



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

May 27, 2009

Docket No. 05000003

License No. DPR-5

Joseph E. Pollock  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Indian Point Energy Center  
450 Broadway, GSB  
P.O. Box 249  
Buchanan, NY 10511-0249

SUBJECT: NRC INSPECTION REPORT NO. 05000003/2009006, ENTERGY NUCLEAR OPERATIONS, INC., INDIAN POINT NUCLEAR GENERATING UNIT 1, BUCHANAN, NY

Dear Mr. Pollock:

On April 27-29, 2009, Laurie Kauffman and Kathy Modes of this office conducted a safety inspection of activities authorized by the above listed NRC license. The inspection was an examination of your licensed activities as they relate to radiation safety and to compliance with the Commission's regulations and the license conditions. The inspection consisted of observations by the inspectors, interviews with personnel, and a selective examination of representative records. Additional information provided in your correspondence dated May 14, 2009 was also examined as part of the inspection. The findings of the inspection were discussed with Mr. R. Walpole and other members of your organization on April 29, 2009 at the conclusion of the inspection.

Within the scope of this inspection, no violations were identified.

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

Sincerely,

**Original signed by Mark Roberts for**

Judith A. Joustra, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

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K. Coplan, Pace Environmental Litigation Clinic  
M. Jacobs, IPSEC  
W. Little, Associate Attorney, NYSDEC  
M. J. Greene, Clearwater, Inc.  
R. Christman, Manager Training and Development  
J. Spath, New York State Energy Research, SLO Designee  
F. Murray, President & CEO, New York State Energy Research  
A. J. Kremer, New York Affordable Reliable Electricity Alliance (NY AREA)  
State of New York

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Decommissioning Branch  
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NAME	LKauffman/KDM f/		KModes/KDM	MGray/M. Gray	JJoustra/M.Roberts
DATE	5/27/09		5/27/09	5/26/09	05/27/09

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REGION I

INSPECTION REPORT

Inspection No. 05000003/2009006  
Docket No. 05000003  
License No. DPR-5  
Licensee: Indian Point Nuclear Generating Station, Unit 1  
Location: Buchanan, New York, 10511  
Inspection Dates: April 27-29, 2009  
Additional Information Received: May 14, 2009

Inspectors: \_\_\_\_\_/RA by Kathy Modes For/\_\_\_\_\_ 5/27/09 \_\_\_\_\_  
Laurie A. Kauffman date  
Health Physicist

\_\_\_\_\_/RA/\_\_\_\_\_ 5/27/09 \_\_\_\_\_  
Kathy Modes date  
Senior Health Physicist

Approved By: \_\_\_\_\_/RA by Mark Roberts For/\_\_\_\_\_ 5/27/09 \_\_\_\_\_  
Judith A. Joustra, Chief date  
Decommissioning Branch  
Division of Nuclear Materials Safety

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## EXECUTIVE SUMMARY

Indian Point Nuclear Generating Station, Unit 1  
NRC Inspection Report No. 05000003/2009006

Indian Point Nuclear Generating Station, Unit 1 is a pressurized water reactor that has been shut down since October 31, 1974. Since that time, the reactor has remained in a shutdown, defueled condition, and Unit 1 has continued to serve as a support facility for the operation of Unit 2. Units 1 and 2 share a number of systems and facilities and also a common operating organization. Unit 1 contains radioactive waste processing facilities that are utilized for radioactive waste processing for Units 1 and 2.

A routine announced safety inspection was conducted from April 27-29, 2009, at the Indian Point Nuclear Generating Station Unit 1. The inspection included a review of operations and management oversight, chemistry monitoring and control, maintenance, corrective action program, and plant support activities associated with the Unit 1 plant while in SAFSTOR status. Specifically, the scope of the inspection included an evaluation of the condition and operational status of structures, systems and components (SSCs) important to the safe storage of spent fuel, while the fuel was in the spent fuel pool through September 2008. Additionally, the scope of the inspection included: (1) a review of the implementation and adequacy of the radiation protection program, (2) an evaluation of the licensee's controls and processes regarding the U1 liquid and gaseous radioactive effluents related to the transfer of spent fuel to dry cask storage (completed in September 2008) and the subsequent drain down and clean up of the spent fuel pool (completed in October 2008), and (3) and evaluation of the radioactive waste management and transportation programs to determine whether the licensee properly processed, packaged, stored, and shipped radioactive materials. Within the scope of this inspection, no safety concerns or violations were identified.

