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

April 10, 2008

Docket Nos. 05000247
07200051

License No. DPR-26

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

SUBJECT: INSPECTION REPORT 05000247/2007009 AND 07200051/2007001, INDIAN POINT NUCLEAR GENERATING UNIT 2

Dear Mr. Pollock:

On February 25, 2008, the NRC completed an inspection of the Indian Point Nuclear Generating Unit 2 Independent Spent Fuel Storage Installation (ISFSI) pre-operational activities and the initial loading of spent fuel into the ISFSI facility. The inspection period began on July 23, 2007. The findings of the inspection were discussed with you and members of your staff during an exit meeting on February 25, 2008. The enclosed report presents the results of that inspection.

The inspection reviewed activities associated with the preparation, movement, and placement of spent fuel from the Unit 2 spent fuel pool into the ISFSI facility. The inspection included field observations, examination of procedures and documents, and interviews with personnel. Within the scope of this inspection, no violations were identified. However, during the pre-operational walkthrough that simulated the placement of spent fuel into the multi-purpose canister (MPC) and removal of the MPC from the spent fuel pool, the inspectors observed some apparent human performance and procedural issues. In response to the inspectors' concerns, Entergy developed additional oversight measures, as discussed in a letter to the NRC on January 2, 2008, for the initial spent fuel loading campaign. The inspectors observed that Entergy subsequently loaded and safely transferred the spent fuel from the Unit 2 spent fuel pool to the IFSFI.

In accordance with Section 2.390 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations (CFR), a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

We appreciate your cooperation with us during this inspection.

Sincerely,

/RA/
Raymond Lorson, Chief
Decommissioning Branch

Enclosure:
Inspection Report No. 05000247/2007009 and 07200051/2007001

cc w/encl:
Senior Vice President, Entergy Nuclear Operations
Vice President, Operations, Entergy Nuclear Operations
Vice President, Oversight, Entergy Nuclear Operations
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L. Puglisi, Supervisor, Town of Cortlandt
Congressman John Hall
Congresswoman Nita Lowey
Senator Hillary Rodham Clinton
Senator Charles Schumer
G. Shapiro, Senator Clinton's Staff

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I
INSPECTION REPORT

Docket Nos.:	05000247 and 07200051
License No.:	DPR-26
Report Nos.:	05000247/2007009 and 07200051/2007001
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Indian Point Nuclear Generating Unit 2
Location:	450 Broadway Buchanan, NY 10511-0249
Inspection Dates:	July 23, 2007 through February 25, 2008
Inspectors:	John Nicholson, Health Physicist, Region I Robert Prince, Health Physicist, Region II Robert Temps, Senior Safety Inspector, Nuclear Materials Safety and Safeguards Edwin Gray, Senior Reactor Inspector, Region I Suresh Chaudhary, Reactor Inspector, Region I
Approved By:	Raymond Lorson, Chief Decommissioning Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

IR 05000247/2007009 and 07200051/2007001; 07/23/2007 - 02/25/2008; Indian Point Nuclear Generating Unit 2; Independent Spent Fuel Storage Installation (ISFSI) NRC Dry Run and Initial Loading

Entergy selected the Holtec International HI-STORM 100 Cask System for dry storage of spent nuclear fuel at Indian Point Nuclear Generating Unit 2. The HI-STORM 100 Cask System is licensed by the Nuclear Regulatory Commission (NRC) as Certificate of Compliance (CoC) No. 1014. The NRC inspection, conducted by five NRC radiological and engineering specialist inspectors, reviewed Entergy's preparation for and conduct of the transfer of spent fuel from the Indian Point Unit 2 spent fuel pool to the ISFSI.

The inspectors reviewed equipment performance, programmatic controls and documentation, and personnel performance to assess Entergy's compliance with the Holtec International Certificate of Compliance, Technical Specifications, and 10 CFR Part 72 requirements. Specific inspection areas included: welding techniques, installation and testing of the fuel storage building handling gantry crane, security and radiological controls, quality assurance, worker training, reactor engineering, and spent fuel handling activities. Within the scope of this inspection, no violations of NRC requirements were identified.

During the pre-operational activity in December 2007, that simulated the placement of spent fuel into the multi-purpose canister (MPC) and removal of the MPC from the spent fuel pool, the inspectors observed some apparent human performance and procedural issues. In response to the inspectors' concerns, Entergy developed additional oversight measures, as described in a letter to the NRC on January 2, 2008, (ML080090168) for the initial spent fuel loading campaign. During subsequent observations of the spent fuel loading activities, the inspectors observed that these additional oversight measures had been implemented and also that the fuel handling activities were conducted safely. Entergy commenced loading of spent fuel into the initial canister on January 1, 2008, and the first loaded HI-STORM was placed onto the ISFSI pad on January 11, 2008.

