UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD, SUITE 102
KING OF PRUSSIA, PA 19406-1415

November 17, 2022

Mr. Kelly Trice
President - HDI
Holtec Decommissioning International, LLC
Krishna P. Singh Technology Campus
1 Holtec Boulevard
Camden, NJ 08104

SUBJECT: HOLTEC DECOMMISSIONING INTERNATIONAL, LLC, INDIAN POINT ENERGY CENTER UNITS 1, 2 AND 3 - NRC INSPECTION REPORT NOS. 05000003/2022002, 05000003/2022003, 05000247/2022002, 05000247/2022003, 05000286/2022002, 05000286/2022003, AND 07200051/2022001

Dear Mr. Trice:

On September 30, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection under Inspection Manual Chapter 2561, “Decommissioning Power Reactor Inspection Program,” at the permanently shutdown Indian Point Nuclear Generating Station Units 1, 2 and 3. The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission’s rules and regulations, and the conditions of your licenses. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records and plant walk-downs. The results of the inspection were discussed with Mr. Richard Burroni, Site Vice President on October 20, 2022, and are described in the enclosed inspection report.

Based on the results of this inspection, one NRC-identified violation of NRC requirements of very low safety significance (Severity Level IV) is documented in this report. Because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating the violation as a Non-Cited Violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy. If you contest the subject or severity of this NCV, you should provide a response within 30 days of the date of this letter, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region I, 475 Allendale Road, Suite 102, King of Prussia, PA 19406-1415; and the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-001.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC’s "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Radioactive Waste**; **Decommissioning of Nuclear Facilities**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's Website at www.nrc.gov; select **About NRC**, **Organizations & Functions**; **Office of Enforcement**; **Enforcement documents**; then **Enforcement Policy** (Under 'Related Information'). You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

No reply to this letter is required. Please contact Katherine Warner of my staff at (610) 337-5389 if you have any questions regarding this matter.

Sincerely,

Anthony M. Dimitriadis

Digitally signed by Anthony M. Dimitriadis
Date: 2022.11.17 11:20:41 -05'00'

Anthony Dimitriadis, Chief
Decommissioning, ISFSI, and Reactor Health Physics Branch
Division of Radiological Safety and Security

Docket Nos. 05000003, 05000247, 05000286, and 07200051
License Nos. DPR-5, DPR-26, and DPR-64

cc w/encl: Distribution via ListServ

Enclosure: Inspection Report Nos. 05000003/2022002, 05000247/2022002, 05000286/2022002, 05000003/2022003, 05000247/2022003, 05000286/2022003 and 07200051/2022001 w/Attachment

HOLTEC NUCLEAR OPERATIONS, INC., INDIAN POINT NUCLEAR GENERATING STATION UNITS 1, 2 AND 3, NRC INSPECTION REPORT NOS. 05000003/2022002, 05000247/2022002, 05000286/2022002, 05000003/2022003, 05000247/2022003, 05000286/2022003 AND 07200051/2022001 DATED NOVEMBER 17, 2022

DOCUMENT NAME: https://usnrc.sharepoint.com/teams/Region-I-Decommissioning-Branch/Inspection Reports/Issued Reports/Indian Point/2022/2Q and 3Q 2022 Indian Point Decommissioning Report.docx

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Docket Nos.	05000003, 05000247, 05000286, and 07200051
License Nos.	DPR-5, DPR-26, and DPR-64
Report Nos.	05000003/2022002, 05000247/2022002, 05000286/2022002, 05000003/2022003, 05000247/2022003, 05000286/2022003 and 07200051/2022001
Licensee:	Holtec Decommissioning International, LLC (HDI)
Facility:	Indian Point Energy Center, Units 1, 2 and 3
Location:	Buchanan, NY
Inspection Dates:	April 1 – September 30, 2022
Inspectors:	K. Warner, Senior Health Physicist Decommissioning, ISFSI and Reactor Health Physics Branch Division of Radiological Safety and Security
	B. DeBoer, Senior Health Physicist Decommissioning, ISFSI and Reactor Health Physics Branch Division of Radiological Safety and Security
	K. Mangan, Senior Reactor Inspector Engineering Branch 1 Division of Operating Reactor Safety
	P. Cataldo, Senior Reactor Inspector Engineering Branch 1 Division of Operating Reactor Safety
	L. Parks, Risk Analyst Risk and Technical Analysis Branch Division of Decommissioning, Uranium Recovery, and Waste Programs
	A. Taverna, Health Physicist (Training) Decommissioning, ISFSI and Reactor Health Physics Branch Division of Radiological Safety and Security

S. Veunephachan, Health Physicist
Decommissioning, ISFSI and Reactor Health Physics Branch
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A. Istar, Civil Engineer
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C. Borman, Health Physicist (Training)
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

Approved By: Anthony Dimitriadis, Chief
Decommissioning, ISFSI and Reactor Health Physics Branch
Division of Radiological Safety and Security

EXECUTIVE SUMMARY

Holtec Decommissioning International, LLC (HDI)
Indian Point Energy Center Units 1, 2, and 3 (IP-1, IP-2, and IP-3)
NRC Inspection Report Nos. 05000003/2022002, 05000247/2022002, 05000286/2022002, 05000003/2022003, 05000247/2022003, 05000286/2022003 and 07200051/2022001

An announced decommissioning inspection was completed on September 30, 2022, at Indian Point Units 1, 2, and 3. A combination of on-site and remote inspection activities were performed over the inspection period. The inspection included a review of design changes and modifications, problem and identification and resolution, spent fuel pool activities, decommissioning performance and status, and occupational radiation exposure. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and plant walk-downs. The U.S. Nuclear Regulatory Commission's (NRC's) program for overseeing the safe decommissioning of a shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, "Decommissioning Power Reactor Inspection Program."

