U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection Nos.	05000244/2010008 and 07200067/2010002
Docket Nos.	05000244 and 07200067
License No.	DPR-18
Licensee:	Constellation Energy
Location:	R. E. Ginna Nuclear Power Plant 1503 Lake Road, Ontario, New York
Inspection Dates:	July 19, 2010 – September 3, 2010
Inspectors:	Stephen Hammann, Senior Health Physicist, Decommissioning Branch, Division of Nuclear Materials Safety Dennis R. Lawyer, Health Physicist, Commercial and R&D Branch, Division of Nuclear Materials Safety Jim Pearson, Senior Inspector, Spent Fuel Storage and Transportation, Office of Nuclear Material Safety and Safeguards Rob Temps, Senior Inspector, Spent Fuel Storage and Transportation, Office of Nuclear Material Safety and Safeguards E. Harold Gray, Senior Reactor Inspector, Materials and Structural Engineering Branch, Division of Reactor Safety Suresh Chaudhary, Senior Reactor Inspector, Materials and Structural Engineering Branch, Division of Reactor Safety
Approved By:	Judith A. Joustra, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Ginna
NRC Inspection Report Nos. 05000244/2010008 and 07200067/201002

This report covered an on-site inspection and in-office review by Nuclear Regulatory Commission (NRC) regional and Office of Nuclear Material Safety and Safeguards (NMSS) based inspectors of activities related to the dry cask storage of spent fuel, including the preparation for, and the initial loading of, spent fuel into the independent spent fuel storage installation (ISFSI). The licensee selected the NUHOMS cask system for storage of spent nuclear fuel at the R.E. Ginna Nuclear Power Plant. The NRC had certified the NUHOMS cask system for storage of irradiated fuel under Certificate of Compliance (CoC) No. 1004, Amendment No. 10 on August 24, 2009. The inspectors reviewed the pre-operational loading activities to confirm that the personnel, equipment, and plant programs and procedures were adequate to safely load spent fuel into the ISFSI. The inspectors also observed selected portions of the initial ISFSI loading campaign to confirm that these activities were performed in accordance with the approved procedures, the CoC, and Technical Specification (TS) requirements. The licensee successfully demonstrated pre-operational activities in preparation of the initial loading campaign and successfully completed their first complete canister loading and storage on the ISFSI pad.

Based on the results of this inspection, no findings were identified.

REPORT DETAILS

1.0 Preoperational Test Program

a. Inspection Scope

The CoC for the Standardized NUHOMS Horizontal Modular Storage System required that the licensee conduct pre-operartional testing (i.e. dry runs) to demonstrate dry shielded canister (DSC) loading, transfer cask (TC) handling and DSC insertion into the horizontal storage module (HSM). The inspection included observation of the activities being performed, interviews with personnel performing the activities, and reviews of select Constellation Energy procedures and documents prepared to support the conduct of these activities.

b. Observations and Findings

Between July 19, 2010, and August 6, 2010, the inspectors evaluated a dry run demonstration by the licensee that included moving a TC with a DSC inside from the cask preparation building (CPB) into the spent fuel pool in the auxiliary building; loading of mock bundles into the DSC; and transporting the DSC to the ISFSI pad and inserting the DSC into the HSM. All activities were performed in a methodical manner. Strict adherence to procedures was followed with each step of the procedure being checked off as it was completed. All workers carried out their activities in a professional manner indicating they were experienced and properly trained.

The licensee conducted pre-job briefings before each work evolution. The briefings covered key aspects of the activities to be performed including, human performance, scope of work, job instructions, industrial safety, radiological concerns, potential hazards and planned responses, personnel safety, and closure items. Full participation of all workers was encouraged and all comments were taken into consideration.

No findings of significance were identified.

c. Conclusions

The licensee demonstrated the ability to move the DSC and TC as necessary, load fuel bundles into the DSC, and transfer a loaded DSC to the ISFSI pad and insert it into the HSM.

2.0 Review of Evaluations

a. Inspection Scope

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

b. Observations and Findings

The licensee is required, as specified in 10 CFR 72.212(b)(1)(i), to notify NRC at least 90 days prior to the first storage of spent fuel under this general license. The inspectors verified the licensee notified the NRC on March 11, 2010, of their intent to use the Standardized NUHOMS Horizontal Modular System in accordance with CoC No. 1004. This letter met the requirement of the 90-day notification. The licensee is also required, as specified in 10 CFR 72.212(b)(1)(ii), to register the use of each cask with the NRC no later than 30 days after using the cask to store spent fuel. At the time of the inspection, the licensee had not provided this registration but was aware of the requirement.

