

May 5, 2003

Mr. John L. Skolds
President and Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: NRC INSPECTION REPORT 05000295/2003-001(DNMS) - ZION

Dear Mr. Skolds:

On April 11, 2003, 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 management oversight, decommissioning support activities, and spent fuel safety. At the conclusion of the inspection on April 11, 2003, the NRC inspectors discussed the findings with members of your staff.

The inspection consisted of an examination of decommissioning activities at the Zion Nuclear Plant 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.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

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

Sincerely,

/RA/

Christopher G. Miller, Chief
Decommissioning Branch

Docket No. 05000295
License No. DPR-39

Enclosure: Inspection Report 05000295/2003-001(DNMS)

See Attached Distribution

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| NAME | Lee | | Kulzer | | Landsman | | Miller | |
| DATE | 04/22/03 | | 04/22/03 | | 04/22/03 | | 05/05/03 | |

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cc w/encl: Zion Nuclear Power Station Decommissioning Plant Manager
 Regulatory Assurance Engineer - Zion
 Chief Operating Officer
 Senior Vice President - Nuclear Services
 Senior Vice President - Mid-West Regional Operating Group
 Vice President - Mid-West Operations Support
 Vice President - Licensing and Regulatory Affairs
 Director Licensing - Mid-West Regional Operating Group
 Director Project Management
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 M. Aguilar, Assistant Attorney General
 K. Nollenberger, County Administrator
 Mayor, City of Zion
 State Liaison Officer
 State Liaison Officer, Wisconsin
 Chairman, Illinois Commerce Commission
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M. L. Dapas, RIII w/encl
RIII Enf. Coordinator w/encl

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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| Docket No. | 05000295 |
| License No. | DPR-39 |
| Report No. | 05000295/2003-001(DNMS) |
| Licensee: | Exelon Generation Company, LLC |
| Facility: | Zion Nuclear Station |
| Location: | 101 Shiloh Boulevard Zion, IL 60099 |
| Dates: | March 4, 5, 2003 April 10, 11, 2003 |
| Inspectors: | Peter J. Lee, PhD, CHP, Decommissioning Inspector, DNMS Edward L. Kulzer, CIH, CSP, Decommissioning Inspector, DNMS |
| Approved by: | Christopher G. Miller, Chief Decommissioning Branch Division of Nuclear Materials Safety |

EXECUTIVE SUMMARY

Zion Nuclear Station NRC Inspection Report 05000295/2003-001(DNMS)

This routine decommissioning inspection covered aspects of licensee facility management and control, 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. The staffing level and training met Technical Specification requirements found in Sections 4 and 5.2.2. (Section 1.1)
- The inspectors determined that the licensee's process for screening procedure changes met the requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 50.59. (Section 1.2)
- The inspectors determined that the licensee's assessment of the corrective action work orders appropriately identified safety issues and implemented corrective actions in a timely manner. (Section 1.3)

Spent Fuel Safety

- Based on the physical inspections of the plant radiation instrumentation, water chemistry, and leakage detection system, the inspectors determined that safety of the spent fuel was being adequately maintained. The inspectors did not identify any concerns. (Section 2.1)

Radiological Safety

- The licensee continued to effectively control exposure to radiation and to maintain effective contamination control processes. (Section 3.2)
- The inspectors determined that the licensee complied with both the Nuclear Regulatory Commission and the Department of Transportation regulations for shipment of radioactive materials. (Section 3.3)
- The licensee was adequately implementing the effluent monitoring program. (Section 3.4)

Report Details¹

Summary of Plant Activities

During the period covered by this inspection, the plant remained in a condition ensuring safe storage of the spent fuel (SAFSTOR) with no major decommissioning work activities in progress. Ongoing activities focused on the operation and maintenance of the equipment in support of the Spent Fuel Nuclear Island (SFNI).

1.0 Decommissioning Performance and Status Review at Permanently Shut Down Reactors

1.1 Organization and Facility Management (IP 36801)

a. Inspection Scope

The inspectors evaluated the licensee's staffing and training including Technical Specification requirements found in Sections 4 and 5.2.2.

b. Observations and Findings

The licensee maintained a training matrix in order to track required training for station personnel. The inspectors reviewed the site's training matrix, including the licensee's tracking and implementation of certified fuel handler and Nuclear General Employee Training (NGET). The licensee required annual NGET training, and biennial testing was given for the certified fuel handlers. The inspectors did not identify any concerns with the training program.

Since the last inspection, one supervisor had been replaced, with no other significant changes in staffing at the station. The inspectors reviewed control room manning and determined that it met Technical Specification requirements. There have been no changes in control room manning since the last inspection.

c. Conclusions

The inspectors determined that the licensee's staffing was adequate for the level of work being performed at the site. The staffing level and training met Technical Specification requirements found in Sections 4 and 5.2.2 .

