



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

February 20, 2007

Docket Nos. 05000317
07200008

License Nos. DPR-53
DPR-69

James A. Spina
Vice President
Calvert Cliffs Nuclear Power Plant, Inc.
Constellation Generation Group, LLC
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: INSPECTIONS 05000317/2007008 AND 07200008/2007008, CALVERT CLIFFS
NUCLEAR POWER PLANT, INC., LUSBY, MARYLAND SITE

Dear Mr. Spina:

On January 8-12, 2007, The United States Nuclear Regulatory Commission (NRC) conducted 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 NRC regulations and the license conditions. The inspection consisted of observations by the inspectors, interviews with personnel, and a selected examination of representative records. The findings of the inspection were discussed with members of your organization on January 12, 2007, at the conclusion of the inspection.

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

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Sincerely,

/RA/

Mark Roberts, Acting Chief
Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure:
Inspection Report No. 05000317/2007008

J. Spina

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Calvert Cliffs Nuclear Power Plant, Inc.

cc w/encl:

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J. M. Heffley, Senior Vice President and Chief Nuclear Officer

President, Calvert County Board of Commissioners

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J. Gaines, Director, Licensing

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R. McLean, Manager, Nuclear Programs

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J. Spina
Calvert Cliffs Nuclear Power Plant, Inc.

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REGION I

INSPECTION REPORT

Inspection No. 05000317/2007008
07200008/2007008

Docket No. 05000317
07200008

License No. DPR-53
DPR-69

Licensee: Calvert Cliffs Nuclear Power Plant, Inc.
Constellation Energy Group, LLC

Location: 1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-4702

Inspection Dates: January 8-12, 2007

Inspectors: Robert Prince, Health Physicist
Decommissioning Branch
Division of Nuclear Materials Safety

John Nicholson, Health Physicist
Decommissioning Branch
Division of Nuclear Materials Safety

Approved By: Mark Roberts, Acting Chief
Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Calvert Cliffs Nuclear Power Plant, Inc.,
Constellation Energy Group, LLC

NRC Inspection Report No. 05000317/2007008

The primary purpose of the inspection was to evaluate and to review the status and effectiveness of licensee corrective actions relating to a previous condition report pertaining to a canister shield plug that was not properly seated prior to welding the outer top cover of the canister. Measures implemented to support the safe storage of a reactor head at the independent spent fuel storage installation (ISFSI) facility were also evaluated. The inspection also evaluated ongoing fuel campaign activities that were in progress during the onsite inspection, including characterization of selected fuel assemblies for storage, procedures and documentation, facilities and equipment, and observation of field activities. The inspection consisted of interviews with cognizant personnel, review of licensee documentation, and field observations.

Corrective actions relating to an improperly seated canister top shield plug were effectively implemented. The 72.48 evaluation for storage of a reactor head at the ISFSI facility adequately addressed potential safety aspects on ISFSI operations. The licensee effectively utilizes the established corrective action program to self-identify and address issues relating to ISFSI activities.

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 technical specification (TS) requirements.

The licensee safely loaded a dry storage canister (DSC) in accordance with approved procedures and the requirements of TS. The DSC was properly sealed, tested, surveyed and inspected, and met TS requirements. Security measures associated with the transport of a loaded DSC from the Protected Area (PA) to the ISFSI facility were adequate and cognizant personnel aware of their assigned responsibilities.

REPORT DETAILS

I. Evaluations and Corrective Actions

a. Inspection Scope

Corrective actions associated with the placement of an improperly seated shield plug during loading of the initial 32P dry storage canister were reviewed. The 10 CFR 72.48 evaluation conducted by the licensee for temporarily storing an old reactor head at the independent spent fuel storage installation (ISFSI) facility was reviewed. The inspection consisted of field observations, interviews with cognizant personnel, and review of licensee documentation.

b. Observations and Findings

The licensee had previously identified an issue in January 2006, where a top shield plug was improperly seated onto a dry storage canister (DSC) during the first loading of a 32P canister. During the welding of the top shield plug for this canister, the plug was not properly seated. The automatic welding machine completed the welding of the shield plug, and at one point during the welding process, the welding machine “walked out” of its path and had to be reset. This was not an uncommon occurrence and at the time was not attributed to the improperly seated shield plug. Once the shield plug weld was completed, the outer top cover was placed over the shield plug. The outer top cover could not be seated properly due to the improperly seated shield plug. Immediate corrective actions included removing the shield plug weld and repositioning the shield plug on the DSC to ensure that it was properly seated. The canister was successfully sealed, prepared, and subsequently placed in the ISFSI.