The licensee is required to perform written evaluations in accordance with 10 CFR 72.212(b)(2)(i), prior to use of each cask, to establish that the conditions of the CoC have been met. The inspectors determined that the licensee developed its written evaluation, "Constellation Energy, R.E Ginna Nuclear Power Plant, Independent Spent Fuel Storage Installation, 10 CFR 72.212 Evaluation Report," to document that the ISFSI was within the licensed scope as required. The inspectors reviewed the licensee's written evaluations that 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 radiological criteria specified in 10 CFR 72.104 had been met. The review of the written evaluations determined that applicable reactor site parameters, such as fire, tornadoes, wind generated missile impacts, lightning, seismic events, flooding, and temperature had been evaluated for acceptability with the bounding values specified in the NUHOMS Horizontal Modular System Safety Analysis Report (SAR) and the NRC Safety Evaluation Report (SER).

The inspectors reviewed the licensee's 10 CFR 50.59 screenings of the construction and operation of the ISFSI and plant interfaces, and determined the licensee had demonstrated that changes to plant TS, or a license amendment were not required, and that ISFSI related work activities would not impact safe operation of the plant. Also, all ISFSI related procedures had a 10 CFR 72.48 screening performed to ensure that there had been no changes, tests, or experiments in the facility or spent fuel storage cask design as described in the Final Safety Analysis Report (FSAR),

The inspectors reviewed selected records and procedure changes related to security, emergency preparedness, training, health physics, and quality assurance programs. The inspectors interviewed key personnel to confirm that they were knowledgeable of the impact of ISFSI related activities.

No findings of significance were identified.

c. Conclusions

Overall, the 10 CFR 72.212 evaluation was found to be acceptable. There was one requirement from the CoC that was not in effect in the draft version of the 10 CFR 72.212 evaluation. The cask records required to be retained had not been put into Constellation Energy's record management system. This was corrected before the final 10 CFR 72.212 evaluation was issued.

3.0 Fuel Characterization and Verification

a. Inspection Scope

The CoC for the NUHOMS 32PT cask system 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 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

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

The CoC TS require that selected fuel assemblies be visually inspected, independently verified, be free of cladding defects, and be within specified limits for such parameters as fuel enrichment, burn-up, and decay heat output. The licensee 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 TS requirements.

Prior to the initial ISFSI campaign, the inspectors verified that procedures had been developed for the selection and verification of fuel bundles and that the procedures covered the movement of the fuel bundles from the spent fuel pool to the DSC. The inspectors verified that the selected fuel bundles met the requirements of the CoC.

No findings of significance were identified.

c. Conclusions

The licensee developed a program to ensure the proper selection and characterization of fuel assemblies for dry cask storage in accordance with approved procedures. The 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 TS.

4.0 Welding and Nondestructive Testing

The welding and nondestructive testing portion of the dry run was performed February 15–19, 2010, and was documented in a feeder for NRC Inspection Report 05000244/2010002.

During the week of August 23, 2010, the inspector concluded that the capability to adequately weld and perform nondestructive examinations (NDE) of DSCs as demonstrated during the dry run sequences on mockup work were adequately applied to the production steps for completing the closure of the first fuel load DSC. The inspector confirmed the adequacy of the welding equipment, as set up in the DSC fuel loading area, by pre-production weld performance operation.

5.0 Heavy Loads Program

a. Inspection Scope

The licensee was required to demonstrate the adequacy of their heavy loads program pertaining to the movement of the TC and canister from the CPB into the spent fuel pool and back to the CPB. The licensee was also required to demonstrate placing the cask on top of the transfer trailer for transport to the ISFSI pad. The inspection consisted of field observations, interviews with cognizant personnel, and reviews of relevant documentation.

b. Observations and Findings

The crane that was used to move the fuel storage components was custom designed and built specifically for use with the ISFSI program at the R.E. Ginna Nuclear Power Plant. The crane was built by P&H Cranes and is a 125 ton, single failure proof, cantilever bridge crane. The crane cantilevers from the CPB into the auxiliary building over the spent fuel pool. The bridge only moves in a north-south direction and has two speeds. The slow down and stop movement are automatic and tripped by sensors. The crane also has ballast blocks to ensure it cannot be moved too far into the auxiliary building.

The crane was used to move the TC containing a canister to the auxiliary building and back again. The movement of the TC into the auxiliary building has an extremely small clearance which is less than six inches. The crane is also utilized to lift the TC and loaded canister onto the transport vehicle. The inspectors observed personnel performing visual inspections and pre-operational checks of the crane and associated lifting devices in accordance with approved procedures prior to lifting the TC loaded with the canister.