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

a. Inspection Scope

The inspectors reviewed two safety screenings associated with procedural changes in order to assess licensee conclusions regarding the need for safety evaluations in accordance with Title 10 of the Code of Federal Regulations (10 CFR) Part 50.59.

Note: A list of acronyms used in these "Details" is provided at the end of the report.

The two screenings were EC # 0000341414, "Design Change to Install Two New Guard It Auto Dialing Paging Systems in the Unit 2 Nonessential Switchgear and Control Rooms," dated March 14, 2003, and EC# 0000341418, "Bypass Lake Discharge Tank & Associated Piping," dated March 11, 2003.

b. Observations and Findings

The inspector reviewed Nuclear Generation Group procedure, "10 CFR 50.59 Review Process" Revision 18, dated January 14, 2003, and found that the licensee complied with the procedure and conducted adequate screenings of the procedural changes. The instructions and forms used for 10 CFR 50.59 evaluations addressed the regulatory requirements of 10 CFR 50.59. The NRC inspectors reviewed the current list of qualified evaluators and qualified independent safety reviewers. All evaluators and reviewers were appropriately qualified.

c. Conclusions

The inspectors determined that the licensee's process for screening procedure changes met the requirements of 10 CFR 50.59.

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

a. Inspection Scope

The inspectors reviewed one self-assessment titled "Zion Decommissioning Functional Area Assessment Report - Nuclear Assessment Oversight," dated January 6, 2003, and selected the following three corrective action work orders to evaluate the corrective actions and root cause evaluations:

- Work Order No. 00529330, "NOS Deficiency-Lifting Slings Not Properly Controlled," dated 3/28/03
- Work Order No. 00523712, "On-Site And Off-Site Communication System Power Supplies," dated 3/7/03
- Work Order No. 00554111, "Entering RPA Without Proper Dosimetry," dated 3/28/03.

b. Observation and Findings

The self-assessment audit had two findings:

1. The software control process was not applied to the spreadsheet used to evaluate compliance with the Illinois Environmental Protection Agency (EPA) Lifetime Operating Permit (LOP) for gaseous emissions.
2. The Unit 2 Sping Flowrate from 2LP084 had no Test Data Sheet. The Test Data Sheet should list the measurement and test equipment (M&TE) (Digital Multi-Meter) used to perform the calibration. This problem would make the log used by the M&TE Coordinator to track the M&TE ineffective.

The inspectors determined that these findings were valid, and the self assessment was effective in finding potential safety problems. The inspectors discussed the corrective action work orders with the licensee staff and found the corrective actions were effective and timely.

c. Conclusions

The inspectors determined that the licensee's assessment of the corrective action work orders appropriately identified safety issues and implemented corrective actions in a timely manner.

2.0 Spent Fuel Safety (60801)

2.1 Spent Fuel Pool (SFP)

a. Inspection Scope

The inspectors reviewed the Defueled Technical Specifications (DTS), Defueled Safety Analysis Report (DSAR), and various procedures relevant to the operation of the SFP. The inspectors verified the safe wet storage of spent fuel in the fuel building. Factors considered in the evaluation included: SFP instrumentation, alarms and leakage detection; cleanliness control; and chemistry of the SFP. The inspectors discussed monitoring SFP parameters with the Operations Manager.

b. Observations and Findings

The inspectors toured the SFP area, and evaluated instrumentation readings, local electrical breaker positions, and local valve line-ups. The inspectors did not identify any problems or concerns.

On April 11, 2003, the SFP cooling system controlled the temperature of the SFP at 88°F; the SFP heat up rate was 0.72°F per hour; and the time it took to achieve the water boiling point in the SFP (with no SFP cooling) was 171 hours. The SFP level was at an elevation of 614 feet and 9 inches. These parameters were within procedural limits.

The inspectors reviewed the chemistry of the spent fuel pool for February, March and April, 2003. On April 11, 2003, the SFP boron concentration was 2007 parts per million (ppm) which met the Technical Specification 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 next scheduled licensee SFP leakage surveillance was scheduled for April 21, 2003, using Work Order No. 00502723. The Work Order referenced Procedure TSS 15.6.104, "Determination of Spent Fuel Pit Liner and Transfer Canal Liner Leakage," Revision 2, to observe, estimate, and evaluate any leakage.

c. Conclusions

Based on the physical inspections of the plant radiation instrumentation, water chemistry, and leakage detection system, the inspectors determined that safety of the

spent fuel was being adequately maintained. The inspectors did not identify any concerns.

