

April 12, 2013

Mr. Mark Varno, Senior Vice President  
Advanced Programs  
General Electric-Hitachi Nuclear Energy  
3901 Castle Hayne Road  
Office 5506; Bldg. J  
Mail Code J32  
Wilmington, NC 28402-2819

SUBJECT: NRC INSPECTION REPORT 07200001/2012002(DNMS) – GENERAL  
ELECTRIC-HITACHI MORRIS OPERATIONS FACILITY

Dear Mr. Varno:

On March 22, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed inspection activities at the General Electric-Hitachi Morris Operations Facility in Morris, Illinois. The purpose of the inspection was to observe and evaluate the effectiveness of your biennial emergency exercise required per your NRC approved Emergency Plan. Additionally, the inspectors reviewed calculations generated in response to Unresolved Item (URI) 07200001/ 2011001-01, "Design Verification of Basin Expansion Gate." The inspectors were onsite on December 12, 2012, and March 13, 2013, and conducted in-office reviews through March 22, 2013. At the conclusion of the inspection, the results were discussed with Mr. Tenorio and other members of your staff during an exit meeting on March 22, 2013.

Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, interviews with personnel, and observations of activities in progress.

Based on the results of this inspection, the inspectors identified one Severity Level IV violation of NRC requirements. However, because the violation was of very low safety significance, and was entered into your corrective action program, the NRC is treating the issue as a noncited violation (NCV) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, and the Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

M. Varno

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In accordance with Title 10 of the Code of Federal Regulations (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 NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

We will gladly discuss any questions you have concerning this inspection. If you have questions, please contact Mr. Rhex Edwards of my staff at 630-829-9722.

Sincerely,

***/RA by Wayne J. Slawinski Acting for/***

Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch  
Division of Nuclear Materials Safety

Docket No. 07200001  
License No. SNM-2500

Enclosure:  
Inspection Report 07200001/2012002(DNMS)

cc w/encl: F. Partney, Acting Plant Manager  
General Electric-Hitachi Morris Operation  
C. Settles, Head Resident Inspection  
Illinois Emergency Management Agency

M. Varno

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cc w/encl: F. Partney, Acting Plant Manager  
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Illinois Emergency Management Agency

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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION III**

Docket No.: 072-00001

License No.: SNM-2500

Report No.: 07200001/2012002(DNMS)

Licensee: GE-Hitachi Nuclear Energy Americas, LLC

Facility: Morris Operation

Location: 7555 East Collins Road  
Morris, IL 60450

Dates: Onsite December 12, 2012, and March 13, 2013,  
with in-office review through March 22, 2013

Inspectors: Rhex A. Edwards, Reactor Inspector  
Matthew C. Learn, Reactor Engineer  
Vijay L. Meghani, Reactor Inspector

Approved by: Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure

## **EXECUTIVE SUMMARY**

### **GE-Hitachi Nuclear Energy Americas, LLC Morris Operation NRC Inspection Report 07200001/2012002(DNMS)**

The inspection consisted of observations of site activities and an evaluation of the licensee's emergency preparedness biennial exercise. Additionally, the inspectors reviewed calculations generated in response to Unresolved Item (URI) 07200001/2011001-01, "Design Verification of Basin Expansion Gate."

#### **Emergency Preparedness**

- The inspectors identified one Severity Level IV noncited violation (NCV) of very low safety significance of Title 10 of the Code of Federal Regulations (CFR) 72.44(f), "License Conditions," in that the licensee failed to follow the emergency plan requirements for biennial exercises and quarterly drills. (Section 1.1)

#### **Design Verification of Basin Expansion Gate**

- The licensee adequately evaluated the Basin Expansion Gate for normal, tornado impact, design basis earthquake (DBE), and Maximum Earthquake (ME) loads closing URI 07200001/2011001-01, "Design Verification of Basin Expansion Gate." (Section 1.2)

## **Report Details**

### **1.0 Away from Reactor Independent Spent Fuel Storage Installation (ISFSI) (IP 60858)**

#### **1.1 Emergency Preparedness**

##### **a. Inspection Scope**

The inspectors reviewed the General Electric-Hitachi Morris Operation (GEH-MO) Emergency Plan, the 2012 quarterly drill scenarios, the biennial exercise scenarios, and the applicable procedures given the proposed scenarios. During the conduct of the 2012 biennial exercise and the 2013 additional exercise, the inspectors were onsite and evaluated the exercise participants for appropriate action, as well as, evaluated the conduct of the exercise controllers.

##### **b. Observations and Findings**

The GEH-MO Emergency Plan was revised on October 20, 2010, and as such there have been no significant changes to the Emergency Plan since the last routine inspection on May 15, 2012. On October 26, 2012, GEH-MO submitted a letter to the NRC describing the planned emergency exercise scenario to be performed on December 12, 2012 to satisfy the biennial exercise requirements of the NRC approved Emergency Plan. The inspectors reviewed this scenario and the previous three quarterly drill scenarios for compliance with the Emergency Plan requirements.

During evaluation of the biennial exercise on December 12, 2012, the inspectors identified one Severity Level IV NCV of very low safety significance of 10 CFR 72.44(f), "License Conditions," for failing to follow Emergency Plan requirements.