Additionally, the inspection period included a review and observation of the ISFSI pad construction activities, inspection of Unit 2's dry cask loading campaign, and Unit 3 HI-LIFT fabrication activities. The NRC's program for overseeing the operation of dry storage of spent fuel at an ISFSI is described in IMC 2690, "Inspection Program for Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for Title 10 of the *Code of Federal Regulations* (CFR) Part 71 Transportation Packagings."

List of Violations

One NRC identified Severity Level IV NCV of Title 10 CFR 20.1406, "Minimization of contamination," is documented for failing to develop and implement a radiation protection program to minimize the introduction of residual radioactivity into the site for protection against ionizing radiation. Specifically, the licensee did not have an adequate procedure or engineering controls to ensure that airflow would not escape the equipment hatch during radiological work as stated in Engineering Change (EC) IP-2021-0018, "VC Hatch Enlargement." HDI entered the issue into its corrective action program (CAP) as IR-IP3-00629.

REPORT DETAILS

1.0 Background

IP-1 was a pressurized water reactor that was granted a 40-year Operating License in 1962 and was permanently shut down in 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 NRC in an Order, dated January 31, 1996, the reactor remains in a defueled status.

On February 8, 2017, Entergy Nuclear Operations, Inc. (Entergy) notified the NRC of its intent to permanently cease power operations at IP-2 and IP-3 by April 30, 2020, and April 30, 2021, respectively subject to operating extensions through, but not beyond 2024 and 2025 (Agencywide Documents and Access Management System (ADAMS) Accession Number: ML17044A004). On May 12, 2020, Entergy certified cessation of power operations and the permanent removal of fuel from the IP-2 reactor vessel (ADAMS Accession Number: ML20133J902). On May 11, 2022, Entergy certified cessation of power operations and permanent removal of fuel from the IP-3 reactor vessel (ADAMS Accession Number: ML21131A157). On May 13, 2022, the NRC notified Indian Point that the NRC would no longer perform its oversight activities in accordance with the Operating Reactor Assessment Program and that oversight would be conducted under the provisions outlined in IMC 2561 "Decommissioning Power reactor Inspection Program" (ADAMS Accession Number: ML21132A069). On May 28, 2022, Entergy Nuclear Operations, Inc. informed the NRC of the successful purchase and sale transaction closing of the Indian Point facilities to Holtec Decommissioning International, LLC (ADAMS Accession No. ML21147A553). On May 28, 2022, the NRC issued license amendments transferring Indian Point Unit Nos. 1, 2, and 3 facility licenses from Entergy Nuclear Operations, Inc. to Holtec Indian Point 2, LLC; Holtec Indian Point 3, LLC; and Holtec Decommissioning International, LLC (ADAMS Accession No. ML21126A004).

IP-1 and IP-2 are physically contiguous and share systems, such as the integrated liquid waste system and the air handling system; and facilities, such as the chemistry and health physics laboratories. Liquid waste from IP-3 will be transported and processed at IP-1. Radiological effluent limits are met on an overall site basis and specific operating limits and surveillance requirements for effluent monitoring instrumentation, including stack noble gas monitoring, are discussed in the Offsite Dose Calculation Manual (ODCM).

IP-1 was inspected under the "Actively Decommissioning (DECON), No Fuel in the Spent Fuel Pool" category and IP-2, and IP-3 were inspected under the "Active Decommissioning (DECON), Fuel in the Spent Fuel Pool" category during this inspection period. The categories of decommissioning are described in IMC 2561.

2.0 Active Decommissioning Performance and Status Review

2.1 Inspection Procedures 37801, 40801, 60801, 71801, and 83750

a. Inspection Scope

The inspectors performed on-site decommissioning inspections on April 25 - 27, June 6 - 9, and July 11 – 14, and September 19 – 22, 2022, supplemented by in-office reviews and periodic phone calls. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and plant walk-downs.

The inspectors conducted document reviews and interviews with plant personnel to determine if IPEC procedures and processes were adequate and in accordance with the regulations and guidance associated with 10 CFR 50.59, and to determine if changes made by IPEC under 10 CFR 50.59 required prior NRC approval. The inspectors reviewed the site training program and qualifications for individuals trained to use the 50.59 process.

The inspectors assessed the implementation and effectiveness of IPEC's corrective action program (CAP) by reviewing a sampling of issues, non-conformances, and conditions adverse to quality entered into the CAP. The inspectors reviewed a representative selection of CAP documents to determine if a sufficiently low threshold for problem identification existed, if follow-up evaluations were of sufficient quality, and if IPEC assigned timely and appropriate prioritization for issue resolution commensurate with the significance of the issue.

The inspectors reviewed IPEC's programs for the safe wet storage of spent fuel. The inspectors reviewed documentation, attended planning and pre-job briefings, and observed work on the Unit 3 spent fuel pool cooling suction line.

The inspectors met with several on-site managers and discussed maintenance staffing, maintenance backlog, status of decommissioning and upcoming activities, among other topics to determine whether the licensee had conducted activities in accordance with regulatory and license requirements. The inspectors performed several plant walk-downs to assess field conditions and decommissioning activities by assessing material condition of structures, systems, and components, housekeeping, system configurations, worker level of knowledge, procedure use and adherence, including Unit 1 sphere, dome and various other areas, and Units 2 and 3 fuel storage buildings and vapor containments. The inspectors observed a planning meeting, select pre-job briefings, and associated work activities for Unit 2 22 steam generator cold leg cutting and cap activities and the Unit 3 34 steam generator steam dome removal. Both work activities were conducted as part of preparations for segmentation of reactor vessel internals.