To prevent recurrence, the licensee established procedure steps to require that measurements of the seated shield plug be obtained and recorded during “dry-fit” testing. The licensee performs dry-fit testing on DSC components prior to placement of a DSC into the spent fuel pool (SFP) and before spent fuel assemblies are loaded into the DSC. At the time the shield plug was improperly seated, the relevant procedure did not include a step during the dry-fit test of the top shield plug to record final measurements nor provide for a measurement check to ensure the top shield plug was properly seated on the DSC prior to welding. The procedure (FH-352, “NUHOMS-32P DSC Loading and Unloading”) was subsequently revised to include a requirement to record various measurement readings.

The inspector reviewed the licensee’s evaluation of the event, the repair plan that was developed, and the effectiveness of corrective actions. The inspector noted that corrective actions included discussions with cognizant personnel, procedure revisions, and the development of a detailed recovery plan. The inspector confirmed that the licensee maintained adequate cooling and monitoring of the DSC in the interim period. At the time of the event (January 2006) and during the recovery period, the licensee provided periodic updates to Region I staff regarding the status of the loaded DSC. No concerns associated with maintaining the loaded spent fuel assemblies in a safe condition were identified. While reviewing Procedure FH-352 to verify that corrective

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actions had been incorporated, the inspector noted that the revised procedure did not include acceptance criteria for the measurement data. Steps were incorporated into the procedure to record measurement data obtained during the dry fit-test. Procedure changes also included steps to obtain measurement data after the canister is loaded and the top shield plug placed on the DSC. The inspector noted that these measurements were obtained during subsequent DSC loadings. However, no procedural guidance was provided pertaining to acceptance criteria once the measurements were obtained. Discussions with licensee personnel concluded that acceptance criteria for these measurements should be provided in the procedure. The licensee stated they would revise the procedure to include acceptance criteria. The licensee has successfully loaded three additional 32P canisters without experiencing any issues relating to the improper seating of the top shield plug.

The licensee currently stores an old reactor head at the ISFSI facility. The licensee performed a 10 CFR 72.48 evaluation for storing the reactor head at the ISFSI facility. The evaluation appeared to be thorough and did not identify any impact on ISFSI operations due to storage of the reactor head. The evaluation was reviewed and the ISFSI facility was inspected to verify that storage of the reactor head did not interfere with ISFSI operations or surveillance. The licensee stated that the reactor head would be stored for an unspecified period of time. The reactor head is located at one end of the facility away from horizontal storage modules (HSMs) in accordance with the 10 CFR 72.48 evaluation. The storage location is such that the reactor head does not pose any safety concerns relating to ISFSI operations. No loaded HSMs are in the vicinity of the reactor head.

The inspectors observed ISFSI security remote monitoring operations from the Secondary Alarm Station. Security personnel demonstrated surveillance capabilities to confirm that storage of the reactor head did not interfere with remote surveillance of the ISFSI facility. Direct surveillance of individual HSMs was adequately maintained. All areas of the loaded HSMs, including lower and upper air vent screens, could be viewed from the security center in sufficient detail.

c. Conclusions

Corrective actions relating to an improperly seated canister top shield plug were effectively implemented. The 72.48 evaluation for storage of a reactor head at the ISFSI facility adequately addressed potential safety aspects on ISFSI operations. The licensee effectively utilizes the established corrective action program to self-identify and address issues relating to ISFSI activities.

II. Fuel Characterization and Evaluation

a. Inspection Scope

The Technical Specifications (TS) for storage of spent fuel at the Calvert Cliffs ISFSI specifies the parameters that must be met in order to allow spent fuel to be stored at the ISFSI. The inspectors evaluated the licensee's integrated programs to verify that spent

fuel assemblies selected for storage were in compliance with TS requirements. The inspection consisted of interviews with cognizant personnel, field observations of fuel activities in the fuel building, and review of licensee procedures and documentation related to loading fuel into DSC number 52.

b. Observations and Findings

Cognizant personnel were knowledgeable of the TS requirements associated with fuel characterization. The inspectors verified that the selected fuel assemblies were adequately characterized and met the appropriate TS requirements for placement into DSC-52. Based on discussions with licensee personnel the inspector determined that fuel assemblies were properly selected, independently verified, and placed into DSC-52 in accordance with the approved loading plan and approved procedures.