REPORT DETAILS

Summary of Facility Activities

Preparations for loading spent fuel from the Unit 2 spent fuel pool (SFP) to the Holtec International Dry Cask Storage System (DCSS) were initiated during this inspection period. Upon completion of the pre-operational testing activities, on December 23, 2007, Entergy began the process to support the transfer of Unit 2 spent fuel to the onsite Independent Spent Fuel Storage Installation (ISFSI).

Indian Point Unit 2 completed initial loading of the first multi-purpose canister (MPC) on January 1, 2008. The loaded MPC was placed on the ISFSI pad on January 11, 2008. Two additional MPCs were loaded during this initial campaign. The next fuel loading campaign is planned for later this year and is expected to include the transfer of Unit 1 spent fuel to the onsite ISFSI.

1. Preoperational Test Program

a. Inspection Scope (60854)

The Certificate of Compliance (CoC) for the Holtec International HI-STORM 100 Cask System requires Entergy to conduct preoperational testing (i.e. dry runs) to demonstrate the loading, closure, and transfer of the cask system prior to the first loading of spent fuel assemblies (ML051580478). The NRC conducted several onsite inspections to observe Entergy's demonstration of the activities required by the CoC. The inspection consisted of field observations, interviews with cognizant personnel, and a review of Entergy's documentation.

The work packages for the dry run activities were reviewed. The work packages contained the applicable procedures associated with the scope of the dry run activities. In addition, condition reports related to DCSS components and equipment were reviewed to ensure that issues were adequately dispositioned prior to commencement of dry run activities.

b. Observations and Findings

No findings of significance were identified.

During the period of December 11-13, 2007, the inspectors observed the placement of the HI-TRAC containing an MPC (i.e., stackup activities) onto the HI-STORM overpack, transfer of the MPC from the HI-TRAC to the HI-STORM, transport of the HI-STORM overpack to the ISFSI along the designated haul path, and placement of the HI-STORM onto the ISFSI pad. Entergy conducted a pre-job briefing on December 10, 2007, with personnel involved with the dry run activities. The briefing was comprehensive and effectively covered key aspects of the evolution, including procedural adherence expectations, safety aspects of the activities, use of peer checks, use of three-way communications, as well as a detailed overview of the tasks to be performed. Radiological conditions were simulated and appropriate measures implemented to provide a degree of realism during the performance of the dry run. The inspectors

noted that Entergy issued neutron dosimetry to workers and posted affected areas with simulated radiological postings in order to prepare workers for the potential radiological conditions associated with the transfer of spent fuel. Entergy had obtained radiological survey data from other licensees and used this data to communicate expected radiation levels to workers at key stages during the dry run.

During the period of December 22-23, 2007, the inspectors observed the movement of the HI-TRAC to the cask storage area of the SFP and also observed the fuel handlers place a dummy fuel assembly into several different MPC storage cells while the HI-TRAC was positioned in the cask placement area of the SFP. Movement of the HI-TRAC to and from the SFP was performed in a deliberate manner in strict compliance with designated heavy load paths. The inspectors noted effective coordination of the work activity with the Unit 2 main control room. SFP water level was properly controlled during all phases of HI-TRAC handling activities.

During this dry run observation, the inspectors observed that some activities were not performed as expected. Specifically, the inspectors observed some examples where Entergy personnel appeared to perform additional steps during the removal of the simulated MPC from the Unit 2 SFP that were not described in the written procedure. In addition, the inspectors observed that some workers did not appear to follow site industrial safety guidelines related to fall protection. In response to these observations, the inspectors questioned the effectiveness of Entergy's oversight for these activities. Entergy subsequently developed enhanced controls for the initial fuel loading activities as described in a letter to the NRC dated January 2, 2008 (ML080090168). The inspectors observed that the additional measures were implemented during the initial fuel loading activities.

c. Conclusions

Entergy demonstrated the ability to safely place the HI-TRAC onto the HI-STORM and subsequently transport the loaded HI-STORM to the ISFSI. The placement of an MPC into the HI-TRAC to verify fit and confirmation that the MPC fuel storage cells were capable of accepting Unit 2 spent fuel assemblies was successfully demonstrated. Entergy successfully demonstrated the ability to insert and retrieve an MPC from the HI-TRAC and HI-STORM. Individuals were able to perform their assigned functions and were knowledgeable of their responsibilities. Entergy appeared to adequately address human performance and procedural issues identified by the inspectors during one of the dry run activities.

2. Review of Evaluations

a. Inspection Scope (60856 and 60857)

The inspectors evaluated Entergy's compliance with the requirements of 10 CFR 72.212 and 10 CFR 72.48. The inspection consisted of interviews with cognizant personnel and a review of license documentation.