### Operations and Decommissioning

The licensee maintained an effective spent fuel pool safety program that included routine operator inspections and oversight, chemistry monitoring and control, and maintenance of equipment important to safety. This program ensured that equipment and chemistry operational parameters were maintained within technical specification limits. The licensee effectively utilized the established corrective action program to self-identify, evaluate, and resolve deficiencies associated with the Unit 1 facility.

### Plant Support and Radiological Controls

The licensee provided adequate controls to limit exposures of workers to external sources of radiation. Posting and labeling of radioactive materials and radiation areas met regulatory requirements. Radiological controls and dose estimates associated with Unit 1 tasks were effective to achieve dose goals. The licensee maintained an effective program to monitor and control the release of radioactive liquid and gaseous effluents as a result of the spent fuel pool drain down. The licensee controlled radioactive liquid and gaseous effluents in accordance with regulatory requirements. The licensee effectively implemented the radioactive waste management and transportation programs.

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## REPORT DETAILS

### I. Operations, Maintenance, Management Oversight and Decommissioning

#### a. Spent Fuel Pool Safety

##### Inspection Scope (Inspection Procedures (IPs) 37801, 60801, 62801, 71801)

The inspectors performed a review of the condition and operational status of structures, systems and components (SSCs) important to the safe storage of spent fuel, while the spent fuel was still in the spent fuel pool. The inspectors reviewed the Unit 1 (U1) Technical Specifications (TS) and compared these requirements with associated procedures to ascertain that the procedures were consistent with the TS. The inspectors performed walk-downs of the nuclear service building, the chemical systems building, the fuel handling building, and the containment building. The inspectors reviewed selected maintenance program work orders and water chemistry data from April 2008 through September 2008 for the U1 spent fuel storage pool. The inspectors also reviewed two temporary modifications (engineering change (EC) 7981 and 8321), including the associated 10 CFR 50.59 safety review screening.

#### b. Observations and Findings

The inspectors noted that, while spent fuel was in the spent fuel pool, maintenance for selected systems and components had been conducted between April 2008 and September 2008 in accordance with established procedures and that the systems and components were operable and available for service. The licensee met the TS requirements for monitoring the spent fuel pool water level, and the TS sampling and analysis requirements with respect to the water chemistry parameters and radioactivity analysis. The inspectors toured the facility and noted that the observed areas were adequately maintained and housekeeping was adequate.

The inspectors also noted that the licensee completed the removal of the spent fuel from the spent fuel pool and decontaminated the empty spent fuel storage pool and the associated pools. The inspectors also noted that because the spent fuel had been removed from the spent fuel pool, the SSCs that were important to the safe storage of the spent fuel are no longer considered important. The inspectors also noted that the licensee had requested a TS change to remove the requirements of the spent fuel pool and associated SSCs from the TS. The approval for this TS change request is pending NRC review.

The purpose of temporary modification EC7981 was to reconfigure the U1 west storage pool demineralization skid to discharge into the integrated liquid waste system so that the U1 pool water could be treated and discharged in a continuous release. The purpose of temporary modification EC8321 was to incorporate changes to six SSCs that were impacted during the project to move the spent fuel to dry cask storage. The review of temporary modifications indicated that the system modifications were completed as planned and supported safe transfer of spent fuel to dry cask storage.

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c. Conclusions

The licensee maintained an effective spent fuel pool safety program that included routine operator inspections and oversight, chemistry monitoring and control, and maintenance of equipment important to safety. This program ensured that equipment and chemistry operational parameters were maintained within technical specification limits.

