U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Docket No.	05000003
License No.	DPR-5
Inspection No.	05000003/2010009
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Indian Point Energy Center (IPEC) Unit 1
Location:	450 Broadway Buchannan, New York 10511-0249
Inspection Dates:	June 22 - 24, 2010
Inspector:	Laurie A. Kauffman Health Physicist Decommissioning Branch Division of Nuclear Materials Safety
Approved By:	Judith A. Joustra, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Indian Point Energy Center Unit 1
NRC Inspection Report No. 05000003/2010009

A routine announced safety inspection was conducted on June 22 - 24, 2010, at Indian Point Energy Center Unit 1 by a Region I inspector. The scope of the inspection included an evaluation of the organization and management oversight; implementation of safety reviews, design changes and modifications programs; implementation of the auditing, self-assessment, and corrective action programs; implementation of long-term safe storage (SAFSTOR) program; implementation of the maintenance and surveillance programs; implementation of the occupational radiation exposure program; and implementation of the Effluent, Environmental Monitoring and Radioactive Waste and Transportation programs associated with Unit 1 while in SAFSTOR status. Within the scope of this inspection, no safety concerns or violations were identified. A brief summary of each area inspected is described below.

Organization and Management Oversight

The licensee's organization and management oversight was adequate to support Unit 1 activities. The roles and responsibilities for the Unit 1 activities were consistent with the *IPEC Site Management Manual, Control of Indian Point 1* and the Technical Specifications (TS). The IPEC Site Management Manual reflected the TS changes delineated in Amendment No. 54 to Facility Operating License No. DPR-5 for the Indian Point Energy Center, Unit 1, issued May 29, 2009.

Safety Reviews, Design Changes, and Modifications

The licensee conducted the safety review and engineering design change screening in accordance with 10 CFR 50.59 requirements.

Auditing, Self-Assessment, and Corrective Action Programs

The licensee maintained an adequate audit and self-assessment program and effectively utilized the established corrective action program to self-identify, evaluate, and correct issues and problems. Condition reports were properly prioritized and corrective actions were tracked in accordance with approved procedures.

SAFSTOR

No dismantlement or decommissioning activities were performed since the previous inspection.

Maintenance and Surveillance

The licensee effectively implemented the preventive maintenance and surveillance program and associated procedures in accordance with TS and Offsite Dose Calculation Manual (ODCM) requirements.

Occupational Radiation Exposure

The licensee provided adequate controls to limit exposures of workers to external sources of radiation. Posting and labeling of radioactive materials and radiation areas complied with regulatory requirements. Radiological controls and dose estimates associated with Unit 1 activities were effective to achieve dose goals. Implementation and oversight of the SAFSTOR program was effective for the storage of radioactive material.

Effluent, Environmental Monitoring and Radioactive Waste and Transportation

The licensee effectively implemented and maintained the radioactive effluent controls program, the groundwater monitoring program related to Unit 1, the radiological monitoring program, and the radioactive waste management and transportation programs.

REPORT DETAILS

1.0 Background

Indian Point Energy Center (IPEC) Unit 1 (Unit 1) is a pressurized water reactor that has been shut down since October 31, 1974. Pursuant to the June 19, 1980, *Commission Order Revoking Authority to Operate Facility* and the *Decommissioning Plan for Indian Point Unit No. 1*, approved by the U.S. Nuclear Regulatory Commission (NRC) in an Order dated January 31, 1996, Unit 1 is permanently shut down and is being maintained in long-tem storage (SAFSTOR) condition. Unit 1 has remained in SAFSTOR as defined in NUREG 0586, *Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Regarding the Decommissioning of Nuclear Power Reactors*, dated November 2002. SAFSTOR is defined as placing a facility in long-term storage until it is decommissioned and decontaminated to levels that permit release of the property to unrestricted use.

