



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

September 21, 2006

Docket Nos. 05000336  
07200047

License Nos. DPR-65

Mr. David A. Christian, Sr. Vice President  
and Chief Nuclear Officer  
Dominion Resources  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: INSPECTIONS 05000336/2006011 AND 07200047/2006011, DOMINION  
NUCLEAR CONNECTICUT, WATERFORD, CONNECTICUT SITE

Dear Mr. Christian:

On July 24-28, 2006, the United States Nuclear Regulatory Commission (NRC) completed an inspection at the above address of activities authorized by the above listed NRC licenses. The inspection was an examination of your licensed activities as they relate to the operation and surveillance of the Independent Spent Fuel Storage Installation (ISFSI) and to compliance with the associated Commission's regulations and the license conditions. The inspection consisted of observations by the inspector, interviews with personnel, and a selected examination of representative records. The findings of the inspection were discussed with Mr. Skip Johnson and other members of your staff on July 28, 2006, at the conclusion of the onsite inspection.

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

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

Sincerely,

*/RA/*

Marie Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

cc:  
State of Connecticut

Enclosure:  
Inspection Report No. 05000336/2006011

D. A. Christian

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cc w/encl:

J. A. Price, Site Vice President, Millstone Station

C. L. Funderburk, Director, Nuclear Licensing and Operations Support

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J. Roy, Director of Operations, Massachusetts Municipal Wholesale Electric Company  
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B. Sheehan, Co-Chair, NEAC

E. Woollacott, Co-Chair, NEAC

E. Wilds, Director, State of Connecticut SLO Designee

J. Buckingham, Department of Public Utility Control

G. Proios, Suffolk County Planning Dept.

R. Shadis, New England Coalition Staff

G. Winslow, Citizens Regulatory Commission (CRC)

S. Comley, We The People

D. Katz, Citizens Awareness Network (CAN)

R. Bassilakis, CAN

J. M. Block, Attorney, CAN

P. Eddy, Electric Division, Department of Public Service, State of New York

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J. Spath, SLO Designee, New York State Energy Research and Development Authority

D. A. Christian

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection Nos. 05000336/2006011  
07200047/2006011

Docket Nos. 05000336  
07200047

License No. DPR-65

Licensee: Dominion Nuclear Connecticut

Location: Rope Ferry Road  
Waterford, CT 06385

Inspection Dates: July 24-28, 2006

Inspector: Robert Prince, Health Physicist

Approved By: Marie Miller, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

## EXECUTIVE SUMMARY

NRC Inspection Report Nos. 05000336/2006011 and 07200047/2006011

The inspection consisted of evaluating independent spent fuel storage installation (ISFSI) activities including characterization of selected fuel assemblies for storage, procedures and documentation, handling and movement of heavy loads, review of personnel training and qualifications, facilities and equipment, and evaluations associated with the most recent ISFSI fuel loading campaign. The inspection also reviewed the licensee's corrective actions regarding dry fuel storage (DFS) activities. The inspection consisted of interviews with cognizant personnel, review of licensee documentation, and field observations.

The licensee developed a cask loading plan in accordance with approved procedures. Licensee documentation supported the proper characterization of fuel assemblies loaded into dry storage canister (DSC) number 7. Licensee programs were adequate to ensure that fuel assembly parameters for fuel assemblies selected for loading were in compliance with Certificate of Compliance (CoC) requirements.

The licensee safely loaded a DSC in accordance with approved procedures and the requirements of the TS. The DSC was properly sealed, tested, surveyed and inspected, and met the requirements of the CoC. Handling and transport of the loaded cask was performed in accordance with approved procedures and the DSC safely placed into an horizontal storage module (HSM) at the ISFSI facility. Routine surveillances of the ISFSI were performed in accordance with TS.