The inspectors observed activities, reviewed documentation, and interviewed personnel associated with occupational radiation exposure to evaluate the licensee's protection of worker health and safety and radiological protection department staffing. The inspectors conducted site walk-downs, including radiologically controlled areas, to examine and verify radiological postings, airborne and contamination controls, and locked high radiation doors and gates. The inspectors also observed calibration of an RO-20 ion chamber in the Unit 3 calibration laboratory and observed source checks for a variety of instruments and monitors

to determine if there was sufficient knowledge level and appropriate procedures for the tasks. The inspectors reviewed radiation work permits (RWP's), and As Low As Reasonably Achievable (ALARA) work plans to determine if radiation work activities were pre-planned effectively to limit worker exposure. The inspectors observed radiation protection (RP) technicians and supervisors perform work activities, including responding to a personnel contamination event to determine if implementation of radiological work controls and training on the use of a respirator was being performed appropriately. The inspectors reviewed the qualifications of select individuals in the radiation protection organization to determine if they met requirements referenced in site technical specifications. The inspectors began review of free release survey reports for the outside of the Unit 3 secondary side of the steam generator domes to determine if they met site free release requirements. Surveys of the interior of the steam domes were ongoing at the end of the inspection period.

b. Observations

The inspectors determined that the reviewed 10 CFR 50.59 screenings and evaluations had been properly performed. The inspectors determined that selected changes under 10 CFR 50.59 did not require prior NRC approval and safety reviews were performed for design changes and modifications in accordance with applicable regulatory requirements, license conditions and the Decommissioning Safety Analysis Report. The inspectors also determined that the training program and the number of individuals qualified was adequate. The inspectors noted that the qualified individuals represent a good cross section of the organization that is spread across the various departments allowing for informed reviews.

The inspectors determined that issues had been identified, entered into the CAP, and evaluated commensurate with their safety significance through document review and discussion.

The inspectors observed adequate material condition of both spent fuel pools, and their supporting cooling systems. The inspectors determined that IPEC was safely storing spent fuel in wet storage. The inspectors observed and reviewed documentation involving the modification of the suction line for IPEC Unit 3 spent fuel pool, including the engineering change package and radiological surveys of the cut pipe. The inspectors observed pre-job briefings for the dive plug insertion, including a locked high radiation area briefing for a diver to enter the spent fuel pool. The inspectors observed the partial drain down of the spent fuel pool, the plugging, venting, and cutting of the original suction pipeline, and setting of the two new parallel replacement pipes. The inspectors also observed the air sampling and radiological surveying of the pipe while it was cut. The inspectors determined that the work was conducted in accordance with the RWP, ALARA plan, and 10 CFR Part 20 standards.

The inspectors noted that IPEC continued preparations for future reactor vessel internals segmentation activities during this inspection period, including isolating the reactor coolant system loops and preparation activities necessary prior to installing platforms on steam generators such as cutting and removal of the steam domes. Specifically, all eight steam generator dome cuts and movement to on-site storage and reactor coolant system loop isolation activities were completed. The inspectors noted that for the areas of the plant toured, the material condition and housekeeping was adequate. The inspectors noted workers were knowledgeable and adhered to plant procedures and work plans, and pre-job

briefs were thorough and highlighted specific safety concerns. The inspectors determined that the maintenance backlog was minimal, manageable, and that items important to safety were appropriately prioritized and tracked.

The inspectors verified that RWP's and ALARA plans were implemented and were effective in limiting worker exposure, and occupational dose was appropriate for the scope of the radiological activities performed. The inspectors determined that RP staff effectively controlled observed work activities, used appropriate instruments for the surveys, and survey records were clear and complete. The inspectors verified that selected technician respirator qualifications were up-to-date and verified that selected respiratory protection training provided adequate knowledge to workers to safely wear the equipment. The inspectors verified that selected instrument source checks and a calibration were performed in low background areas and in accordance with licensee procedures. The inspectors noted that the qualifications reviewed for selected staff either met the requirements in the site licensing basis or immediate corrective actions were taken to restore compliance (IR-IP2-00408). The inspectors also observed the response and documentation regarding a personnel contamination event and determined that IPEC acted in accordance with its procedures and processes. The inspectors attended an ALARA committee meeting on July 14, 2022, and determined that the meeting was conducted in accordance with site processes. The inspectors reviewed a free release survey report for the Unit 3 secondary side of the steam generator domes and determined that site procedures were followed, and the results of the release surveys conducted met site free release criteria for the outside portions reviewed.

The inspectors discussed ongoing reactor internal and reactor segmentation preparations and upcoming plans with IPEC staff.

Violation

The inspectors identified one Severity Level IV NCV of Title 10 CFR 20.1406, "Minimization of contamination," for failing to develop and implement a radiation protection program that used a procedure and engineering controls to minimize the introduction of residual radioactivity into the site for protection against ionizing radiation. Specifically, HDI did not have an adequate procedure or engineering controls to ensure that airflow would not escape the equipment hatch during radiological work as stated in EC IP-2021-0018, "VC Hatch Enlargement."

