U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Docket No.	05000003
License No.	DPR-5
Inspection No.	05000003/2011008
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Indian Point Energy Center (IPEC) Unit 1
Location:	450 Broadway Buchanan, New York 10511-0249
Inspection Dates:	August 30 - September 1, 2011
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. 05000003/2011008

An announced routine safety inspection was conducted on August 30 - September 1, 2011, at Indian Point Energy Center (IPEC) Unit 1 (Unit 1) by a Region I inspector. The NRC's program for overseeing the safe operation of a shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, *Decommissioning Power Reactor Inspection Program.* The inspection included a review of the programs associated with Unit 1 while in long-term safe storage (SAFSTOR) status. There are no ongoing decommissioning activities being conducted at Unit 1. 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).

Safety Reviews, Design Changes and Modifications
There were no plant modifications since the previous inspection conducted in June 2010.

Audit and Corrective Action Programs
The licensee maintained an adequate audit program and effectively utilized the established corrective action program to identify, evaluate, and correct issues and problems. Condition reports were appropriately prioritized and corrective actions were tracked in accordance with approved procedures.

Decommissioning Performance and Status Reviews
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 were in compliance 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 safe 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

Unit 1 is a pressurized water reactor that has been permanently shut down since October 31, 1974, and is being maintained in long-term storage (SAFSTOR). Units 1 and 2 are physically contiguous and share systems and facilities as well as a common operating organization. The Technical Specifications (TS) for Unit 1 recognize this commonality as well as the intended use of the Unit 1 facilities to support Indian Point Unit 2. The systems associated with Unit 1 are divided into three classifications:
a) systems required per the Unit 1 TS that 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

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

The inspector reviewed procedure IP-SMM-DC-905, *IPEC Site Management Manual, Control of Indian Point 1*, Revision 6 (IPEC-SMM), issued February 4, 2010, 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-SMM, Section 5.0. The inspector also interviewed the personnel in the Employee Concerns Program (ECP).

b. Observations and Findings

Procedure IP-SMM-DC-905 defines roles and assigns responsibility for the operation, maintenance and control of Unit 1. There were no organizational structure changes made by the licensee since the previous inspection. The inspector verified that procedure IP-SMM-DC-905 and associated implementing procedures were consistent with the TS. Implementation of the TS and the IPEC-SMM was adequate. ECP personnel provided the inspector with details regarding the licensee commitment to maintain a high level of awareness to safety.

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-SMM and the TS. No safety concerns or violations were identified.

3.0 Safety Reviews, Design Changes, and Modifications

a. Inspection Scope (IP 37801)

Procedure IP-SMM-DC-905, Rev. 6, 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 discussed Engineering Change (EC) reports to determine if the licensee conducted safety reviews and engineering design change screening in accordance with the requirements of 10 CFR 50.59.

b. Observations and Findings

There were no plant modifications since the previous inspection conducted in June 2010.

c. Conclusions

No safety concerns or violations were identified.

4.0 Audit and Corrective Action Program

a. Inspection Scope (IP 40801)

The inspector reviewed the quality assurance (QA) audit report QA-12/18-2011-IP-1, *Operations/Technical Specifications*, dated June 6-27, 2011 related to Unit 1 SAFSTOR activities. The inspector also reviewed selected condition reports (CRs) and any 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.

b. Observations and Findings

The purpose of the audit was to evaluate the effectiveness of Operations, compliance with TS requirements and to evaluate selected elements of the Master Audit Plan for Operations and TS. The audit contained 10 scope elements including: Test Control; Inspection, Test and Operating Status; Limiting Conditions for Operations; Conduct of Operations; Operator Knowledge and Performance; Work Coordination and Control; Corrective Action; Self Assessment and Benchmarking; Instruction, Drawings and Procedures; and Leadership and Management. The audit was adequate and identified strengths and weaknesses related to the Unit 1 activities.

The priority for addressing CRs and implementation of corrective actions were appropriate 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 program and effectively utilized the established corrective action program to identify, evaluate, and correct issues and problems. CRs were appropriately prioritized and corrective actions were tracked in accordance with approved procedures. No safety concerns or violations were identified.

5.0 Decommissioning Performance and Status Reviews

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 June 2010. No safety concerns or violations were identified.