The licensee effectively used the established corrective action program to self-identify and address issues relating to ISFSI activities. The Nuclear Oversight department provided effective independent review of ISFSI activities. Weld repair efforts associated with a root pass weld on an inner top cover (ITC) of a canister were adequately performed.

Individuals were properly trained and qualified to perform their assigned ISFSI functions. Training procedures adequately identified training and qualification requirements associated with ISFSI tasks.

## REPORT DETAILS

### **I. Fuel Characterization and Verification**

#### a. Inspection Scope

The CoC for the NUHOMS-32PT dry cask storage system specifies the parameters that must be met in order to allow spent fuel to be stored at the ISFSI. The inspector evaluated the licensee's integrated programs to verify that spent fuel assemblies selected for storage met the requirements of the CoC. The inspection consisted of interviews with cognizant personnel, field observations of fuel activities in the Unit 2 fuel building, and review of licensee procedures and documentation related to loading fuel into DCS placed into HSM 3 and 4.

#### b. Observations and Findings

Cognizant personnel were knowledgeable of the Technical Specification (TS) requirements associated with fuel characterization. The inspector noted that the selected fuel assemblies were adequately characterized and met all the appropriate TS requirements for placement into DSC-9 (HSM-3) and DSC-7 (HSM-4).

The inspector independently reviewed the video of the final fuel verification for DSC-4. The inspector noted that the loaded fuel assemblies were properly orientated and that all fuel assemblies were placed in their designated locations in the DSC in accordance with the loading plan and approved procedures. The inspector confirmed with cognizant personnel that spent fuel inventory accountability records were updated to reflect the transfer of selected fuel assemblies from the Unit 2 spent fuel pool (SFP) to the appropriate HSM.

#### c. Conclusions

The licensee developed a cask loading plan in accordance with approved procedures. Licensee documentation supported the proper characterization of loaded fuel assemblies. Licensee programs were adequate to ensure that fuel assembly parameters for fuel assemblies selected for loading were in compliance with CoC requirements.

### **II. DSC Preparation, Cask Handling and Loading and ISFSI Operations**

#### a. Inspection Scope

The inspector observed activities associated with the preparation and placement of canisters into storage at the ISFSI. The inspector reviewed the work package associated with the loading and placement of DSC-9 into HSM-3. Observation of field activities included alignment and insertion of a DSC into a designated HSM, movement of the cask from the SFP to the cask wash pit, and portions of canister closure activities and helium backfilling. Radiological surveys of the ISFSI facility were reviewed. The inspection consisted of field observations, interviews with cognizant personnel, and

Enclosure

review of licensee documentation, including review of the Operator daily routine surveillances for a two week period.

b. Observations and Findings

Movement of the cask to and from the SFP to the cask wash pit was performed in accordance with approved procedures in a safe and controlled manner. The pre-job briefing was thorough and adequately addressed the safe handling of heavy loads, effective communication, individual responsibilities and safe load path for movement of a heavy load in the vicinity of the SFP. Decontamination activities and contamination control measures were adequately implemented. Radiation surveys were performed throughout cask movement evolutions to confirm that dose rates were within prescribed limits to allow handling and storage of the DSC at the ISFSI. The inspector noted good communication between the crane operator and members of the work crew during movement of the cask.

The inspector found that TS requirements were met and verification steps associated with such activities as vacuum drying criteria, non-destructive testing of the DSC cover welds, and the performance of the helium leak test were properly completed.

The alignment of DSC-9 to HSM-3 was performed in a deliberate and controlled manner. The licensee experienced difficulty in aligning the transfer trailer (TT) to the HSM. This was based in part on the desire of licensee personnel to maintain the TT tires on the poured portion of the ISFSI pad. Personnel maintained a conservative and controlled approach during the alignment process to ensure proper alignment of the TT. The alignment of the TT, preparation of the HSM to receive the DSC and the subsequent insertion of the DSC into the HSM were performed in a controlled manner. Adequate coordination of work activities and communication was observed among individuals during the performance of these tasks. Activities were completed in accordance with approved procedures.