Units 1 and 2 are physically contiguous and share systems and facilities as well as a common operating organization. The Unit 1 TS recognize this commonality as well as the intended use of the Unit 1 facilities to support Unit 2 until retirement of that unit, and contain specific references to the Unit 2 TS. The systems associated with Unit 1 are divided into three classifications: a) systems required per the Unit 1 TS and that are required to support the SAFSTOR condition of the unit; b) systems required to support the operating units (e.g. Liquid Waste Processing) and c) systems that are not required to support the TS, SAFSTOR condition, or the operating units.

2.0 Organization and Management Oversight at Permanently Shutdown Reactors (PSRs)

a. Inspection Scope (Inspection Procedure (IP) 36801)

The inspector reviewed Amendment No. 54 to Facility Operating License No. DPR-5 for the IPEC, Unit 1, issued May 29, 2009. Amendment No. 54 consisted of changes to Facility Operating License No. DPR-5 and to the TS regarding the removal of spent fuel from Unit 1 and drain down of the spent fuel pool. The inspector compared the TS with procedure IP-SMM-DC-905, *IPEC Site Management Manual, Control of Indian Point 1*, Rev. 6, dated February 4, 2010, and associated implementing procedures to ascertain consistency with TS changes.

The inspector also reviewed procedure IP-SMM-DC-905 regarding the roles and responsibilities for the operation, maintenance and control of Unit 1. The inspector discussed organization, management and/or staffing changes as outlined in TS, Sections 3.1 and 3.2, and in IPEC Site Management Manual, Section 5.0.

b. Observations and Findings

Procedure IP-SMM-DC-905 defines roles and assigns responsibility for the operation, maintenance and control of Unit 1. The licensee made no organizational structure changes since the previous inspection. The inspector verified that procedure IP-SMM-

DC-905 and associated implementing procedures were consistent with the changes delineated in License Amendment No. 54 and the TS regarding the removal of spent fuel from Unit 1 and drain down of the spent fuel pool. Implementation of the TS and the IPEC Site Management Manual were adequate.

c. Conclusions

The licensee's organization and management oversight was adequate to support Unit 1 activities. The roles and responsibilities for the Unit 1 activities were consistent with the *IPEC Site Management Manual, Control of Indian Point 1* and the TS. The IPEC Site Management Manual reflected the TS changes delineated in Amendment No. 54 to Facility Operating License No. DPR-5 for the IPEC, Unit 1, issued May 29, 2009. No findings of safety significance were identified.

3.0 Safety Reviews, Design Changes, and Modifications at PSRs

a. Inspection Scope (IP 37801)

The *IPEC Site Management Manual, Control of Indian Point 1* provides guidance for modifying or working on Unit 1 structures, systems and components (SSCs) that have been "retired in place" and that remain in place to support the operation of Unit 2. The inspector reviewed Engineering Change (EC) reports to ensure that the licensee conducted the safety review and engineering design change screening in accordance with 10 CFR 50.59 requirements.

b. Observations and Findings

As part of the licensee's Independent Safety Evaluation Program (ISE), which is a site program to enhance the structural integrity and appearance of buildings, the licensee identified areas for improvement regarding the Screenwell House (SWH). The purpose of the SWH EC (EC#14789/EC#15360) was to enhance the physical appearance of the SWH. EC#15360 was initiated to repair the roof and EC#14789 was initiated to remove retired wall mounted SSCs, replace the degraded plywood louver covers with new acrylic panels, and reconfigure the existing temporary power stand located east of the SWH. A safety review and engineering design change screening was a requisite for EC#14789. The inspector noted that the licensee conducted the safety review and engineering design change screening in accordance with 10 CFR 50.59 requirements.

c. Conclusions

The licensee conducted the safety review and engineering design change screening in accordance with 10 CFR 50.59 requirements. No findings of safety significance were identified.