In March 2022 the inspectors reviewed EC IP-2021-0018, "VC Hatch Enlargement." This EC evaluated the work activity recently completed to enlarge the vapor containment (VC) equipment hatch openings and install roll-up doors in those openings. The EC states "no airflow will travel outward of the enlarged equipment hatch area, only inward." The inspectors questioned how this was being monitored and controlled. The site entered the concern into its corrective action program as IR-IP3-00501 and subsequently wrote Radiation Protection (RP) Standard RP-STD-44, "RCA Door Control."

In June 2022 during observations of steam dome removal activities in Unit 3 containment, the inspectors observed the tell tail (maslin strip) hanging from the half-way open roll-up door blowing intermittently between the inward and outward direction. The inspectors questioned how the site was managing building openings and ventilation system flow to maintain inward airflow through the roll-up doors, as assumed by the engineering change.

The technicians performing the work appeared to be unaware of the requirements in RP-STD-44 and a copy could not be immediately located. The inspectors noted that the RP Standard was not a controlled procedure and did not provide adequate guidance on roll up door closure, including ventilation indications, type of work being conducted, or general provisions for closure of the door except as needed. No aggressive work (cutting, grinding, etc.) was being performed at the time of the observation and the inspectors noted that the air sample taken that day did not indicate any release of material.

In July 2022, the inspectors reviewed IPEC's initial corrective actions, which included the extent of condition for Unit 2's roll-up door installed under EC IPC-2021-0017, converting RP Standard RP-STD-44, "RCA Door Control" to a controlled procedure, 0-RP-RWP-415, "RCA Door Control," and adding additional guidance. Specifically, the licensee added provisions to the procedure to close the VC roll-up door upon any indication of positive pressure or significant changes to ventilation; strengthened door closure requirements, including during aggressive work and if any loose contamination is identified in the vicinity of the door; and added specific guidance regarding permissions to open/close the door. Section 1.0 "Reason for New Procedure" states, in part, "This procedure was generated to replace IPEC RP Standard RP-STD-44 (Rev. 0), "RCA Door Control". A procedure is a higher-level document with requirements that must be followed, as opposed to a standard which is a lower-level guidance document."

The inspectors noted that a subsequent qualitative evaluation was performed by the site with results indicating a vacuum of -5E-4 inches of water gauge (inwg) through the roll-up door opening under certain conditions. The inspectors noted that the calculated vacuum was several orders of magnitude lower than what would provide reasonable assurance of adequate protection against the potential safety consequences of a release. The inspectors made this determination based on a review of the Nuclear Air Cleaning Handbook, which provides guidance on the design of buildings to have negative pressure based on the use of the room and the quantity of material handled. The handbook states that a Zone 3 classification is applicable to general working areas that are usually "cold," but which are subject to low levels of radiation in the air and would dictate a negative air pressure of -0.6 inwg. Further, a Zone 4 classification is applicable to areas such as lunchrooms and would dictate a -0.1 inwg air pressure. The inspectors noted that the VC meets the description of a Zone 3 area and the calculated air pressure of 5E-4 inwg is well below the guidelines.

HDI performed qualitative smoke dispersion/flow tests in August 2022. With the rollup door in the open position, the results indicated that the containment bulk atmosphere in the vicinity of the door opening remained neutral relative to horizontal flow, with the predominance of gridded locations indicating a slight bias toward inward flow. These conclusions do not support the negative pressure relied upon in the change documentation.

§ 20.1406, "Minimization of contamination," (c) states in part: "Licensees shall, to the extent practical, conduct operations to minimize the introduction of residual radioactivity into the site, including the subsurface, in accordance with the existing radiation protection requirements in Subpart B and radiological criteria for license termination in Subpart E of this part."

EC IP-2021-0018, "VC Hatch Enlargement," states in part that "no airflow will travel outward of the enlarged equipment hatch area, only inward."

Contrary to the above, in June 2022, the licensee failed to develop and implement a radiation protection program that used a procedure and engineering controls to minimize the introduction of residual radioactivity into the site for protection against ionizing radiation. Specifically, HDI did not have an adequate procedure or engineering controls to ensure that airflow would not escape the equipment hatch during radiological work as stated in EC IP-2021-0018, “VC Hatch Enlargement.”

The inspectors determined that the lack of an adequate procedure and engineering controls to control airflow from the vapor containment during scheduled radiologically significant work, including reactor vessel internals (RVI) segmentation is more than minor. As stated in 76 FR 35564 Jun. 17, 2011, residual radioactivity that would be significant for decommissioning planning would be a quantity of radioactive material that would subsequently require remediation during decommissioning to meet the unrestricted use criteria of 10 CFR 20.1402. Recent operating experience at another decommissioning site have identified hundreds of discrete radioactive particles (DRPs) that required remediation. The inspectors reviewed RAI responses from this other site (ML21067A225 and ML22069A329) to inform the determination that this is a Severity Level IV violation. The likely origin of the majority of particles found in site soil at this other site is stated to be from RVI segmentation and introduced to the environment partly via a lack of negative pressure and movement of potentially contaminated equipment and large components through the equipment hatches of each Containment Building. Based on the above, the inspectors determined that the lack of an adequate procedure and engineering controls to control airflow from the vapor containment during scheduled radiologically significant work, including RVI segmentation is more than minor.

Because the licensee took immediate corrective actions, placed the deficiency into its corrective action program (IR-IP3-00629), and since the violation was not willful or repetitive, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy (NCV05000286/2022003–01; Deficient Design Change Implementation and Controls Resulted in Potential of Unfiltered Radioactivity Release to the Environment).

c. Conclusions

One Severity Level IV, non-cited violation of 10 CFR 20.1406, “Minimization of contamination,” was identified.