6.0 Maintenance and Surveillance

a. Inspection Scope (IP 62801)

The inspector evaluated the maintenance program, required by TS, Section 5.0 and described in the IPEC SSM, 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 shift logs and the maintenance and calibration records for the liquid discharge monitor (R-54) and the stack vent noble gas monitor (R-60) for the period July 2010 through August 2011. The inspector conducted a plant tour, including 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 also discussed the biennial SAFSTOR engineering and structural assessment inspection with the licensee.

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 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 acceptable limits. The inspector also determined that the radioactive effluent monitoring instrumentation were calibrated and that the set points were appropriate.

The biennial SAFSTOR engineering and structural assessment inspection will be conducted in November 2011. The inspector will review the engineering and structural assessment report during the next inspection.

c. Conclusions

The licensee effectively implemented the preventive maintenance and surveillance program and associated procedures in accordance with TS and ODCM requirements. No safety concerns or violations were identified.

7.0 Occupational Radiation Exposure

a. Inspection Scope (IP 83750)

The inspector evaluated the licensee's implementation of the occupational radiation exposure program to determine the licensee's capability to monitor and control radiation exposure to employees, and to determine the adequacy of the radiation protection program. The inspector reviewed procedure EN-RO-101, *Nuclear Management Manual, Access Control for Radiologically Controlled Areas*, Rev. 6, issued June 23, 2011, RP-STD-17, *Satellite RP Key Issuance and HRA, LHRA, and VHRA Boundary Verification,* Rev. 10, issued May 17, 2010, and EN-RP-108, *Radiation Protection Posting*, Rev. 10, issued August 4, 2011. 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 Unit 1, and the dose totals for 2010 and January 2011 through August 2011.

b. Observations and Findings

The radiologically controlled areas were appropriately posted 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 2010 and January 2011 through August 2011.

c. Conclusions

The licensee provided adequate controls to limit exposures of workers to external sources of radiation. Posting of radioactive materials and radiation areas were in compliance 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 were effective for the safe storage of radioactive material. No safety concerns or violations were identified.

8.0 Effluent and Environmental Monitoring Programs

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 2010, the annual radiological environmental operating report for 2010, and the associated analytical results for each program. The inspection also included a review of the Unit 1 TS 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 North Curtain Drain (NCD) and Sphere Foundation Drain (SFD) sumps. The inspector also reviewed the gaseous effluent results, the projected doses to the public associated with the stack vent, and the radiological environmental monitoring program, including the analytical results associated with samples of shoreline sediment, fish, and water from January 2011 through August 2011.

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 in accordance with 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 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 inspector compared the analytical water sample results related to the groundwater monitoring program, specifically the NCD and SFD analytical sample results from January 2011 through August 2011 to the results from 2010. The levels of tritium ranged from 13500 picoCuries per Liter (pCi/L) to 3 pCi/L for the NCD and from 642 pCi/L to 480 pCi/L for the SFD. 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 inspector reviewed the analytical results for shoreline sediment, fish, and water from January 2011 through August 2011 for the radiological environmental monitoring program and noted that the results 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 safety concerns or violations were identified.

9.0 Radioactive Waste Management and Transportation of Radioactive Materials

a. Inspection Scope (IP 86750)

The inspector evaluated and discussed the radioactive waste management and transportation programs to determine whether the licensee properly processed, packaged, stored, and shipped radioactive materials. The inspector also conducted a tour of the Unit 1 FHB.

b. Observations and Findings

The inspector noted that there were no radioactive waste shipments since the previous inspection conducted in June 2010.

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 safety concerns or violations were identified.

Exit Meeting Summary

On September 1, 2011, the inspector presented the inspection results to Donald Mayer, Director, Unit 1, and other members of the licensee's staff. The inspector confirmed that proprietary information was not provided or examined during the inspection.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. English, Superintendant, Unit 1
J. Doroski, Health Physics and Chemistry Specialist
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
G. Dahl, Licensing Engineer
B. Taggart, Employee Concerns Program
R. Tagliamante, 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 Documents Access and Management Systems
CFR	Code of Federal Regulations
CR	condition reports
CSB	chemical systems building
EC	Engineering Change
ECP	Employee Concerns Program
FHB	fuel handling building
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEC	Indian Point Energy Center
IPEC-SMM	IPEC Site Management Manual, Control of Indian Point 1
NCD	North Curtain Drain
NRC	Nuclear Regulatory Commission
NSB	nuclear service building
ODCM	Offsite Dose Calculation Manual
PSRs	Permanently Shutdown Reactors
QA	quality assurance
RMS	radiation monitoring system
RWP	radiation work permits
SAFSTOR	long-term safe storage
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)