Entergy is required, as specified in 10 CFR 72.212(b)(1)(I), to notify the NRC of the intent to store spent fuel at an ISFSI at least 90 days prior to the first storage of spent fuel. Entergy Nuclear notified the NRC on December 29, 2003, of their intent to use the Holtec International HI-STORM 100 Cask System in accordance with CoC Number 1014. This letter met the requirements for the 90-day notification. Entergy is required, as specified in 10 CFR 72.212(b)(1)(ii), to register the use of each cask with the NRC within 30 days of using that cask to store spent fuel. Entergy provided this registration to the NRC in a letter dated February 5, 2008.

b. Observations and Findings

No findings of significance were identified.

A written evaluation is required per 10 CFR 72.212(b)(2)(i), prior to use, to establish that the conditions of the CoC have been met. Entergy documented its written evaluation to confirm the ISFSI was within the licensed scope in "Entergy Nuclear, 10 CFR 72.212 Evaluation Report Revision 6," dated July, 2, 2006, and Appendix F of this document, "IPEC Unit 2 Specific Information." Based on the review of the 10 CFR 72.212 report, the inspectors questioned whether Entergy's evaluation contained a sufficient level of detail to reach some of the stated conclusions. For example, in one section, the analysis indicated that a forest fire would not have an adverse impact on the ISFSI, however, the report did not contain specific details to reach this conclusion. In response to this question, Entergy provided an additional level of detail to this report. The inspectors also questioned Entergy's site specific analysis involving the lifting of the HI-STORM above the Technical Specification limit prior to engagement of the redundant locking pins of the vertical cask transporter. This issue was resolved during the dry run when it was determined that the Technical Specification lift height limit was sufficient to lift the loaded HI-STORM off the low profile transporter (LPT).

Entergy had performed written evaluations which confirmed that the conditions set forth in the CoC had been met, the ISFSI pad had been designed to support the stored load of the casks, and the requirements of 72.104 had been met. Applicable reactor site parameters, such as fire and explosions, tornados, wind-generated missile impacts, seismic qualification, lightning, flooding, and temperature**,** had been evaluated for acceptability with the bounding values specified in the HI-STORM 100 Cask System Safety Analysis Report (SAR) and the NRC Safety Evaluation Report (SER).

A 50.59 evaluation of the construction and operation of the ISFSI and plant interfaces had been performed to demonstrate that changes to plant Technical Specifications, or a license amendment were not required and that ISFSI-related work activities would not impact safe operation of Unit 2. Based on the inspectors' review of the 50.59 evaluation, Entergy agreed to enhance the evaluation to provide additional information to better clarify some areas of the report. No safety concerns were identified.

The inspectors reviewed selected referenced records and procedure changes related to the security, emergency preparedness, training, health physics, and quality assurance programs. The inspectors interviewed cognizant personnel to confirm that they were

knowledgeable of the impact of ISFSI-related activities. For instance, the inspectors interviewed a Unit 2 Operations shift manager concerning the availability and knowledge of the Emergency Action Levels (EALs) associated with ISFSI operations. The shift manager readily retrieved the EAL chart and demonstrated awareness of the ISFSI EALs. The emergency plan, quality assurance program, radiological safety program, and training program had been evaluated and their effectiveness were determined not to be decreased by ISFSI activities.

c. Conclusions

The inspectors had some questions related to the level of detail contained in the Entergy 72.212 report and a 10 CFR 50.59 ISFSI-related safety evaluation. Entergy subsequently provided additional detail to these documents.

3. Fuel Characterization and Verification

a. Inspection Scope (60854)

The CoC for the HI-STORM 100 cask system specifies the parameters that must be met in order to allow spent fuel to be stored at the ISFSI. The inspectors evaluated Entergy programs to verify that spent fuel assemblies selected for storage met the applicable requirements of the CoC. The inspection consisted of interviews with cognizant personnel and a review of licensee documentation.

b. Observations and Findings

No findings of significance were identified.

The inspectors reviewed Entergy's process for selecting and verifying fuel assemblies for placement into dry cask storage (DCS). The inspectors reviewed various documents associated with the qualification, characterization, and selection of fuel assemblies for storage at the ISFSI.