2. Self-Assessment and Corrective Action Programs

a. Inspection Scope (IP 40801)

The inspectors reviewed selected oversight observation checklists, self-assessments, and condition reports, and associated corrective actions, related to the safe storage of spent fuel, the transfer of spent fuel to dry cask storage, and the drain down and clean up of the spent fuel pool. The inspectors also reviewed the U1 Retired System Isolation Boundary Project Report. The project was developed as a result of a U1 self-assessment and included identifying and marking boundary interfaces between the U1 and U2 shared electrical and mechanical systems.

b. Observations and Findings

The oversight observation checklists were thorough, well balanced, and sufficiently detailed to identify strengths and weaknesses related to the transfer of spent fuel to dry cask storage and the drain down and clean up of the spent fuel pool. The priority for addressing condition reports and implementation of corrective actions was adequate and based upon safety significance. Corrective actions were established to address identified issues, and were being tracked to closure using the licensee's corrective action program. No adverse trends or safety concerns were identified.

The U1 Retired System Isolation Boundary project was completed in June 2008 and documented. The report contained details on hundreds of systems, included drawings and photographs regarding each electrical and mechanical boundary interface, and included documentation of the location of each label or tag. The inspectors selected electrical and mechanical systems and verified that each selected system was appropriately marked as a boundary interface. During the walk-down, the inspectors observed one mechanical system where three tags were not hung. The inspectors noted that the licensee generated a condition report, immediately corrected the condition, and initiated an extent-of-condition review. The inspectors selected fifteen additional systems for inspection and determined that each was marked appropriately.

c. Conclusions

The licensee effectively utilized the established corrective action program to self-identify, evaluate, and resolve deficiencies associated with the Unit 1 facility.

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## I. Plant Support and Radiological Controls

### 1. Occupational Exposure Controls

#### a. Inspection Scope (IP 83750)

The inspectors reviewed implementation of the occupational exposure program to determine the licensee's capability to monitor and control radiation exposure to employees, and to determine adequacy of the radiation protection program. The inspection consisted of interviews with responsible individuals, reviews of radiological survey plans and survey maps of the radiologically controlled area, and field observations of radiological postings. The inspectors reviewed radiation work permits and the associated post-job dose evaluations for the transfer of spent fuel to dry cask storage and the drain down and clean up of the spent fuel pool.

#### b. Observations and Findings

The radiologically controlled areas were appropriately posted and labeled for radioactive material. Radiological postings were readily visible, well-maintained, and reflected radiological conditions. The radiological survey maps and related information maintained at the U1 access point were current. High radiation areas and technical specification locked high radiation areas were properly posted and locked as required. The radiation work permits were commensurate with the radiological significance of the task and included the appropriate exposure control measures for the safe implementation of the activity. Based on the post-job dose evaluations, the actual doses were below the dose goals for each job. No safety concerns were identified.

#### c. Conclusions

The licensee provided adequate controls to limit exposures of workers to external sources of radiation. Posting and labeling of radioactive materials and radiation areas met regulatory requirements. Radiological controls and dose estimates associated with U1 tasks were effective to achieve dose goals.

### 2. Radioactive Effluent Control Program

#### a. Inspection Scope (IP 84750)

The inspectors evaluated the licensee's controls and processes regarding the U1 liquid and gaseous radioactive effluents related to the transfer of spent fuel to dry cask storage and the subsequent drain down and clean up of the spent fuel pool. The inspectors reviewed the licensee's Radiological Environmental Review Guidance (RER) that defined the required sampling and controls needed to remain in compliance with the Offsite Dose Calculation Manual (ODCM). The inspectors reviewed the associated radioactive liquid release permit, the radioactive gaseous and liquid analysis reports, and the projected doses to the public. The inspectors reviewed the calibration results for the liquid discharge monitor (R-54) and stack vent noble gas monitor (R-60) for the period April 2008 through April 2009.