3.0 Radiological Safety

3.1 General

The inspectors conducted reviews of ongoing activities in order to assess the overall Radiation Protection Program (RPP). Specific findings are detailed in the sections below.

3.2 Occupational Radiation Exposure

a. Inspection Scope (83750)

The inspectors examined and evaluated specific aspects of the RPP, including the external and internal exposure control, radiological surveying, control of radioactive materials, and contamination control.

b. Observations and Findings

The inspectors reviewed the general air sampling data taken from the Fuel and Auxiliary Buildings during the first quarter of 2003. The inspectors also reviewed the external dosimetry records for the second half of 2002. Workers received no significant exposure.

The inspectors reviewed direct radiation survey and smear sample results from the fuel building and the auxiliary building for the first quarter of 2003. The inspectors determined that the licensee complied with procedural requirements and that the contaminated areas were adequately controlled. Contamination levels within the facility were kept to a minimum.

The inspectors reviewed the calibration procedures and records for the PM-7 portal monitor and IPM-8 whole body frisking monitor, which was calibrated during the first quarter of 2003. The inspectors also reviewed the calibration procedures and records for the spent fuel building area radiation monitor which was calibrated during the fourth quarter of 2002. The inspectors interviewed station personnel to ascertain that the monitors were adequately calibrated in accordance with station procedures. The licensee was calibrating the radiation monitors properly and in accordance with procedures.

c. Conclusions

The licensee continued to effectively control exposure to radiation and to maintain effective contamination control processes.

3.3 Solid Radioactive Waste Management and Transportation of Radioactive Materials

a. Inspection Scope (86750)

The inspectors interviewed the individual responsible for the radioactive materials shipping program and reviewed applicable shipping documents.

b. Observations and Findings

During October 2002, one radioactive waste shipment was sent to G.T.S. Duratek in Kingston, Tennessee. The inspectors reviewed survey records, radiological analysis results, and inspection checklists and found these documents to be adequate in accordance with NRC and Department of Transportation (DOT) regulations.

c. Conclusions

The inspectors determined that the licensee had complied with both NRC and DOT regulations for shipment of radioactive materials.

3.4 Radioactive Waste Treatment, and Effluent and Environmental Monitoring.

a. Inspection Scope (84750)

The inspectors examined and evaluated aspects of the effluent monitoring program, including a review of calibration procedures for liquid, gaseous, and air particulate radiation monitors. The inspectors also reviewed effluent release data for 2002.

b. Observations and Findings

Based on interviews with station personnel and a review of the applicable records, the inspectors determined that the gaseous effluent monitors and waste water effluent monitor were properly calibrated and checked for operation in accordance with station procedures. The inspector also reviewed the effluent release data in 2002, and determined that the licensee effluent control program met the requirements of Technical Specifications.

c. Conclusions

The licensee was adequately implementing the effluent monitoring program.

4.0 **Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management during an exit meeting on April 11, 2003. The licensee acknowledged the findings presented and did not identify any of the documents or processes reviewed by the inspectors as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

- * J. Ashley, Design Engineering
- * R. Landrum, Operations and Engineering Manager
- * R. Schuster, Radiation Protection and Chemistry Supervisor
- * V. Voigt

* Present at the April 11, 2003 exit meeting.

INSPECTION PROCEDURES (IP) USED

- IP 36801: Organization, Management, and Cost Controls at Permanently Shut Down Reactors
- IP 37801: Safety Reviews, Design Changes, and Modifications at Permanently Shut Down Reactors
- IP 40801: Self-Assessment, Auditing, and Corrective Actions
- IP 60801: Spent Fuel Pool Safety at Permanently Shut Down Reactors
- IP 83750: Occupational Radiation Exposure
- IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring

LIST OF ACRONYMS USED

| | |
|---------|--|
| CHF | Certified Fuel Handler |
| CFR | Code of Federal Regulations |
| DOT | Department of Transportation |
| DSAR | Defueled Safety Analyses Report |
| DTS | Defueled Technical Specifications |
| EC | Exempt Change |
| EPA | Environmental Protection Agency |
| LOEP | License Operating Emergency Procedures |
| M&TE | Measurement and Test Equipment |
| NCO | Non-Certified Operators |
| NGET | Nuclear General Employee Training |
| NRC | Nuclear Regulatory Commission |
| ppm | part per million |
| SAFSTOR | Safe Storage of the Spent Fuel |
| SFNI | Spent Fuel Nuclear Island |
| SFP | Spent Fuel Pool |
| SPING | Station Particulate Iodine and Noble Gas |
| ZAP | Zion Administrative Procedure |