2.2 Inspection Procedures 84750

a. Inspection Scope

The inspectors reviewed activities and documentation associated with radioactive effluent control and site radiological environmental monitoring program (REMP) to assess the effectiveness of site radiological programs. The inspectors reviewed any changes made to the ODCM, Process Control Program, and the radioactive waste system design and operation. The inspectors reviewed the 2021 Annual Radioactive Effluent Release Report and the 2021 Annual Radiological Environmental Operating Report for any anomalous results to determine if reported doses were below regulatory requirements. The inspectors reviewed radioactive gaseous and liquid effluent release permits, licensee audits, and the first and second quarter 2021 groundwater monitoring reports. The inspectors reviewed

the procedures associated with entering events into the 10 CFR 50.75(g) file and assessed their adequacy.

The inspectors observed a selection of environmental monitoring stations to evaluate their location, placement, and material condition. The inspectors observed several media change-out activities (e.g., TLD change outs) to determine if staff followed appropriate site procedures and if the staff had the appropriate knowledge and training to perform their tasks. The inspectors walked down several locations of groundwater monitoring wells and observed sample collection from a groundwater monitoring well.

b. Observations

The inspectors verified that effluent releases to the environment had been properly controlled, monitored, and quantified in accordance with NRC requirements. The inspectors verified that the first and second quarter 2021 groundwater monitoring reports, the 2021 annual radioactive effluent release report and the 2021 annual radiological environmental operating report demonstrated that calculated doses were below regulatory dose criteria listed in 10 CFR 50, Appendix I "Numerical Guides for Design Objectives and Limiting Conditions for Operations to Meet the Criterion "As Low as is Reasonably Achievable" for "Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents." The inspectors reviewed IPEC's Groundwater Protection Program and determined it was adequate. During a tour of selected environmental monitoring stations, the inspectors did not identify any significant concerns. The licensee entered an incident report (IR-IP2-00471) regarding air sampler location 5 to determine if the location is in accordance with the procedures given the proximity of vegetation growing on the enclosure fence.

The inspectors reviewed the licensee's procedure EN-CY-113 associated with documenting spills or leaks in the 50.75(g) file and interviewed the Radiation Protection Superintendent to understand the process of entering a sampling of historical events into the file. IPEC wrote IR – IP2 00469 to review potential ambiguities in the procedure and take appropriate actions. The inspectors will review corrective actions and the disposition of IR-IP2-00390 describing an overflow of a Unit 2 waste tank in future inspections. The inspectors determined that there had not been any changes to the Off-Site Dose Calculation Manual since the previous inspection under this IP. The inspectors sampled several media change-out activities at Units 1, 2, and 3, including the Unit 1 stack vent, Unit 2 plant vent, and Unit 3 Radioactive Materials Storage Building and verified that the process had been implemented in accordance with site procedures.

The inspectors reviewed the Procedure EN-CY-111, "Radiological Groundwater Protection Program," Revision 11, which implements the voluntary Groundwater Protection Initiative that was set forth by the Nuclear Energy Institute (NEI). The inspectors noted that the licensee had not completed a 5-year review of the groundwater protection initiative program, per the NEI 07-07 Objective 3.2 "Review the Program Under the Auspices of NEI" since 2017. The last review was conducted by EPRI in 2016 and the report was published in 2017. The licensee generated IR-IP2-00438 and is planning to schedule the next independent program review in the near term.

c. Conclusions

No violations of more than minor safety significance were identified.

3.0 Independent Spent Fuel Storage Installation

3.1 Onsite Fabrication of Components and Construction of an ISFSI (Inspection Procedure 60853)

a. Inspection Scope

On June 13-14, 2022, the inspectors conducted a review of licensee and vendor activities in preparation of concrete placement of one section of three areas of pad #2 for the ISFSI. The inspectors reviewed procedures and documents, interviewed site personnel, and made observations of work performance.

b. Observations

The inspectors walked down the construction area of the ISFSI pad and examined the rebar installation to verify that the rebar size, spacing, splice length, and concrete coverage on each side complied with license approved drawings, specifications, procedures, and other associated documents. Additionally, the inspectors evaluated the pad to determine if compliance with applicable codes, the Certificate of Compliance, and Technical Specifications was met. The inspectors also evaluated the concrete framework installation for depth, straightness, and horizontal bracing to determine if the overall dimensions and orientation was in compliance with the licensee approved drawings. The inspectors observed the concrete placement and vibration for the ISFSI slab and observed tests for concrete slump and air content. In addition, the inspectors observed temperature measurements, the collection and preparation of cylinder samples for compression tests, to determine if the work was implemented in accordance with the approved specifications and procedures. The inspectors verified that the pad was being finished in accordance with approved specifications and Code requirements.

Following completion of the 7-day and 28-day compression tests by the independent laboratory, the inspectors reviewed the results to verify that the acceptance criteria were met. The inspectors noted that all tested samples for concrete placement #2 satisfied the acceptance criteria.

c. Conclusions

No violations of more than minor safety significance were identified.

