May 3, 2006

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 050-00295/06-001(DNMS)
ZION NUCLEAR STATION

Dear Mr. Crane:

On May 2, 2006, 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, during an on-site inspection on April 3 through 5, 2006, 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 on-site inspection on April 5, 2006, the NRC inspectors discussed the findings with members of your staff. In addition, on April 19, 2006, the inspectors collected six independent water samples for tritium analysis. Four samples were collected at the Zion Station's Radiological Environmental Monitoring Program water collection locations, one was from an on-site potable drinking water source, and one was from Lake Michigan. On May 2 the inspectors completed an in-office review of laboratory analysis results of the water samples. The inspectors conducted a telephone exit interview with members of your staff on May 2, 2006, to discuss the results of the in-office review of the laboratory results.

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).

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

Sincerely,

/William G. Snell acting for RA/

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

Docket No. 05000295
License No. DPR-39

Enclosure: Inspection Report 050-00295/06-001(DNMS)
w/Attachment: Supplemental Information

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
Director Licensing and Regulatory Affairs
T. O'Neill, Associate General Counsel
Document Control Desk - Licensing
J. Dale, Bureau Chief, Office of Attorney General
K. Nollenberger, County Administrator
Mayor, City of Zion
State Liaison Officer
State Liaison Officer, Wisconsin
Chairman, Illinois Commerce Commission
A. C. Settles, Illinois Emergency Management Agency

Distribution w/encl:
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.	050-00295
License No.	DPR-39
Report No.	050-00295/06-001(DNMS)
Licensee:	Exelon Generation Company, LLC
Facility:	Zion Nuclear Station
Location:	101 Shiloh Boulevard Zion, IL 60099
Date:	April 3 through 5, 2006, April 19, 2006, and May 2, 2006
NRC Inspectors:	Peter J. Lee, Ph.D., CHP, Health Physicist Eugenio A. Bonano, Health Physicist William G. Snell, Senior Health Physicist
Approved by:	Jamnes L. Cameron, Chief Decommissioning Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Zion Nuclear Station
NRC Inspection Report 050-00295/06-001(DNMS)

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

Facility Management and Control

- The inspector determined that the licensee's staffing was adequate for the level of work being performed at the site and met the requirements established in the licensee's procedures. (Section 1.1)

- The inspector concluded that the licensee adequately maintained the material condition of its facilities and equipment. (Section 1.2)

- The inspector 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 inspector concluded that the licensee adequately implemented its audit and corrective action programs in accordance with the licensee's Quality Assurance Program, and that the programs were consistent with NRC requirements. (Section 1.4)

Spent Fuel Safety

- The inspector concluded that the licensee adequately maintained structures, systems, equipment, and components necessary for safe storage of spent fuel. (Section 2.1)

Radiological Safety

- The inspector concluded that the licensee effectively monitored and controlled personnel exposures to radiation. (Section 3.1)

- The inspector determined that the licensee effectively implemented radiological effluent control programs and processes. (Section 3.2)

- No concerns were identified regarding the levels of radioactivity in six drinking water samples collected. (Section 3.3)

Report Details

1.0 Facility Management and Control

1.1 Organization, Management, and Cost Controls (IP 36801)

a. Inspection Scope

The inspector evaluated the licensee's staffing to determine whether adequate staffing levels were being maintained to effectively conduct decommissioning activities.

b. Observations and Findings

The licensee made two staffing changes since the last NRC inspection. The staff changes involved filling two positions, which were the Decommissioning Plant Manager and Radiation and Chemistry Supervisor. These positions were described in licensee procedure ZAP 200-01, "Zion Decommissioning Organization," Revision 9.

c. Conclusions

The inspector determined that the licensee's staffing was adequate for the level of work being performed at the site and met the requirements established in the licensee's procedures.

1.2 Decommissioning Performance and Status Review (71801)

a. Inspection Scope

The inspector conducted a plant tour to assess field conditions, and to evaluate 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 inspector did not identify any adverse conditions, which could effect 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 inspector concluded that the licensee adequately maintained the material condition of its facilities and equipment.

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

a. Inspection Scope

The inspector reviewed and evaluated licensee's safety screening reviews to verify that the reviews were consistent with the requirements of 10 CFR 50.59. The inspector evaluated safety screening reviews, completed since the NRC's last inspection.