Operator surveillances include visual inspection of the ISFSI facility and HSMs and confirmation that temperature levels of loaded HSMs are within specified limits. No deviations or concerns were noted on the surveillance data sheets reviewed by the inspector. The inspector noted that appropriate postings were located at the entrance to the ISFSI and along the perimeter ISFSI fence. Dosimetry stations were located at various locations along the perimeter fence. Appropriate radiological sign postings were verified to be present on loaded HSMs. The inspector noted that dose rates on the transfer cask and loaded HSMs met TS requirements. A visual inspection of the heavy haul path did not identify any concerns relating to the material condition of the road surface.

c. Conclusions

The licensee safely loaded a DSC in accordance with approved procedures and the requirements of TS. The DSC was properly sealed, tested, surveyed and inspected, and met the requirements of the CoC. Handling and transport of the loaded cask was

performed in accordance with approved procedures and the DSC safely placed into an HSM at the ISFSI facility. Routine surveillances of the ISFSI were performed in accordance with TS.

### III. Self-Assessment, Evaluations and Corrective Actions

#### a. Inspection Scope

The involvement of oversight functions and independent reviews of ISFSI activities was evaluated to ensure that the dry spent fuel storage program was being assessed by the licensee to support safe operation of the ISFSI facility. Condition Reports (CRs) related to ISFSI activities, issued since the last ISFSI inspection through July 2006, were reviewed for safety-related issues. Interviews were conducted with cognizant personnel responsible for providing independent oversight of ISFSI activities. Corrective actions associated with a weld repair performed on the inner top cover (ITC) of DSC-3 were reviewed.

#### b. Observations and Findings

The threshold for the identification of safety-related issues was adequate. No adverse trends or safety concerns were identified from the review of selected CRs.

Oversight of ISFSI activities was provided by the Nuclear Oversight department staff. The inspector noted that ISFSI-related activities are routinely incorporated into the audit and surveillance schedule and program. Various elements of ISFSI activities were included in 2006 audit reports. These reports addressed such areas as ensuring that ISFSI activities were conducted in accordance with TS requirements, ISFSI-related design change requests, and observing the performance of ISFSI radiological surveys.

The licensee had previously identified an issue whereby a single weld pass was completed on the ITC of DSC-3. During the subsequent vacuum drying sequence the licensee identified the need to complete a second weld pass on the inner top cover. The cause for not completing the second weld pass, prior to initiation of vacuum drying, was attributable to a procedure note that was mis-applied to the final weld pass of the ITC. Design documents require that at least one root pass and a final weld pass be performed on the ITC. The procedure note in question allowed for one pass if the initial pass was successful. However, the note only applied to the root pass and did not allow the final pass to be eliminated if the initial weld for the root pass was successful. The note simply allowed the root pass to be completed in one pass if it was successfully completed. The note did not apply to the final pass.

While performing the subsequent second weld pass on the ITC, blow-through of the root pass, was experienced in a portion of the key-way section of the ITC weld. The blow-through was characterized as a small pinhole leak. The inspector reviewed the licensee's evaluation of the event, the repair plan that was developed and corrective actions with cognizant personnel. The inspector noted that corrective actions included discussions with cognizant personnel, procedure revisions, and the development of a



detailed repair plan. The inspector confirmed that the licensee maintained adequate cooling and monitoring of the DSC in the interim period. No concerns associated with maintaining the loaded spent fuel assemblies in a safe condition were identified.

c. Conclusions

The licensee effectively used the established corrective action program to self-identify and address issues relating to ISFSI activities. The Nuclear Oversight department provided effective independent review of ISFSI activities. Weld repair efforts associated with a root pass weld on an ITC of a canister were adequately performed.