3.2 Onsite Fabrication of Components and Construction of an ISFSI (Inspection Procedure 60853)

HI Lift Crane

a. Inspection Scope

During the inspection period inspectors reviewed documents, observed activities, and discussed with IPEC personnel an auxiliary lifting device, known as the “Hi-Lift” Crane planned for installation in the IP-3 Fuel Storage Building. The licensee requested NRC approval of the Hi-Lift Crane in a License Amendment Request dated March 24, 2020, which described among other topics the crane design, crane and building structural analyses, crane load test requirements, and applicable quality assurance standards. The NRC approved the incorporation of the Hi-Lift Crane into the IP-3 current licensing basis in IP-3 License Amendment 272 dated February 28, 2022 (ML21091A305). An NRC Safety Evaluation was also provided. On April 26-27 and July 12-15, 2022, an NRC inspector observed Hi-Lift Crane fabrication and load testing activities at the Holtec crane fabrication facility. Inspectors interviewed licensee personnel, reviewed procedures, observed storage and handling of crane components, reviewed procurement documents and commercial grade dedication documents, and observed the Hi-Lift Crane “100%” and “125%” load tests. On August 24-26 and September 13-16 inspectors conducted further on-site inspections at the IP-3 facility. Inspectors interviewed IPEC and contractor personnel, reviewed fabrication procedures, and observed drilling activities into both the truck bay wall and the spent fuel pool wall landing where crane anchoring was planned. The inspectors reviewed structural configurations of the support walls and drilled hole locations to determine if they were consistent with the structural analysis results provided to the NRC.

b. Observations

The inspectors performed evaluations to determine if the fabrication, installation, and testing activities performed by the Holtec validates the crane licensing requirements. The inspectors noted that fabrication and testing of the crane is ongoing. Specifically, observation of the final assembly; onsite testing of the crane and control system; and commercial grade dedication testing activities of components are not complete and successful completion and review of these activities will be needed to determine if the crane complies with licensing requirements. At the end of this inspection period, inspector questions remained with the licensee related to the design and capability verification testing of several commercial grade active components.

At the Holtec fabrication facility, inspectors observed portions of activities by Holtec to fabricate crane structural components, testing activities, and testing results for various crane components. The inspectors found that procurement documents identified components procured or fabricated as safety-related or commercial grade. For components fabricated at the facility or procured as commercial grade components the inspectors observed testing and reviewed test results credited to dedicate the components for safety-related applications. The inspectors observed testing of the assembled crane with a 100% and 125% rated load.

At IPEC, inspectors observed drilling operations for crane anchoring and evaluated if the drilling was performed in accordance with licensee procedures and if they met design

requirements. The inspectors validated the structural configuration of the spent fuel and truck bay walls where the anchor system will be installed. Following completion of drilling activities, the inspectors observed that due to the location of existing rebar in the truck bay wall, the anchor hole locations were different than the evaluation submitted as part of the license amendment. Inspectors noted that Holtec had entered this issue into its corrective action program as IR-IP3-00777 and would evaluate if additional structural analysis, discussed in the NRC Safety Evaluation, was required.

c. Conclusions

No violations of more than minor safety significance were identified.

3.3 Operation of an Independent Spent Fuel Storage Installation (Inspection Procedure 60855)

a. Inspection Scope

The inspectors conducted direct observations and performed independent evaluations to determine if the licensee was operating the ISFSI in conformance with their commitments and requirements. The inspectors reviewed changes to the program and procedures since the last inspection, evaluated the effectiveness of the licensee's plans for controlling radiological activities, reviewed selected records, and observed selected licensee activities for loading fuel. The inspectors evaluated the effectiveness of the licensee's management oversight and quality assurance assessments of ISFSI activities.

The inspectors also observed and evaluated Indian Point's ISFSI activities associated with dry cask operations. In addition to the ISFSI activities, the inspectors also reviewed the licensee's activities associated with long-term operation and monitoring of the ISFSI. The inspectors verified conformance with the Certificate of Compliance (CoC), Technical Specifications (TS), and station procedures.

b. Observations

On September 19 – 23, 2022, the inspectors observed dry cask operations for the fourth and fifth canisters loaded during the Unit 2 continuous offload campaign. The activities observed included: (1) Fuel loading; (2) multi-purpose canister (MPC) lid installation; (3) MPC/HI-TRAC heavy lift out of spent fuel pool; (4) blowdowns; (5) forced helium dehydration; (6) stack-up and MPC transfer; (7) HI-STORM lid installation; and (8) survey activities. During performance of these activities, the inspectors verified that procedure use, communication, and coordination of ISFSI activities met established regulatory requirements and IPEC approved site procedures. The inspectors also observed pre-job briefings and determined that the licensee's ability to identify critical steps of the evolution, potential failure scenarios, and human performance tools to prevent errors were effective to ensure procedural adherence and a safe work environment.

The inspectors observed radiation protection technicians as they provided job coverage for the cask loading workers. The inspectors reviewed survey data maps and radiological records from the MPC loadings to date and confirmed that radiation survey levels measured were within limits specified by the TS and consistent with values specified in the final safety analysis report.

The inspectors reviewed corrective action reports and the associated follow-up actions that were generated prior to and during the campaign and verified that issues were entered into the corrective action program, were prioritized, and evaluated commensurate with their safety significance.

c. Conclusions

No violations of more than minor safety significance were identified.