4.0 Auditing, Self-Assessment, and Corrective Action at PSRs

a. Inspection Scope (IP 40801)

The inspector reviewed selected quality assurance (QA) audit reports related to Unit 1 SAFSTOR activities, selected condition reports (CRs), and associated corrective actions to evaluate the licensee's ability to assess, identify, resolve, and prevent issues that could impact safety or the quality of SAFSTOR activities. Specifically, the inspector reviewed Quality Assurance Audit Report, QA-14/15-2009-IP-1, *Combined Chemistry, Effluent and Environmental Monitoring*, dated October 2009, and Quality Assurance Audit Report, QA-02-06-2009-IP-1, *IPEC Radiation Protection and Radwaste*, dated November 2009.

b. Observations and Findings

The audit reports focused on site-wide plant support activities, such as the chemistry, radiation protection and radioactive waste programs. The audits were adequate and identified strengths and weaknesses related to the Unit 1 activities. As an outcome from discussions regarding the above audit results, the QA Manager determined that audits would be enhanced to focus on SAFSTOR activities, Unit 1 TS, and the *IPEC Site Management Manual, Control of Indian Point* 1 procedure. The priority for addressing condition reports and implementation of corrective actions was adequate and based upon safety significance. Corrective actions were implemented to address identified issues, and were being tracked to closure using the licensee's corrective action program. The licensee did not identify any adverse trends or safety concerns.

c. Conclusions

The licensee maintained an adequate audit and self-assessment program and effectively utilized the established corrective action program to self-identify, evaluate, and correct issues and problems. Condition reports were properly prioritized and corrective actions were tracked in accordance with approved procedures. No findings of safety significance were identified.

5.0 SAFSTOR

a. Inspection Scope (IP 71801)

The inspector reviewed the licensee's current decommissioning status with respect to the *Decommissioning Plan for Indian Point Unit 1*, approved by the NRC in an Order dated January 31, 1996.

b. Observations and Findings

Unit 1 is currently in the SAFSTOR condition. The licensee informed the inspector that they plan to actively decommission Unit 1 in parallel with the decommissioning of Unit 2 after that unit has been permanently shutdown.

c. Conclusions

No dismantlement or decommissioning activities were performed since the previous inspection, conducted in April 2009. No findings of safety significance were identified.

6.0 Maintenance and Surveillance at PSRs

a. Inspection Scope (IP 62801)

The inspector evaluated the maintenance program, required by TS, Section 5.0 and described in *IPEC Site Management Manual, Control of Indian Point 1*, Section 6.0. The inspector reviewed the surveillance requirements for the Unit 1 radioactive effluent monitoring instrumentation, required by TS, Section 5.2 and the ODCM. The inspector examined the maintenance and calibration records for the liquid discharge monitor (R-54) and stack vent noble gas monitor (R-60) for the period April 2009 through June 2010. The inspector reviewed the operability of the radioactive effluent monitoring instrumentation, required by TS Section 4.4 and the ODCM. The inspector toured the nuclear service building (NSB), the chemical systems building (CSB), the fuel handling building (FHB), the containment building, and containment sphere [i.e. vapor containment (VC)]. The inspector reviewed the biennial SAFSTOR engineering and structural assessment report and the Unit 1 Retired System Isolation Boundary (RSIB) project report. The RSIB project was developed as a result of the initial self assessment/ SAFSTOR engineering and structural assessment and included identifying and marking boundary interfaces between the Unit 1 and Unit 2 shared electrical and mechanical systems.

b. Observations and Findings

The inspector verified that the maintenance and surveillance program for selected systems and components had been conducted in accordance with TS, implementing procedures, and the ODCM. The inspector also determined from a review of maintenance and calibration records that the preventative maintenance, routine surveillance, and calibration results were complete and the results were within the acceptable tolerance limits.

The inspector determined from the plant tour, discussions with individuals cognizant of the performance of the above systems and components, and a review of shift logs that the radioactive effluent monitoring instrumentation were operable. The inspector verified that the VC, which was maintained in a condition to allow safe storage and subsequent decommissioning, contained the components utilized during operation, including the steam generators and reactor coolant pumps.