Technical Specifications require that selected fuel assemblies be visually inspected, independently identified, be free of cladding defects, and be within specified limits for such parameters as fuel enrichment, burn-up, and decay heat output. Entergy had developed procedures to ensure the proper characterization of loaded fuel to meet the requirements of the CoC. The inspectors discussed the fuel selection process with cognizant personnel and determined that individuals were knowledgeable of the Technical Specification requirements. The inspectors noted that Entergy had made arrangements to perform a general cleaning of the Unit 2 SFP prior to loading of the first MPC. The inspectors discussed the results of the cleaning effort with cognizant personnel after the work was completed, and noted that the activity resulted in the removal of miscellaneous loose debris that was previously identified to be present on some fuel assemblies. Fuel Assembly Qualification Data Sheets for the 32 fuel assemblies selected for loading into the first MPC were reviewed to confirm that the fuel

assemblies met the requirements of the CoC. The inspectors noted that the selected fuel assemblies met all the appropriate Technical Specification requirements for placement into an MPC for dry storage. Supporting documentation adequately characterized the selected fuel assemblies for loading into the first MPC. For the initial MPC, the inspectors viewed the recording of the selected fuel assemblies as they were placed in the MPC.

c. Conclusions

Entergy had developed a program to ensure the proper selection and characterization of fuel assemblies for DCS in accordance with approved procedures. Entergy documentation supported the proper characterization of the first 32 fuel assemblies to be loaded and demonstrated that these fuel assemblies met the design parameters specified in the CoC.

4. Welding and Nondestructive Testing

a. Inspection Scope (IP 60854)

The inspectors observed and evaluated the welding and nondestructive examination (NDE) processes to determine whether the Indian Point staff and Entergy's contractor had developed the capability to properly weld and perform NDE on the type of MPC to be used for storage of spent fuel at the Indian Point site.

b. Observations and Findings

No findings of significance were identified.

Entergy utilized the services of a dedicated contractor welding and nondestructive examination team experienced in the MPC type used at Indian Point. The welding portion of the dry run was conducted as a separate work activity and was observed by the inspectors on September 4-5, 2007. The inspectors observed the welding equipment setup, welding of the mockup shield cover, visual weld examination, penetrant testing, and helium leak-testing of the shield cover and drain/vent port covers. Portions of the applicable work instructions and procedures were reviewed. The inspection included verification that the activities were accomplished in accordance with the commitments and requirements contained in the SAR, the NRC's SER, the CoC, Entergy's Quality Assurance (QA) program, and 10 CFR Part 72. The inspectors discussed the work steps and plans with those involved and reviewed portions of various controlling procedures to verify their adequacy. The inspectors also examined the welding equipment, observed welding in progress on an MPC shield cover, and reviewed welder qualification records and portions of the welding and NDE procedures.

The inspectors attended the pre-job briefing on January 3, 2008, for welding the cover onto the first MPC that had been loaded with spent fuel. The pre-job briefing was thorough and covered key aspects of the activity. The inspectors noted a thorough

review of industry operating experience was provided, associated with issues relating to welding of MPC lids.

The inspectors observed preparations for welding activities on January 3, 2008. Contractor personnel were knowledgeable of their work activities and worked closely with Entergy personnel. Rigging and handling of the lid, welding machine, and associated equipment were performed in a safe manner. The inspectors discussed the methods employed by the crane operator and riggers regarding the selection of slings, inspecting slings prior to use, and confirmation that slings were approved for use. The individuals were knowledgeable of procedural requirements and followed approved rigging and lifting practices.

The welding machine was prepared for use in accordance with approved procedures. Personnel were meticulous in ensuring proper alignment of the welding machine and that support equipment was properly prepared before welding was allowed to commence. Liquid penetrant testing and visual inspection of welds was performed in a methodical manner in accordance with procedural and CoC requirements.

c. Conclusions

Entergy successfully demonstrated the ability to adequately weld and perform NDE of MPCs. Welding activities associated with MPC closure were performed in accordance with approved procedures. Personnel were qualified to perform their assigned functions.

5. Heavy Loads Program

a. Inspection Scope (60854)

Entergy was required to demonstrate the adequacy of their heavy loads program pertaining to the movement of the HI-TRAC and MPC from the spent fuel pool to the fuel storage building (FSB) truck bay and placement of the HI-TRAC on top of the HI-STORM in the FSB truck bay. The inspection consisted of field observations, interviews with cognizant personnel, and reviews of Entergy documentation.

b. Observations and Findings

No findings of significance were identified.

The Indian Point Unit 2 FSB Gantry Crane is a single trolley, seismic Category 1, overhead crane with a 110-ton capacity main hoist. The licensee implemented a design change to install the gantry crane in the Unit 2 FSB. The crane installation, preoperational checks and testing were completed prior to commencement of training activities to support dry run readiness work. The inspectors reviewed the design modification and supporting documentation and noted that the newly installed gantry crane met the requirements of ASME NOG-1, “Rules for Construction of Overhead and

Gantry Cranes," and NUREG-0554, "Single Failure Proof Cranes for Nuclear Power Plants," and NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants." The gantry crane included various controls and interlocks to ensure that loads could be stopped and held in a safe manner in the event of fault indications or if certain parameters exceeded specified limits (e.g., over-speed, over-travel, and over-load).