4.0 Exit Meeting Summary

On October 20, 2022, the inspectors presented the inspection results to Mr. Richard Burroni, Site Vice President, and other members of the IPEC organization. No proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT

SUPPLEMENTARY INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

R. Burroni, Site Vice President
B. Noval, Director, Regulatory Affairs
F. Spagnuolo, Decommissioning Manager
D. Budds, Senior Radiation Protection Technician
G. Gross, Radiation Protection Technician
M. Johnson, Regulatory Assurance Manager
M. Kempski, Maintenance Manager
K. Elliott, Mechanical Engineer
P. Lowe, Chemistry Technician
W. Wittich, Senior Licensing Specialist
R. Whitley, Decommissioning Project Manager
A. DeNully, Chemistry Supervisor
G. Delfini, Engineering Supervisor
W. O'Brien, Radiation Protection Superintendent
R. Fucheck, Chemistry and Radiation Protection Manager
R. Daley, CAA Specialist Sr.
R. Passalugo, WCS Project Manager
C. Bohren, Operations Manager
C. Garcia, Environmental Specialist
J. Simpson, GZA, Senior Project Manager
S. Spezzano, GZA, Assistant Project Manager
G. Tiner, HOLTEC Safety Manager
S. Gibson, HOLTEC Contruction Manager
T. Hendrix, HOLTEC Construction Superintendent
M. Giordalli, President Giordalli Construction
D. Hamilton, Field Engineer

ITEMS OPEN, CLOSED, AND DISCUSSED

None

PARTIAL LIST OF DOCUMENTS REVIEWED

Audits and Reports

HDI-IPEC-22-035, 2021 Annual Radiological Environmental Operating Report, May 3, 2022
HDI-IPEC-22-052, Resubmittal of the 2021 Annual Radioactive Effluent Release Report, July 1, 2022
Offsite Dose Calculation Manual, Revision 6
QA-20-2020-IP-01, Quality Assurance Audit Report, Independent Spent Fuel Storage Installations, Revision 13 (06/28/2020)

Engineering Changes

LBDCR U2-DSAR-2022-1, Update of LBDs for Gaseous Waste Disposal System - DSAR, Revision 0
LBDCR U3-DSAR-2022-1, Update of LBDs for Gaseous Waste Disposal System - DSAR, Revision 0
LBDCR U2-TRM-2022-2, Update of LBDs for Gaseous Waste Disposal System - TRM, Revision 0
LBDCR U3-TRM-2022-2, Update of LBDs for Gaseous Waste Disposal System - TRM, Revision 0
EDCR-2880-(S)354, Rev. 0, Stayforms/Angle Iron/Formwork
EDCR-2880-340, Rev. 0, ISFSI & Electrical Rebar Drawing
EDCR-2880-346, Rev. 0, ISFSI Mud Mat Elevations
EC IPC-2021-0017, VC Hatch Enlargement, Revision 0
EC IPC-2021-0018, VC Hatch Enlargement, Revision 0
EC-IPC-2022-067, IP3 FSB Installation of HI-Lift Crane, dated 9/12/2022

Procedures

0-RP-IC-101, Calibration of Portable Ion Chamber Survey Meters, Revision 3
0-RP-RWP-415, RCA Door Control, Revision 0
0-RP-RWP-420, Radiological Controls for Dry Cask Storage, Revision 11
EN-HU-106, Procedure and Work Instruction Use and Adherence, Revision 008
HPP-10309-0001, NCI Oversight Procedure for MPC Loading Operation at IPEC, Revision 1
HPP-2880-0002, Rev.1, Rebar Installation and Inspection Procedure
HPP-2880-0200, MPC Loading at IPEC, Revision 17
HPP-2880-0300, MPC Sealing, Drying, and Backfilling at IPEC, Revision 12
HPP-2880-0332, IP2 Damaged Fuel Container Sheets for Campaign 2, Revision 0
HPP-2880-0400, MPC Stack-Up and Transfer at IPEC, Revision 7
HPP-2880-0500, HI-STORM Operations and Transport at IPEC, Revision 10HSP-186, Rev. 29, Ready Mixed Concrete Testing Requirements For Its “B” Site Construction Application
RP-STD-44, “RCA Door Control,” Revision 0
EN-CY-111, “Radiological Groundwater Protection Program,” Revision 11
IP-SMM-CY-110, “Radiological Groundwater Monitoring Program,” Revision 11
EN-CY-132, “Annual Radiological Environmental Operating Report,” Revision 0

EN-CY-131, “Annual Radioactive Effluent Release Report,” Revision 2
EN-CY-130-05, “Radiological Environmental Monitoring Program (REMP) -Indian Point Energy Center,” Revision
EN-CY-113, “Response to Contaminated Spills/Leaks,” Revision 10

Partial List of Condition Reports Reviewed

CR-IP2-2017-00587
IR-IP2-00359
IR-IP2-00390
IR-IP2-00438
IR-IP3-00103
IR-IP3-00105
IR-IP3-00110
IR-IP3-00326
IR-IP3-00355
IR-IP3-00384
IR-IP3-00476
IR-IP3-00518
IR-IP3-00631
IP2-00168
IP2-00365
IP2-00482
IP2-00514
IP2-00518
IP2-00523
IP2-00530
IP2-00531
IP2-00522

Condition Reports Generated from Inspection

IR-IP2-00408
IR-IP2-00438
IR-IP2-00460
IR-IP2-00469
IR-IP2-00470
IR-IP2-00471
IR-IP3-00464
IR-IP2-00581
IR-IP2-00583
IR-IP2-00588
IR-IP2-00592
IR-IP3-00629
IR-IP3-00673
IR IP3-00777

Licensing Bases Documents

Indian Point 2 Defueled Safety Analysis Report, Rev. 0
Indian Point 3 Defueled Safety Analysis Report, Rev. 0
Indian Point Energy Center Unit 1, 2 & 3, 10 CFR 72.212 Report, Revision 13
Safety Evaluation for Amendment No. 272 to Renewed Facility License No DPR-64, Holtec Decommissioning International, LLC and Holtec Indian Point 3, dated 2/28/22