Over the course of the dry run, the inspectors observed all the movement pathways of the TC. Pre-lift job briefings were thorough and emphasized safety aspects of lifting heavy loads. Individual responsibilities were clearly communicated during the 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. The inspectors also reviewed the crane acceptance testing that the licensee had performed in November 2009.

No findings of significance were identified.

c. Conclusions

The licensee developed a heavy loads program and procedures to ensure the proper handling of the required heavy loads involved in an ISFSI. The documentation supported compliance with the CoC and FSAR.

6.0 Vacuum-Drying and Helium-Backfill Operations

The vacuum-drying and helium backfill-operations portion of the dry run were performed February 15–19, 2010, and documented in a feeder for NRC Inspection Report 05000244/2010002.

During the week of August 23, 2010, the inspector concluded that the capability to adequately vacuum-dry and helium-backfill the DSCs as demonstrated during the dry run sequences on mockup work were adequately applied to the production steps for the first DSC loaded with spent fuel.

7.0 Training and Qualifications

a. Inspection Scope

The licensee's training program was reviewed to verify that appropriate training requirements were identified for ISFSI related activities and that personnel were qualified to perform those activities.

b. Observations and Findings

The inspectors determined that the licensee established a formal site-specific ISFSI training program that addressed the NUHOMS design, the applicable CoC conditions, the approved facility fuel loading, TC handling, DSC loading and transfer, and abnormal event procedures. The licensee maintained records to demonstrate that personnel conducting ISFSI activities attended the required training. As part of the process, the licensee established a formal training matrix to assure that personnel selected for ISFSI activities were fully qualified. Interviews with personnel and field observations provided evidence that personnel were familiar with the ISFSI activities that they were assigned to perform.

No findings of significance were identified.

c. Conclusions

Appropriate training was developed for the various tasks and licensee personnel were adequately trained to safely conduct ISFSI activities.

8.0 Initial Loading of the ISFSI

a. Inspection Scope

The inspectors observed the initial spent fuel loading campaign initiated on August 23, 2010. The inspection consisted of field observations, review of license documentation, and interviews with responsible personnel.

b. Observations and Findings

The inspectors observed the loading of spent fuel into the DSC by the licensee's fuel handlers. The fuel bundles were properly identified and verified before being moved into the canister. The licensee did a further verification that the correct fuel bundles had been loaded by making a video recording of the fully-loaded canister and checking the identification numbers of the fuel bundles. The inspectors also viewed the video recording. The inspectors observed the removal of the loaded TC from the spent fuel pool into the CPB and the decontamination of the TC. The inspectors observed the welding equipment setup, the root pass welding of the DSC inner cover, and the examination of the weld by visual weld examination and dye penetrant testing. Helium leak-testing plans and procedure for the cover welds and the drain/vent port covers were reviewed. The inspector examined the inner cover root weld surface. The inspectors also examined the welding equipment, welder qualification records, portions of the welding, and the NDE procedures. The setup and start of the vacuum-drying process were also observed by the inspectors. All ISFSI procedures and procedures for ISFSI

related activities were examined. The personnel involved in the various ISFSI activities were interviewed and found to be knowledgeable and experienced. The pre-job briefings were thorough and covered all aspects of the activity to be performed.

No findings of significance were identified.

c. Conclusions

The licensee successfully performed their first complete canister loading and storage on the ISFSI pad. The licensee has a documented ISFSI program and trained personnel needed to meet the criteria set forth in the CoC, SAR, and NRC regulations for an ISFSI.

Exit Meeting Summary

The inspectors presented the preliminary inspections results to John Carlin, Site Vice President, and various staff on August 27, 2010. The inspectors informed the licensee that although they did not plan on returning the following week, the inspection would remain open until the first canister was successfully stored on the ISFSI pad. This occurred on September 2, 2010. The final exit meeting was held via telephone with Brian Flynn, ISFSI Project Manager, on September 3, 2010.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. Some proprietary items were reviewed during the inspection, but no proprietary information is presented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

John Carlin, Site Vice President
Ken Connor, Engineering Support, Nuclear Fuel Management
Michael Edelstein, Fire Marshall
Penny File, Engineering Support, Nuclear Fuel Management
Brian Flynn, ISFSI Project Manager
Mark Geckle, Training Manager
Mark Giacini, Maintenance Manager
Tom Harding, Licensing Director
Jarred Jackson, ISFSI Licensing Engineer
Jamie Johnson, Maintenance Supervisor
Mike Lilley, ISFSI Engineering Manager
Terry McConnell, QPA
Jim Omundsen, Maintenance Supervisor
Jamie Ortiz, Licensing
Gene Palmer, Director of Security
Paul Swift, Engineering Manager
Jack Torbitt, Acting Director QPA
Jim Wood, Engineering Support, Nuclear Fuel Management
Alan Zelie, RP Supervisor