The inspectors reviewed the initial load test results provided by the manufacturer. The load test was performed by the manufacturer upon final assembly of the crane at the manufacturer's facility. This test was performed by the supplier of the crane and witnessed by Entergy personnel. The test plan included 100% and 125% load tests on the main hoist, trolley, and gantry components. The test plan also included testing of emergency brakes and limit switches, and verification of operational parameters. The inspectors reviewed the completed test package and noted that test results were within prescribed specifications provided in the test plan. No concerns were identified.

To ensure that the crane could not travel over areas of the SFP where spent fuel was stored, Entergy designated restricted load paths when handling heavy loads. Additionally, the design of the new gantry crane physically limits the movement of heavy loads beyond the cask loading area of the SFP, thus preventing the movement of loads over areas of the SFP containing stored assemblies.

The gantry crane is used to move the HI-TRAC containing an MPC from the cask loading area of the SFP to the cask preparation area located in the FSB truck bay and back again. The crane is also utilized to lift the HI-TRAC onto the HI-STORM in the FSB truck bay. The gantry crane main hoist is uniquely designed to engage the HI-TRAC lifting trunnions. Procedure 2-DCS-002-GEN, "HI-TRAC Inspection, Handling, and Initial Assembly," addressed the various inspection requirements for the trunnions and specified the applicable acceptance criteria. The inspectors observed personnel performing visual inspections and pre-operational checks of the gantry crane and associated lifting devices in accordance with approved procedures prior to lifting and movement of the HI-TRAC.

Over the course of the dry run, the inspectors observed all the movement pathways of a fully-loaded HI-TRAC. Pre-lift job briefings were thorough and emphasized safety aspects of handling heavy loads. Individual responsibilities were clearly communicated during pre-job briefings. Crane operators, spotters and members of the lifting team were knowledgeable of their responsibilities. Movements of heavy loads were performed in a deliberate and safe manner. The inspectors noted that effective communication was maintained between the load director, crane operator and members of the lifting team while lifts were in progress. Positive controls were established to keep non-essential personnel away from the work area to minimize distractions of the lift team.

At the conclusion of the dry run as the empty MPC and HI-TRAC were being lifted out of the SFP back to the truck bay floor, the inspectors observed that the required minimum clearance of the HI-TRAC over the crane cross member did not appear to be met. The inspectors asked Entergy personnel to measure the clearance of the HI-TRAC over the

gantry crane cross member as it approached the cross member during travel to the SFP for the initial loading. The crane design specifications require a minimum clearance of 6 1/2" between the cross member and the bottom of the HI-TRAC.

The clearance of the gantry crane cross member by the bottom of the HI-TRAC was measured at the start of the initial loading activity as the HI-TRAC was lifted from the truck bay floor to travel to the SFP. The clearance was measured before the HI-TRAC moved over the crane cross member. The minimum clearance was not met. The HI-TRAC was lowered to the truck bay floor and lifted three times and each time the amount of clearance decreased. The problem was attributed to a faulty crane upper limit switch that was replaced.

c. Conclusions

The inspectors identified an issue with the clearance of the HI-TRAC over the gantry crane cross member. The clearance was measured prior to the initial loading as the empty MPC and HI-TRAC were being lifted from the FSB truck bay floor to the SFP. The HI-TRAC clearance was measured before it came over the gantry crane cross member. A faulty crane upper limit switch was replaced and the proper clearance was obtained. Entergy revised the procedure to include confirming the clearance over the SFP wall and the crane cross member anytime the HI-TRAC would move over this position.

6. Forced Helium Dehydration and Helium Backfill Operations

a. Inspection Scope (60854)

Entergy was required to drain the MPC, dehydrate the MPC with helium, and backfill the canister with helium. The inspection consisted of a review of the Entergy's equipment and procedures, field observations, and interviews with cognizant personnel.

b. Observations and Findings

No findings of significance were identified.

Over the period of December 3-6, 2007, NRC inspectors reviewed the forced helium dehydration and helium backfilling sequence. The sequence involves draining water from the MPC, drying the MPC, backfilling the MPC with helium, and helium leakage testing. Entergy utilized a forced helium dehydration system (FHD) to perform these activities. The FHD is a modular system equipped with a control panel to operate pumps, manipulate valve positions and display overall equipment configuration during the drying and helium backfilling activities. Entergy procedure 2-DCS-023-GEN, Forced Helium Dehydrator System Operations, provides the instructions for operating the FHD system.