Work Orders

09419044-14
09419044-18
52798975-01
52927543-01
559260-51
IPC-2022-053-01

Miscellaneous

223-1559, Air Sample Unit 3 95' General Area/34 S/G lift, June 7, 2022
9321-F-10263-3, Turbine Bay and Heater Bay Column Footing Details, Rev. 3
Apparent Cause Evaluation, IP2-00470
Chem Sample Number 07-Jul-22-10009, U3-Plant Vent Millifilter, July 7, 2022
Dry Cask Dose Report, Cask #59, August 26, 2022
EC IP2-2022-054 / Reclassify ISFSI I Pad as ITS-C, Revision 0
EC IPC-2022-059 / Licensing and Operations for Phase 2 Loading at IPEC Unit 2, Revision 0
EN-RP-110, ALARA Committee Meeting Agenda, July 14, 2022
EN-RP-105, Cut and Cap Reactor Coolant System Unit 2 VC, May 6, 2022
EN-RP-303, Source Checking of Radiation Protection Instrumentation, Revision 4
EN-LI-100, PAD Qual Matrix Read and Sign, May 2022
IPEC 22-01, IPEC OSRC Meeting Minutes, January 13, 2022
IPEC-RPT-22-011, Free Release of Steam Generator Secondary Site Upper Vessel, May 2022
IPEC-RPT-22-010, Parameters for ISFSI-Occupancy and Distances to Determine Doses to the Public, March 2022
DECP IPC-2022-035, SFP Cooling Suction Line Re-route, Revision 0
DTE, SFP Cooling System Suction Pipe Mechanical Plug Isolation, Revision 0
HI-2210967, Assembly Decay Heat Calculations for Indian Point Unit 2 and 3, Revision 1
HI-2210651, Fuel Loading Plan for Indian Point Unit 2 and Unit 3, Revision 6
HPP-2880-0015, HI-LIFT Factory Acceptance Test Procedure, Rev. 1
HI-2188549, IPEC Unit 3 HI-LIFT Specification, Rev. 3
HI-2210873, Failure Modes and Effects Analysis (FMEA) for IP3 HI-LIFT Mechanical and Control Systems, Rev. 0
IP2 Defueling Readiness Review presentation, dated July 29, 2022
LA220047-D-001, R2 SFP Cooling Suction Line Re-Route
LA220047-C-001, Re-route Pipe Stress Evaluation, Revision 1
LA220047-C-002, Re-route Flow Evaluation, Revision 1
LA221290-LR-001, Qualitative Evaluation of Containment Opening – Indian Point Units 2 & 3, July 11, 2022
PAD for Piping Change Modification, Revision 0
LA220047-D-003, #329 Isolation Option, Revision 1

L-2-2022-081, June 8, 2022
L-3-2021-104, February 7, 2022
Nuclear Air Cleaning Handbook, Design, Construction, and Testing of High-Efficiency Air Cleaning Systems for Nuclear Application, May 4, 2006
Phase 1 IPEC Organization Chart, June 6, 2022
22-007, Transient Combustible Evaluation Fire Zone 930, January 3, 2022
Radiological Surveys, Various
Radiological Survey, ISFSI Pad Set Down of HI-STORM #1543, November 8, 2021
ALARA Plan, Load 28 MPCs and place on the ISFSI pad, July 28, 2022
RWP 20222053, Cut/Cap Reactor Vessel Cold and Hote Leg Nozzles at Biowall Penetrations at Unit 2 in support of Decommissioning, Revision 00
RWP 20222029, Unit 2 Dry Cask Storage and associated work, Revision 00
Whole Body Count review, Unit 3 VC June 8, 2022
Sample Process Number 758262, U3-Plant Vent Millifilter, July 7, 2022
U3 – RP Nasal Swab Gamma Spectroscopy Results, June 8, 2022
Qualifications for various RP personnel
Whole Body Count Results June 8, June 9, June 10, and June 13, 2022
2022 Annual Portland Cement Concrete Plant Approval for Brewster NY, dated March 21, 2022
Purchase Order 126103, Rev. 3, Reinforcing Steel
Purchase Order 128862, Rev. 0, Concrete
ERDA 76-21, Nuclear Air Cleaning Handbook, May 4, 2006

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ALARA	As Low As Reasonably Achievable
CAP	Corrective Action Program
CFR	*Code of Federal Regulations*
CoC	Certificate of Compliance
DRP	Discrete Radioactive Particle
DSAR	Defueled Safety Analysis Report
DQAP	Decommissioning Quality Assurance Program
Entergy	Entergy Nuclear Operations, Inc.
EC	Engineering Change
EP	Emergency Plan
FSBAFS	Fuel Storage Building Air Filtration System
GPO	Government Printing Office
Holtec/HDI	Holtec Decommissioning International, LLC (HDI)
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEC	Indian Point Energy Center
IP-1	Indian Point Unit 1
IP-2	Indian Point Unit 2
IP-3	Indian Point Unit 3
ISFSI	Independent Spent Fuel Storage Installation
MPC	Multi-purpose canister
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NCV	Non-Cited Violation

ODCM	Offsite Dose Calculation Manual
PHE	Public Health Emergency
RAI	Request for Additioonal Information
RP	Radiation Protection
RVI	Reactor Vessel Internals
RWP	Radiation Work Permits
SAFSTOR	Safe Storage
SSCs	Structures, Systems, and Components
SFP	Spent Fuel Pool
TS	Technical Specifications
VC	Vapor Containment