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 that none of the changes required a formal 10 CFR 50.59 safety evaluation.

c. Conclusions

The inspector 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 inspector reviewed the licensee's annual audit (NOSA-ZIN-04-14), which was conducted from December 5 through December 13, 2005. The inspector reviewed selected corrective action work orders, which were associated with deficiencies identified during the annual audit.

b. Observations and Findings

The licensee's annual audit included the evaluation of activities affecting plant systems, structures and components necessary for the safe storage of spent fuel. The annual audit was consistent with license requirements in both scope and level of detail, and that the licensee initiated appropriate corrective actions to resolve audit findings.

c. Conclusions

The inspector concluded that the licensee adequately implemented its audit and corrective action programs in accordance with the licensee's Quality Assurance Program, and that the programs were consistent with NRC requirements

2.0 Spent Fuel Safety

2.1 Spent Fuel Pool Safety (IP 60801)

a. Inspection Scope

The inspector verified the safe wet storage of spent fuel in the fuel building. The review included spent fuel pool (SFP) instrumentation, alarms, cleanliness control, chemistry of the SFP, and criticality controls, and the results of the January through March 2006 spent fuel pool water temperatures, levels, and chemistry and gamma spectrum analyses.

b. Observations and Findings

A review of the January through March 2006 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 2,000 parts per million (ppm) versus the Technical Specifications limit, which requires a concentration equal to or greater than 500 ppm.

The licensee performed monthly functional tests for high radiation levels in the spent fuel pool area. The tests were performed to verify proper pager function in response to control room alarms, which alert operators to potential spent fuel pool conditions effecting safety. The licensee implemented the pager system to relieve the need for operators continuously manning the control room.

c. Conclusions

The inspector concluded that the licensee adequately maintained structures, systems, equipment, and components necessary for safe storage of spent fuel.

3.0 Radiological Safety

3.1 Occupational Radiation Exposure

a. Inspection Scope (83750)

The inspector reviewed the licensee's personnel external dosimetry monitoring records for the second half of calendar year 2005. The inspector reviewed the licensee's first quarter 2005 general air sampling results, direct radiation survey and smear sample results for the Fuel Building and the Auxiliary Building. The inspector also reviewed the air sampling results, direct radiation survey, and smear sample results for the Unit 2 cavity area, which were collected as a result of a special nuclear material inventory involving the Gamma-Metrics detectors.

b. Observations and Findings

The highest external radiation exposure measured for a plant worker during the second half of calendar year 2005 was 80 millirem total effective dose equivalent. The results of general area air sampling conducted by the licensee during the first quarter

of 2006 in the Fuel and Auxiliary Buildings, were consistent with ambient background levels. The results of the licensee's routine quarterly radiation surveys performed in the Fuel Building and the Auxiliary Building did not identify any significant removable contamination.

The results of air sampling conducted by the licensee did not indicate any potential intake of radioactive materials by plant workers performing a special nuclear material inventory. The workers conducted the inventory on the Gamma Metrics detectors located in the Unit 2 cavity. The results of contamination surveys did not indicate any spread of contamination, and that the direct radiation surveys did not indicate any significant potential for exposure to the workers greater than license or NRC regulatory limits.

c. Conclusions

The inspector concluded that the licensee effectively monitored and controlled personnel exposures to radiation.

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

a. Inspection Scope

The inspector reviewed and evaluated the plant effluent release data for the year 2005. The inspector also evaluated the projected offsite dose.

b. Observations and Findings

The licensee participated in a cross check program, which involved the use of an off-site laboratory to ensure the quality of the analytical data. The results of the cross checked completed in calendar year 2005 indicated agreement in all analytical data.

The licensee did not have any liquid effluent releases during calendar year 2005. The licensee's gaseous effluent release data demonstrated that the concentrations of released effluent conformed to 10 CFR Part 20, Appendix B, Table 2, and that the associated doses to the general public were in conformance with Appendix I of 10 CFR Part 50.

c. Conclusions

The inspector determined that the licensee effectively implemented radiological effluent control programs and processes.

3.3 Independent Collection of Water Samples for Tritium Analysis (IP 84750)

a. Inspection Scope

The inspector collected six independent water samples for the analysis of tritium. Four of the samples were collected at the licensee's Radiological Environmental Monitoring Program water collection locations, the Kenosha Water Works, the Lake County Water Works, the Waukegan Water Works, and the Lake Forest Water Works. A fifth

sample was collected from a potable onsite drinking water source and the last from Lake Michigan adjacent to the Zion Station.

b. Observations and Findings

By letter dated May 1, 2006 (ML061220340), NRC received the results of the analysis of six water samples from the NRC's contract laboratory, the Oak Ridge Institute for Science and Education (ORISE). The six samples were all below the minimum detectable concentration level of 190 picocuries per liter (pCi/L) for tritium. This is well below the Environmental Protection Agency's allowable drinking water level for tritium of 20,000 pCi/L. One sample was also analyzed for gamma emitting nuclides. No radioactivity was identified in the sample in excess of the minimum detectable concentrations for cobalt-58, cobalt-60, cesium-134 or cesium-137.

c. Conclusions

No concerns were identified regarding the levels of radioactivity in the drinking water samples collected.

4.0 Exit Meeting

The inspector presented the on-site inspection results to licensee management at the conclusion of the inspection on April 5, 2006. The results of the analysis of the water samples collected on April 19, 2006, were presented to licensee management on May 2, 2006. The licensee acknowledged the findings presented and did not identify any of the documents or processes reviewed by the inspector as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

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

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 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
ORISE	Oak Ridge Institute for Science and Education
pCi/L	picocuries per liter
ppm	parts per million
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.