The inspectors observed the pre-job briefing on December 3, 2007. The briefing was thorough and addressed pertinent aspects of the relevant procedures and CoC. Entergy provided simulated radiological conditions based on industry experience. This data was utilized as simulated radiation levels during the actual performance of the dry run to promote as low as reasonably achievable (ALARA) awareness. Procedure steps were strictly followed. The field supervisor maintained effective oversight of work activities.

Entergy demonstrated the capability, using a mockup, to drain an MPC and to perform drying and helium backfilling of an MPC during the preoperational tests**.** The technique for the helium leak testing of the final closure welds was demonstrated on a mockup canister during the welding portion of the dry run inspection. The helium leak testing was performed by experienced contract personnel qualified to perform NDE on these components. The FHD process was performed in accordance with approved procedures. The required vacuum pressure and dew point readings were achieved and the pressure maintained well within the Technical Specifications limits. Helium backfilling operations were also performed in accordance with approved procedures. Individuals performing the leak test demonstrated a good understanding of the requirements for performing helium leak tests and the associated acceptance criteria.

A supplemental cooling system was available to support MPC drying and helium backfilling activities. The supplemental cooling system is provided, if required to provide cooling to a loaded MPC in the event that the FHD system was not available. Entergy personnel were knowledgeable in the operation of the supplemental cooling system and also of various contingency measures that could be employed to ensure an adequate cooling supply to an MPC.

c. Conclusions

Entergy demonstrated the capability to perform drain-down, forced helium dehydration, and helium backfilling of an MPC. Procedures and processes were sufficient in achieving the required limits specified in the Technical Specifications, ensuring minimal water content of loaded MPCs, and maintaining an inert atmosphere to support the safe storage of spent fuel assemblies. Adequate arrangements to provide supplemental cooling to an MPC during FHD operations were established.

7. Training and Qualifications

a. Inspection Scope (60854)

Entergy's training program was reviewed to verify that appropriate training requirements were identified for DCS tasks and that personnel were qualified to perform DCS related activities. Entergy's training program was reviewed to verify that the required elements described in 10 CFR 72 Subpart I were incorporated into the DCS training program. The inspection consisted of a review of Entergy documentation, interviews with cognizant personnel, and field observations.

b. Observations and Findings

No findings of significance were identified.

The inspectors interviewed the training instructor regarding training and qualification of personnel performing DCS activities. Job task analyses (JTA) were utilized in the development of ISFSI-related training modules. The inspectors noted that the JTAs were used to develop formal classroom training sessions and served as the basis for identifying the pertinent elements of on-the-job training modules. Several training modules were specifically developed for DCS activities. These modules covered such activities as general overview of the DCS project to job-task specific modules covering such activities as operation of the vertical cask transporter (VCT), MPC drying and helium backfilling, and handling and movement of the HI-TRAC and HI-STORM.

The inspectors reviewed selected training modules and noted that they were comprehensive and adequately covered training aspects of a given task. The inspectors noted that Entergy had developed a student qualification matrix that designated individuals qualified to perform a given task based upon successful completion of the required training modules. Training and qualification consisted of satisfactory completion of classroom training and a written examination, followed by on-the-job training and evaluation sessions. The inspectors reviewed selected names from the qualification matrix and reviewed training records to verify that individuals observed in the field were qualified for tasks they were performing. No concerns were identified.

The inspectors requested that Entergy personnel confirm the status of medical qualifications for two individuals designated as crane operators for lifting of heavy loads. Upon investigation Entergy discovered that the medical examinations for these individuals had lapsed. Further investigation revealed that the medical examination dates were inadvertently eliminated when Entergy recently implemented a new computerized qualification and training data base. Medical examination dates were not included in the new data base for crane operators. The inspectors noted that neither individual had operated a crane while handling a heavy load during the period when their medical examinations were overdue.

c. Conclusions

The inspectors identified an issue with the medical clearances for two crane operators responsible for lifting heavy loads. Entergy entered the issue in their corrective action program and implemented immediate corrective actions that included removal of the individuals from the qualified crane operator data base until their medical examinations could be updated. Appropriate training modules were developed.

8. Initial Loading of the ISFSI

a. Inspection Scope (60855)

The inspectors observed the loading of spent fuel into the first MPC on January 1, 2008. The inspection consisted of field observations, review of license documentation, and interviews with cognizant personnel.

b. Observations and Findings

No findings of significance were identified.

