning Support Activities**

2.1 Maintenance and Surveillance (62801)

a. Inspection Scope

The inspectors reviewed the licensee's annual assessment of its 10 CFR 50.65, "Maintenance Rule" (MR) program for the 2004 calendar year, letter dated April 23, 2005; and the associated Attachment A of procedure ZAP 500-13C, "Periodic Assessment, and Balancing Availability and Reliability within the Maintenance Rule Program," for each MR function (19 total).

The inspectors reviewed work orders: 00756703, "011 Station Batt Full Batt Check," dated April 5, 2005; 00796393, "Emergency Light Functional Test," dated April 4, 2005; and 00782439, "Cooling Tower B Pan and Strainer Cleaning," dated June 3, 2005; equipment listed as "Important to the Defueled Condition," to verify that maintenance and surveillance for structures, systems, and components (SSCs) were conducted in a manner that resulted in the safe storage of spent fuel.

The inspectors also reviewed licensee surveillances PT-205-D4, "Unit 2 System Auxiliary Transformer Deluge System Test" completed April 6, 2005; and PT-201, "Monthly Check Sheet for Fire Suppression Water System," completed June 1, 2005.

b. Observations and Findings

The licensee reviewed the following aspects of its MR program: changes in scope, review of goals, review of performance, corrective action effectiveness, balance of availability and reliability, and expert panel recommendations. The licensee's staff reviewed 19 MR functions, 9 high importance functions and 10 low importance functions, that were documented in Attachment A of ZAP 500-13C. During the

assessment period, the licensee identified six functional failures; one was designated maintenance preventable. All failures were associated with low importance functions. Although the number of functional failures and Maintenance Preventable Functional Failures increased from the last annual assessment period, the overall performance of equipment within the MR was acceptable.

The review of the work orders indicated that the SSCs were properly released for maintenance or surveillance. The review included the planning, scheduling, tagouts, and approvals. Prior to the maintenance and surveillance activities, the licensee assessed the availability and operability of redundant systems, when appropriate. During the maintenance and surveillance, the licensee established and implemented appropriate personnel safety, fire protection, and radiation safety considerations

The licensee's completion of surveillances PT-205-D4 and PT-201 was in accordance with the surveillance instructions. Each surveillance demonstrated the operability of the affected equipment and SSCs, as appropriate.

c. Conclusions

The licensee's annual assessment of the Maintenance Rule program for 2004 was adequate, and corrective actions had been satisfactory and performed in a timely manner. The inspectors determined that the licensee implemented its maintenance and surveillance programs in accordance with its procedures and NRC regulations.

3.0 Spent Fuel Safety

3.1 Spent Fuel Pool Safety (IP 60801)

a. Inspection Scope

The inspectors verified the safe wet storage of spent fuel in the fuel building. The review included: spent fuel pool (SFP) instrumentation; alarms and leakage detection; cleanliness control; chemistry of the SFP; and criticality controls.

b. Observations and Findings

A review of the January through May of 2005 spent fuel pool water temperatures, levels, and chemistry and gamma spectrum analyses results indicated that all parameters were within procedural limits. The licensee maintained the boron concentration in the spent fuel pool at approximately 2000 parts per million (ppm) versus the Technical Specifications limit of greater than 500 ppm.

The licensee staff monitored the SFP liner and transfer canal leakage and trended data on a six-month frequency. The licensee last completed the the SFP leakage surveillance on April 20, 2005. The results indicated that the total leakage was 0.000159 gallon per minute (gpm), which was below the allowable 1 gpm leakage in the acceptance criteria.

The last SFP high/low level alarm switch calibration was completed on March 14, 2005. The calibration was performed in accordance with licensee's procedures. The calibration was completed on a four-year frequency.

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.

4.0 Radiological Safety

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

a. Inspection Scope

The inspectors evaluated the licensee's activities to effectively control, monitor, and quantify releases of radioactive materials in liquid, gaseous, and particulate forms to the environment. The inspectors reviewed the 2004 Effluent and Environmental Monitoring reports, and Offsite Dose Calculation Manual (ODCM).

b. Observations and Findings

The gaseous effluent monitors and waste water effluent monitor were calibrated and checked for operation in accordance with station procedures. The licensee participated in the cross check program with an off-site laboratory to ensure the quality of the analytical data. The results of the cross checked completed in calendar year 2004 indicated agreement in all analytical data.

The ODCM was comprehensive and contained the requirements listed in the Technical Specifications. The effluent release data demonstrated that the concentrations of released effluent conformed to 10 CFR Part 20, Appendix B, Table 2, and the doses to the general public were in conformance with Appendix I of 10 CFR Part 50.

The environmental sampling results indicated only background radiation levels with no distinct contribution from the shutdown reactor.

c. Conclusions

The licensee effectively implemented its radiological effluent control programs and processes.

5.0 Exit Meeting

The inspectors presented the inspection results to licensee management at the conclusion of the inspection on June 8, 2005. 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

- * R. Schuster, Plant Manager
 - * J. Ashley, Design Engineering
 - * R Adams, Operations and Engineering Manager
 - * L. Cunningham, Security Project Manager
 - * 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 70801	Decommissioning Performance and Status Review
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

CFR	Code of Federal Regulations
DNMS	Division of Nuclear Materials Safety
IEMA	Illinois Emergency Management Agency
NGET	Nuclear General Employee Training
NRC	Nuclear Regulatory Commission
SFP	Spent Fuel Pool

LICENSEE DOCUMENTS REVIEWED

Licensee documents reviewed and utilized during the course of this inspection are specifically identified in the "Report Details" above.