The inspector verified that the licensee conducted the biennial structural inspection for the NSB, CSB, Utility Tunnel and the exterior super heater building structural steel. The licensee's most recent inspection was conducted in 2009. The purpose of the structural inspection was to identify and monitor the facility for signs of age-related structural degradation (i.e., masonry cracking, concrete spalling, and equipment corrosion) that could potentially endanger the operating units or create an industrial safety hazard.

The RSIB project 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 inspector selected electrical and mechanical systems for inspection and verified, during a tour, that each selected system was appropriately marked as a boundary interface.

c. Conclusions

The licensee effectively implemented the preventive maintenance and surveillance program and associated procedures in accordance with TS and ODCM requirements. No findings of safety significance were identified.

7.0 Occupational Radiation Exposure

a. Inspection Scope (IP 83750)

The inspector evaluated 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 inspector reviewed procedure EN-RO-101, *Nuclear Management Manual, Access Control for Radiologically Controlled Areas*, Rev 5, dated January 20, 2010 and RP-STD-17, *Satellite RP Key Issuance and HRA, LHRA, and VHRA Boundary Verification,* Rev. 10, dated May 17, 2010. The inspector interviewed responsible individuals, reviewed radiological survey plans, survey maps of the radiologically controlled area, and conducted field observations of radiological postings. The inspector evaluated the radiation work permits (RWP) related to core bore sampling in the Unit 1 East and West Spent Fuel Pools, the associated post-job dose evaluations, and the dose totals for 2009 and January through June 2010.

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 Unit 1 access point were current. High radiation areas and technical specification locked high radiation areas were properly posted and locked as required. The RWPs were commensurate with the radiological significance of the tasks and included the appropriate exposure control measures for the safe implementation of the activities. The RWP dose totals were below the dose goal totals for 2009 and January 2010 through June 2010.

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 complied with regulatory requirements. Radiological controls and dose estimates associated with Unit 1 activities were effective to achieve dose goals. Implementation

and oversight of the SAFSTOR program was effective for the storage of radioactive material. No findings of safety significance were identified.

8.0 Solid Radioactive Waste Treatment, and Effluent and Environmental Monitoring

a. Inspection Scope (IP 84750)

The inspector evaluated the radioactive effluent control and the site radiological environmental monitoring programs. The evaluation included a review of the annual radioactive effluent release report for 2009, the annual radiological environmental operating report for 2009, and the associated analytical results for each program. The inspection also included a review of the Unit 1 TS and the ODCM. The ODCM contains the current methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm/trip set-points, and in the conduct of the environmental radiological monitoring program. The inspector evaluated the licensee's controls and processes regarding the liquid and gaseous radioactive effluents related to Unit 1 activities, required by TS, Section 4.2 and the ODCM. The inspector reviewed the associated radioactive liquid release permits, the analytical sample results, and the projected doses to the public associated with the groundwater in-leakage into the NCD and SFD sumps. The inspector also reviewed the gaseous effluent results and the projected doses to the public associated with the stack vent. The inspector also evaluated the radiological environmental monitoring program, including the analytical results associated with samples of shoreline sediment, fish, and water from January 2010 through June 2010.

b. Observations and Findings

The annual effluent and environmental monitoring reports demonstrated that the calculated doses were well below regulatory dose criteria of 10 CFR 50, Appendix I. The radioactive liquid effluent release permits were completed according to the ODCM. From a review of the analytical data, the inspector verified that the projected doses to the public from the liquid and gaseous effluent from Unit 1 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 is reasonably achievable. The inspector verified that the licensee collected and analyzed the stack vent samples, NCD and SFD sump samples, and the liquid discharge monitor samples within the required frequencies and that the sample collection was conducted in accordance with applicable procedures. The chemistry technician responsible for the oversight of the RMS demonstrated knowledge of the RMS relative to operability requirements and performance history.