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 TS requirements.

III. DSC Preparation, Loading and ISFSI Operations

a. Inspection Scope

The inspectors observed activities associated with the preparation of a canister for storage at the ISFSI. The inspectors reviewed the work package associated with the loading and placement of DSC-52. Observation of field activities included welding of the shield plug and top cover, vacuum drying, helium back-filling, and helium leak-testing. Radiological surveys of the ISFSI facility were reviewed. The inspection consisted of field observations, interviews with cognizant personnel, and review of licensee documentation.

b. Observations and Findings

Personnel performing welding, vacuum drying, and helium leak-testing activities were interviewed. During the welding evolution, the welder was equipped with a head set radio and was in constant communication with radiation protection (RP) personnel. RP personnel monitored the welder's dose via electronic dosimetry to advise the welder when he neared areas of higher dose rate. The machinist performing the vacuum drying was knowledgeable of associated procedural and TS requirements. The inspector noted 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 inspector performed a visual inspection of the heavy haul path with cognizant personnel. The visual inspection and walk down of the entire heavy haul path did not identify any concerns relating to the material condition of the road surface.

Security personnel demonstrated appropriate security measures associated with movement of a loaded DSC from the Protected Area (PA) to the ISFSI facility. Adequate measures were implemented to ensure proper authorization of individuals escorting a loaded DSC. Security personnel were knowledgeable of the security measures relating to the movement of a loaded DSC from the PA to the ISFSI secured area.

The inspector noted that appropriate postings were located at the entrance to the ISFSI facility and along the perimeter ISFSI fence. Dosimetry stations were located at various locations along the perimeter fence. Specific radiological sign postings were not present on the shield doors of loaded HSMs. The licensee stated that radiological sign postings were not provided on loaded HSMs for security reasons so as not to differentiate loaded and empty HSMs. Per 10 CFR 20.1905(e), this is acceptable as the containers are accessible only to authorized individuals and appropriate radiological postings were provided at the entrance to the ISFSI.

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 TS requirements. Security measures associated with the transport of a loaded DSC from the PA to the ISFSI facility were adequate and cognizant personnel aware of their assigned responsibilities.

IV. Exit Meeting

The inspectors presented the inspection results to members of your staff at the conclusion of the inspection on January 12, 2007.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

*Paula Amos, Director-Performance Improvement
Robert Beall, Principal Engineer-Nuclear Fuel Management
*Hearst Daman, Manager-Maintenance
Jon Detchemendy, Technician-Radiation Protection
*Wayne Edmiston, Security Program Analyst
*Mark Flaherty, Manager-Engineering Services
*Jay Gaines, Director-Licensing
*Ken Gould, General Supervisor-Radiation Protection
Dianne Harrod, Security System Operator
*Mark Hillebrand, Maintenance Supervisor
Steven Kinnison, Welder
*Doug Lauver, Director-Q&PA
*Ken Robinson, General Supervisor-Design Engineering
Michael Telmanowsky, Machinist
*Michael Yox, Principal Engineering Analyst-Licensing
*Philip Wenglosh, General Supervisor-Nuclear Fuel Services
Butch Wiltse, Supervisor-Security

*Denotes attendance at the January 12, 2007 exit meeting

DOCUMENTS REVIEWED

Condition Report #: IRE-009-579, AIT #: IR200500312, Improperly Seated Top Shield Plug was Welded onto Dry Shielded Canister During First NUHOMS-32P ISFSI Loading

Action Item Closure Document, AIT #: IR200500233, CR #: IRE-007-840

Apparent Cause Evaluation, AIT #: IR200500232, CR #: IRE-007-845

Procedure ISFSI-03, Revision 4, Independent Spent Fuel Storage Installation (ISFSI) Loading HUHOMS-32P Dry Shielded Canister

Work Order #: 0200502605, IR#: E009476, Perform ISFSI Loading #52 Using A NUHOMS-32P DSC

Procedure FH-352, NUHOMS-32P DSC Loading and Unloading (ISFSI #51)

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DSC	Dry Storage Canister
HSM	Horizontal Storage Module
ISFSI	Independent Spent Fuel Storage Installation
PA	Protected Area
RP	Radiation Protection
SFP	Spent Fuel Pool
TS	Technical Specifications