#### **IV. Training and Qualifications**

a. Inspection Scope

The licensee's training program was reviewed to verify that TS and related training requirements were incorporated into the ISFSI training program and that personnel were qualified to perform ISFSI-related activities. The inspector interviewed cognizant training and ISFSI personnel regarding training and qualification of personnel performing ISFSI activities. The inspection consisted of a review of training program procedures and field observations.

b. Observations and Findings

Additional individuals were assigned to the ISFSI 2006 fuel campaign. The inspector confirmed by interviews with cognizant personnel that newly assigned individuals have been entered into the ISFSI training and qualification program. The inspector observed that these individuals were being afforded an opportunity to observe ISFSI activities along side previously qualified individuals. Cognizant personnel stated that the qualification matrix was utilized when assigning individuals to ISFSI-related tasks. The inspector confirmed that medical records were complete and current for crane operators handling heavy loads. Based on field observations the inspector found individuals to be knowledgeable of their ISFSI-related duties including procedural requirements, equipment operation, and applicable CoC and TS requirements. The ISFSI training program adequately addressed the training requirements for the various ISFSI-related tasks and specified the necessary classroom and on-the-job training modules in order to qualify individuals for a given task.

c. Conclusions

Individuals were properly trained and qualified to perform their assigned ISFSI functions. Training procedures adequately identified training and qualification requirements associated with ISFSI tasks.

**V. Exit Meeting**

The inspector presented the inspection results to Mr. Skip Johnson and other members of your staff at the conclusion of the inspection on July 28, 2006.

**SUPPLEMENTAL INFORMATION**

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

\*Joe Bergin, Operations Support  
William Brown, Regulatory Affairs  
\*Don Delcore, RP Operations Supervisor  
Mike Dolishny, Supervisor - Nuclear Fuel Handling  
\*D. W. Dodson, Supervisor-Licensing  
\*John Guerci, Nuclear Fuel Engineering  
\*Skip Johnson, Director - Operations and Maintenance  
Bob King, Health Physicist  
\*Eric Laine, Manager Radiation Protection & Chemistry  
Mike Lalikos, Welding Engineer  
Steve LaClerc, Supervisor - Quality Control  
Joe Parillo, Nuclear Fuels  
Gary Sturgeon, Operations - Training  
Shiela Stark, Engineer  
Steve Claffey, Engineer  
Tom Moriarty, Work Control  
Frank Perry, HP Supervisor  
\*Kent Wietharn, Nuclear Fuel

\*Denotes attendance at the July 28, 2006 exit meeting.

**DOCUMENTS REVIEWED**

Calculation ISFSI-04194F2, Qualification of MP2 Fuel Assemblies for Placement in Dry Storage Casks - Campaign 2

Calculation ISFSI-04195F2, Loading Patterns for DSC 3, 4 and 5 at the Millstone ISFSI - Campaign 2

Calculation SFP-04002F2, Millstone Unit 2 Fuel Data

Technical Evaluation M2-EV-05-0013, for Non Leaking Fuel for Millstone 2 ISFSI - Campaign 2

Work Order MP 06 00593, Perform Weld Repair on Inner Top Cover of DSC-3

Work Order M2 05 10759, Spent Fuel Pool Cask Crane Inspection

Work Order M2 05 11902, Spent Fuel Pool Cask Crane Interlock Test

Nuclear Oversight Audit 06-03, Design Control and Engineering Programs

Nuclear Oversight Audit 06-08, Radiation Protection/Process Control Program

SP 2614C, Rev. 008-02, MP2 Cask Crane restricted Load Path checks

TPD-7.074, Millstone Station Nuclear Fuel Handler Training Program

**LIST OF ACRONYMS USED**

CoC	Certificate of Compliance
CR	Condition Report
DFS	Dry Fuel Storage
DSC	Dry Storage Canister
HSM	Horizontal Storage Module
ISFSI	Independent Spent Fuel Storage Installation
ITC	Inner Top Cover
SFP	Spent Fuel Pool
TS	Technical Specifications
TT	Transfer Trailer