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

LIST OF DOCUMENTS REVIEWED

GMM-24-02-ISFSI01, “DSC Closure Operations”
GMM-24-02-ISFSI03, “HSM Loading Operations”
GMM-24-02-ISFSI04, “HSM Unloading Operations”
GMM-24-02-ISFSI05, “Transfer Cask Site Transportation”
GMM-24-02-ISFSI06, “DSC Loading Operations”
GMM-24-02-ISFSI07, “Transfer Cask Annual and Pre-Use Inspections”
GMM-24-02-ISFSI08, “DSC Pre-Use Inspection
GMM-24-02-ISFSI15, “ISFSI Abnormal Events and Recovery Actions”
FPS-16, “Bulk Storage of Combustible Materials and Transient Fire Loads”
CEG002-CALC-001, “Fire Hazards Evaluation for R.E. Ginna ISFSI Cask Handling and Storage”

FRP-52, " Canister Preparation Building and ISFSI Transport Process"
MM-GIC-ISFSI, "ISFSI Orientation Maintenance"
CNG-HU-1.01-1002, "Pre-Job Briefings and Post-Job Critiques", Rev 00300
CNG-NL-1.01-1008, "Preparation and Management of External Inspections" Rev 00300
Calc-2010-001, "ISFSI Offsite and Accident Dose Evaluation"
PCR-2004-0071, "Haul Path and ISFSI Pad"
PCR-2004-0072, "ISFSI Electrical and Security"
PCR-2007-0005, "Underground Utilities Relocations"
MM-GIC-ISPREP, "TC/DSC Prep for the Fuel Pool"
WPS 100-116, "Weld Procedure Specification, P8 to P8 with GTAW" Rev 2
PQR 99 for WPS 100-116, "Procedure Qualification Record"
PQR N148 for GTAW, "Automatic Machine Welding"
PQR N149 for GTAW, "Manual, Automatic, and Semiautomatic Welding"
RWP: 10-5001 for ISFSI Activities Task 3 and Task 6
Ginna Technical Procedure EP-PT-106, "Liquid Penetrant Examinations" Rev 00301
Ginna Vendor Procedure MSLT-DSC-CE, "Helium Mass Spectrometer Leak Testing of Dry Fuel Storage Container"
Ginna Technical Procedure EP-VT-103, "Visual Examination of Welds" Rev 00100
CNG-PR-3.01-1000, "Records Management" Rev. 00300
CNG-NL-1.01-1001, "Preparation of Regulatory Correspondence" Rev. 00501
CNG-NL-1.01-1004, "Regulatory Reporting" Rev. 00300
CNG-MN-1.01-1003, "Load Handling" Rev. 00300
GMM-24-02-ISFSI07, "Transfer Cask Annual and Previous Inspections"
CALC-GNP-009-C-1, "Ginna Spent Fuel Transfer Cask Evaluation for Seismic Rocking"
Quality Assurance Topical Report, Rev. 4
RF-8.4, "Fuel and Core Component Movement in the Spent Fuel Pool"
RE-101, "Fuel Selection for NUHOMS-32PT DSC"
RE-100, "Preparation, Review and Approval of Fuel Movement Sequence Sheets and Document Closeout"
RF-302, "Fuel Handling Tool Checkout and Operation" Rev. 00300
"Quality and Performance Assessment Inspection Procedure Guideline Maximo", Rev. 2
"10 CFR 72.212 Evaluation Report"
Ginna Plant Technical Procedure 0-6.11, "Surveillance Requirement/Routine Operations Checksheet", Rev. 16001
Ginna Plant Technical Procedure 0-6.1, "Auxiliary Operator Rounds and Log Check Sheets", Rev. 04301
Ginna SFSI and Containment Neutron Survey Tech Support Document No. 10-047
Certificate of Compliance No. 1004, Amendment No. 10
Safety Evaluation Report
Final Safety Analysis Report

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
CoC	Certificate of Compliance
CFR	Code of Federal Regulations
CPB	Cask Preparation Building
DCS	Dry Cask Storage

DSC	Dry Shielded Canister
FSAR	Final Safety Analysis Report
HSM	Horizontal Storage Module
ISFSI	Independent Spent Fuel Storage Installation
NDE	Nondestructive Examination
NMSS	Nuclear Material Safety and Safeguards
NRC	Nuclear Regulatory Commission
QA	Quality Assurance
SAR	Safety Analysis Report
SER	Safety Evaluation Report
TC	Transfer Cask
TS	Technical Specifications