The inspectors observed the first loading of spent fuel into an MPC. Following NRC observations of pre-operational dry run activities in December 2007, Entergy implemented additional measures to enhance the oversight of spent fuel loading as described in a January 2, 2008, Entergy letter to the NRC (ML080090168). The pre-job brief was conducted with the same thoroughness observed at several other pre-job briefings. The inspectors reviewed the MPC loading documentation to confirm that the selected fuel assemblies that had been previously characterized for loading were configured as described. The inspectors reviewed the visual recording of the fuel verification directly from the hard drive located in the FSB with the assistance of two Westinghouse contract personnel. The DVD recording of the fuel loading for the initial MPC did not clearly show each fuel bundle. The fuel transfer forms were independently witnessed by a second individual during loading of the spent fuel assemblies into the MPC. Documentation was accurate and completed in accordance with approved procedures. The drain tube was installed on the MPC lid and the lid was placed on the MPC. Entergy personnel moved the MPC from the SFP in a controlled and deliberate manner and placed it on the truck bay floor. Radiation Protection (RP) personnel decontaminated the MPC to a level that allowed the welding crew to perform their activities in regular work clothes. The welding crew worked with license personnel to safely rig and lift the welding machine to the top of the MPC.

Several radiation monitors were staged at strategic locations in the immediate vicinity of the SFP and areas adjacent to MPC handling operations. These monitors were equipped with local alarms and remote readout displays. The inspectors discussed the purpose and function of these monitors with Entergy personnel and determined that individuals were aware of the actions to take in the event of a radiation monitor alarm.

c. Conclusions

Entergy safely loaded spent fuel into the first MPC. Work activities were performed in accordance with approved procedures and met the requirements of technical specifications. Spent fuel loaded into the MPC was properly characterized. The MPC was properly sealed, tested, surveyed and inspected, and met the requirements of the CoC.

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Joseph Pollock, Site Vice President, and members of his staff at the conclusion of the dry run and initial loading inspection on February 25, 2008.

The inspectors asked the Entergy whether any materials examined during the inspection should be considered proprietary. Some proprietary items were reviewed during the inspection but proprietary information is not presented in this report.

SUPPLEMENTAL INFORMATION
PARTIAL LIST OF PERSONS CONTACTED

Licensee
Ryan Aquiar, Security Shift Supervisor - Nuclear Security
Dave Ashby, Instructor Mechanical, Rotation
John Baker, Unit 2 - Shift Operations Manager
Robyn Bentley, Public Relations
*Pat Conroy, NSA Director
*Joseph Defrancesco, Project Manager - Dry Fuel Storage
Ramon Escaba, DCS Team Member
Jose Flores, DCS Team Member
Mel Garofalo, QA Supervisor
Dan Gagnon, Site Security Manager, Acting
Bob Hansler, Supervisor - Reactor Engineering
*Frank Inzirillo, Manager, Quality Assurance
John Janicki, Dry Cask Storage - Dry Fuel Storage Superintendent
Richard Jones, DCS Team Supervisor
Becky Martin, Senior Emergency Planner
*Don Mayer, Director, Unit 1
*John McCann, Unit 1 Project Licensing
Kathy McMullin, Public Relations
Sean Meighan, Radiation Protection/Chemistry - Specialist
William Meyer, Supervisor - Dry Storage Cask
Kelley Pettis, Access and Fitness for Duty Security Coordinator
*Joseph Pollock, Site Vice President
Mike Powell, DCS Team Supervisor
William Osmin, Senior Lead Reactor Engineer
Ian Ramcharitar, DCS Team Member
Michael Rutkoske, Dry Cask Storage - Project Manager
*John Skonieczny, Project Engineer
Kevin Slesinski, DCS Team Member
*Ann Stewart, Licensing
Jeff Stewart, Radiation Protection Supervisor
*Tony Vitale, General Manager, Plant Operations
*Bob Walpole, Manager, Licensing
Robert Williams, DCS Team Member
Brian Zandstra

***Denotes those present at the exit meeting.**

INSPECTION PROCEDURES USED

60854 Preoperational Testing of an Independent Spent Fuel Storage Installation
60855 Operation of an Independent Spent Fuel Storage Installation
60856 Review of 10 CFR 72.212(b) Evaluations
60857 Review of 10 CFR 72.48 Evaluations

ITEMS OPENED, CLOSED, DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Entergy Nuclear, 10 CFR 72.212 Evaluation Report, dated July, 2, 2006

Entergy Nuclear, 10 CFR 72.212 Evaluation Report, Site Specific, Appendix F Indian Point Energy Center Unit 2, Rev. 1 and Rev 2

2-DCS-001-GEN, Rev 1, Multi-Purpose Canister (MPC) Inspection, Handling and Fitup

2-DCS-002-GEN, Rev 0, HI-TRAC Inspection, Handling and Initial Assembly

2-DCS-003-GEN, Rev 0, HI-STORM Inspection, Handling and Fitup

2-DCS-005-GEN, Rev 0, Ancillary Equipment Pre-Operational Inspection and Functional Checks