Analytical water sample results related to the groundwater monitoring program, specifically, the NCD and SFD analytical sample results from January 2010 through June 2010 were compared to the results from 2009. The licensee informed the inspector that the levels of radioactivity appear to be trending downward. The inspector's review of this data confirmed the licensee's conclusion.

The analytical results for shoreline sediment, fish, and water from January 2010 through June 2010 for the radiological environmental monitoring program indicated that no significant radioactivity was identified in fish and the environment.

c. Conclusions

The licensee effectively implemented and maintained the radioactive effluent controls program, the groundwater monitoring program, and the radiological monitoring program. No findings of safety significance were identified.

9.0 Solid Radioactive Waste Management and Transportation of Radioactive Materials

a. Inspection Scope (IP 86750)

The inspector evaluated the radioactive waste management and transportation programs to determine whether the licensee properly processed, packaged, stored, and shipped radioactive materials. The inspector reviewed the most recent exclusive use shipment of low specific activity radioactive waste that occurred in June 2009.

b. Observations and Findings

The licensee had significantly reduced the Unit 1 radioactive waste inventory. After the completion of the drain down and clean up of the spent fuel pool, the licensee packaged and shipped the resins and sludge in a 14-215 cask to a waste processing facility in Tennessee. Radioactive waste shipment records were complete and included copies of characterization reports and waste manifest shipping papers. The licensee met the applicable radioactive waste and transportation requirements for the shipments reviewed.

Additionally, the inspector determined from the Unit 1 FHB tour and discussions with individuals cognizant of the radioactive waste management and radioactive materials transportation programs that the Class B waste from the cleanup of the spent fuel pool is still being maintained in the Unit 1 FHB until an appropriate disposal option is available.

c. Conclusions

The licensee effectively implemented the radioactive waste management and transportation programs. No findings of safety significance were identified.

Exit Meeting Summary

On June 24, 2010, the inspector presented the inspection results to Donald Mayer, Director of Unit 1, and other members of the licensee's staff. Mr. Mayer acknowledged the inspection findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. Donahue, Unit 1 Chemistry
C. English, Superintendant Unit 1
D. Fucito, Unit 1 ISE Projects
D. Gray, Chemistry Manager
W. Henries, Senior Engineer Consultant, Unit 1
F. Inzirillo, Quality Assurance Manager
D. Mayer, Director Unit 1
J. Michetti, System Engineering Support - RMS
S. Sandike, Senior Chemistry Engineer
W. Scholtens, Radioactive Waste Engineer
D. Smith, Health Physicist, Radiation Protection
A. Stewart, Licensing Engineer
R. Tagliamante, Acting Radiation Protection Manager

INSPECTION PROCEDURES USED

36801	Organization, Management, and Cost Controls at Permanently Shutdown Reactors (PSRs)
37801	Safety Reviews, Design Changes, and Modifications at PSRs
40801	Self Assessment, Auditing, and Corrective Action at PSRs
62801	Maintenance and Surveillance at PSRs
71801	Decommissioning Performance and Status Reviews at PSRs
83750	Occupational Radiation Exposure
84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

ITEMS OPEN, CLOSED, AND DISCUSSED

Opened, Closed and Discussed – None

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
CFR	Code of Federal Regulations
CR	condition reports
CSB	chemical systems building
EC	Engineering Change
FHB	fuel handling building
IP	Inspection Procedure
IPEC	Indian Point Energy Center
ISE	Independent Safety Evaluation Program
NCD	North Curtain Drain
NSB	nuclear service building
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PSRs	Permanently Shutdown Reactors
QA	quality assurance
RMS	radiation monitoring system
RSIB	U1 Retired System Isolation Boundary
RWP	radiation work permits
SFD	Sphere Foundation Drain
SSCs	structures, systems and components
TS	technical specification
Unit 1	Indian Point Unit 1
Unit 2	Indian Point Unit 2
VC	vapor containment (containment sphere)