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b. Observations and Findings

The licensee developed the RER to determine the ODCM, effluent, and environmental impact of a one-time operation of draining the U1 spent fuel pool according to the temporary modification EC7981. The EC7981 involved draining the spent fuel pool after the dry cask project was completed. The spent fuel pool was drained to minimize the source of tritium to the environment. The licensee developed the RER to provide the guidance necessary to sample and control the discharge of radioactive liquid and gaseous effluents related to the drain down of the spent fuel pool.

The inspectors noted that the calibration results of the RMS were within the licensee's acceptance criteria. The chemistry technician responsible for the oversight of the RMS demonstrated knowledge of the RMS relative to operability requirements and performance history. The radiation monitors were operable at the time of the plant tour and, based on a review of operational logbooks, were operational from April 2008 through April 2009. The radioactive liquid effluents release permit was completed according to the RER and ODCM. From a review of the analytical data, the inspectors verified that the projected doses to the public from the liquid and gaseous effluent from U1 were well below TS limits and were performed in accordance with the ODCM and the Code of Federal Regulations (10 CFR 50.36a) for maintaining doses to the public from radioactive effluents as low as reasonably achievable.

c. Conclusions

The licensee maintained an effective program to monitor and control the release of radioactive liquid and gaseous effluents as a result of the spent fuel pool drain down. The licensee controlled radioactive liquid and gaseous effluents in accordance with regulatory requirements.

## II. Radioactive Waste Management and Transportation

a. Inspection Scope

The inspectors evaluated the radioactive waste management and transportation programs to determine whether the licensee properly processed, packaged, stored, and shipped radioactive materials. The inspectors reviewed the two exclusive use shipments of low specific activity radioactive waste and the limited quantity shipment of composite water samples from the drain down and clean up of the spent fuel pool. The inspectors reviewed the 2008 waste stream analysis for dry active waste, required by 10 CFR 61.

b. Observations and Findings

The licensee had significantly reduced the U1 radioactive waste inventory. After the completion of the drain down and clean up of the spent fuel pool, the licensee packaged and shipped dry active waste in two sea-land containers and six B-25 Boxes. The licensee also packaged and shipped the resins in a CNS 6-80 Poly High Integrity Container and 6 pressure vessels. The licensee has class B waste from the cleanup of

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the pools awaiting future shipments.

Radioactive waste shipment records included copies of characterization reports and waste manifest shipping papers and were complete. The licensee met the applicable radioactive waste and transportation requirements for the shipments reviewed. No significant safety issues or concerns were identified.

c. Conclusions

The licensee effectively implemented the radioactive waste management and transportation programs.

**III. Exit Meeting**

On April 29, 2009, the inspectors presented the inspection results to Mr. R. Walpole, Licensing Manager, and other members of the licensee's staff. Mr. Walpole acknowledged the inspection findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

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**PARTIAL LIST OF PERSONS CONTACTED**

**Licensee**

A. Stewart, Licensing Engineer  
D. Gray, Chemistry Manager  
C. English, Superintendant Unit 1  
S. Sandike, Senior Chemistry Engineer  
R. Walpole, Licensing Manager  
W. Henries, Senior Engineer Consultant, Unit 1

**INSPECTION PROCEDURES USED**

37801	Safety Reviews and Design Changes
40801	Self Assessment and Corrective Action
60801	Spent Fuel Pool Safety at Permanently Shutdown Reactors
62801	Maintenance and Surveillance at Permanently Shutdown Reactors
71801	Decommissioning Performance and Status Reviews
83750	Occupational Radiation Exposure
84750	Radioactive Waste Treatment and Effluent and Environmental Monitoring
86750	Solid Radioactive Waste Management and Transportation

**ITEMS OPEN, CLOSED, AND DISCUSSED**

Opened, Closed and Discussed – None

**LIST OF ACRONYMS USED**

CFR	Code of Federal Regulations
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
RER	Radiological Environmental Review Guidance
SSCs	structures, systems and components
TS	technical specification
U1	Indian Point Unit 1
U2	Indian Point Unit 2