2-DCS-006-GEN, Rev 2, Vertical Cask Transporter (VCT) Operation

2-DCS-008-GEN, Rev 2, Unit 2 MPC Loading and Sealing Operations

2-DCS-009-GEN, Rev 2, MPC Transfer & HI-STORM Movement

2-DCS-010-GEN, Rev 0, Ancillary Equipment Maintenance and Layup Procedure

2-DCS-011-GEN, Rev 0, HI-STORM Annual Inspection

2-DCS-012-GEN, Rev 2, Unit 2 MPC Unloading Operations

2-DCS-016-GEN, Rev 0, DCSS Special Lifting Devices Inspection

2-DCS-023-GEN, Rev 3, Forced Helium Dehydrator (FHD) System Operations

2-DCS-025-GEN, Rev 0, Air Pad Operator

2-DCS-026-GEN, Rev 1, FSB 110 Ton X-Sam Gantry Crane Operations

2-DCS-031-GEN, Rev 0, Fuel Selection for Dry Cask Storage

2-DCS-032-GEN, Rev 0, Dry Cask Loading Readiness Guide

2-DCS-033-GEN, Rev 0, Dry Cask Abnormal Event Procedure

2-DCS-034-GEN, Rev 0, HI-TRAC Annual Inspection

Work Order 51314731-07, Install/Remove HI-TRAC Mock-up in SFP Cask Load Pit #2

O-RP-RWP-420, Rev 0, Radiological Controls for Dry Cask Storage

Course Number 10CBT-MMS-DFS-01, Dry Fuel Storage - Managers Overview

Course Number IOLP-LOR-DFS-01, Dry Fuel Storage - Overview

Course Number: IOLP-MMS-DFS-01, Dry Fuel Storage Operations

Course Number: IOLP-MMS-DFS-02, Dry Fuel Storage MPC Sealing and Welding

EN-TQ-204, On-The-Job Training and Evaluation

Qualification Guide 825-001, Rev 0, Dry Fuel Storage Operations

Qualification Guide 825-002, Rev 1, Dry Fuel Storage Loading and Sealing

Qualification Guide 825-018, Rev 0, Vertical Cask Transporter (VCT) Operation

Qualification Guide 825-019, Rev 0, Push/Pull Device (Tugger)

Holtec Report HI-2073833, Evaluation of the Acceptability of Foreign Material in the Indian Point 2 Fuel Assemblies for Dry Cask Loading and Storage

Fuel Assembly Qualification Data Sheets (2-DCS-031-GEN, Attachment 2) for MPC 1023-51 (Cask #1)

10 CFR 50.59 Evaluation, IPEC Unit 2 ISFSI

Special Lifting Device Inspection Report: HI-STORM Lift Bracket, Dated 9-18-07

Special Lifting Device Inspection Report: HI-STORM Lid Lift Bracket Support, Dated 9-18-07

ENN-NDE-10.07, Rev 0, Visual Inspection Procedure for the HI-STORM 100 Dry Cask Fuel Storage System

ENN-NDE-9.43, Rev 2, Liquid Penetrant Procedure for HI-STORM 100 Dry Cask Fuel Storage System

Work Order 51326056-16, Remove Interferences on Unit ½ HI-TRACS and MPC Simulator

OAP-008, Rev 4, Severe Weather Preparations

O-RP-IU-402, Rev 0, Use of the Eberline RMS 11 Radiation Monitoring Systems

EN-RP-401, Rev 0, Decontamination Program

Purchase Order #164456, PAR Systems A325 Bolts for Crane to Vermont Fasteners Manufacturing

Bolt Tensioning Inspection Report, dated 07/02/2007

EDERER Drawing #D-43849, Rev A, Gantry Assembly Sheets 1-4

Engineering Calculations ENN-DC-126, Rev 4, Rated Load and Seismic Qualification 110 Ton Gantry Crane

Administrative Procedure ENN-DC-149, Rev 2, EDERER Main Hoist Shop Testing of X-Sam System for Gantry Crane

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CoC	Certificate of Compliance
CFR	Code of Federal Regulations
DCS	Dry Cask Storage
DCSS	Dry Cask Storage System
EAL	Emergency Action Level
FHD	Forced Helium Dehydrator
FSAR	Final Safety Analysis Report
FSB	Fuel Storage Building
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
JTA	Job Task Analysis
LPT	Low Profile Transporter
MPC	Multi-Purpose Canister
NDE	Nondestructive Examination
NRC	Nuclear Regulatory Commission
RP	Radiation Protection
QA	Quality Assurance
QC	Quality Control
RWP	Radiation Work Permit

SAR	Safety Analysis Report
SER	Safety Evaluation Report
SFP	Spent Fuel Pool
VCT	Vertical Cask Transporter