10 CFR 72.32(a)(12), "Exercises," requires that an ISFSI not located on the site of a nuclear power reactor to have an Emergency Plan that includes provisions for conducting biennial onsite exercises to test response to simulated emergencies. To satisfy this requirement, the approved GEH-Morris Emergency Plan, Section 8.5, requires that at least once every two years off-site emergency response is practiced as an exercise. Additionally, section 8.4 of the Emergency Plan states that quarterly drills are performed at GEH-MO and the Safety Committee evaluates the effectiveness of the emergency response.

On December 12, 2012, the inspectors were present to observe the conduct of a biennial exercise where a worker simulated falling while carrying a bottle containing simulated contaminated liquid and sustained simulated injuries. During the exercise, the inspectors noted that following the fall, the injured individual was never simulated as contaminated. The inspectors also noted that section 1.6, "Personal Illness, Injury, and/or Contamination," of Morris Operation Instruction (MOI) 233, "Situation Plan," Revision 12, states that an incident involving an injured and/or contaminated individual is not an Emergency Plan event. Moreover, the NRC inspectors noted other discrepancies between the scenario and the Emergency Plan. For example, the scenario simulated a worker falling while carrying contaminated liquid and classified the event as an ALERT while the Emergency Plan does not.

The term emergency is used throughout the Emergency Plan. In Section 3.2, "Assessment and Classification," the term "Emergency" is stated as "equivalent to, and interchangeable with the term Alert." The scenario, as demonstrated, involved an injury to a worker with no contamination. The potential for contamination existed; however, no contamination was simulated. The Emergency Plan, Appendix B, "Definitions," defines an Emergency as "an unforeseen combination of circumstances or events, other than operation events, requiring prompt mitigating or corrective action." The same section defines Operational Events as "accidents or other events may occur that require prompt mitigating or corrective action without these events being considered emergencies in the sense contemplated under this plan. Operational events are not classified as emergencies but could escalate to emergency status with a corresponding increase in response effort and initiation of needed emergency measures." The inspectors determined from these definitions that the injured individual scenario did not represent an Emergency, but rather an Operational Event as defined by the Emergency Plan.

Additionally, in review of a January 4, 2013 letter to the NRC generated in response to issues raised during the inspection, "GEH-Morris Operations Emergency Exercise Requested Information," the NRC identified quarterly drills performed in 2012 that would not be classified as Emergencies per the NRC approved Emergency Plan. The inspectors concluded that if the scenario did not trigger an Emergency it would not be possible for the Safety Committee to evaluate the Emergency Response as required by the Emergency Plan.

The inspectors determined that these issues were examples of failing to follow the Emergency Plan and a performance deficiency that warranted screening for enforcement. Consistent with the guidance in section 2.2 of the NRC Enforcement Policy, ISFSIs are not subject to the Significance Determination Process and thus traditional enforcement will be used for these facilities. The inspectors determined that the failure to develop and to execute scenarios that tested key aspects of the Emergency Plan was a violation of more than minor significance using Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," example 4h.

Consistent with the guidance in section 2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) Commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. Section 6, "Violation Examples," of the NRC Enforcement Policy was used to determine the significance of the violation. The inspectors determined that the violation could be evaluated using example 6.2.d.7 as a Severity Level IV violation; in that, the licensee failed to meet or implement any emergency planning standard or requirement not directly related to assessment and notification.

Title 10 CFR 72.44(f), "License Conditions," states, in part, a licensee shall follow and maintain in effect an emergency plan that is approved by the Commission.

Contrary to the above, on December 12, 2012, the licensee failed to follow their emergency plan that is approved by the Commission requiring them to conduct, once every two years, an exercise requiring off-site emergency response. Additionally, in review of the January 4, 2013 letter to the NRC, "GEH-Morris Operations Emergency Exercise Requested Information," the NRC identified quarterly drills performed in 2012

that would not be classified as Emergencies per the NRC approved Emergency Plan. Because this matter was of very low safety significance (Severity Level IV), and has been entered into the licensee's corrective action program as Condition Report (CR) 4446, this violation is being treated as a NCV consistent with the NRC Enforcement Policy. (NCV 07200001/2012002-01).

As part of the corrective actions, the licensee performed, and the inspectors observed, an additional exercise on March 13, 2013. The scenario for that exercise tested relevant aspects of the Emergency Plan. The inspectors noted improvement from increased involvement from GEH corporate staff. Drill controllers and evaluators for the March exercise consisted of a mixture of GEH-MO staff and managers from the GEH Wilmington office. The inspectors evaluated the licensee's ability to critique and assess performance and noted that the evaluators discovered several deficiencies during the performance of the exercise. The licensee effectively demonstrated the ability to conduct and critique a biennial exercise and returned to compliance with their NRC approved Emergency Plan.

c. Conclusion

The inspectors identified one Severity Level IV NCV of very low safety significance of 10 CFR 72.44(f), "License Conditions," in that the licensee failed to follow the emergency plan requirements for biennial exercises and quarterly drills.

## **1.2 Design Verification of Basin Expansion Gate**

a. Inspection Scope

The inspectors reviewed a revised licensee calculation, Engineering Calculation 0000-0137-7388, "Structural Evaluation of Morris Expansion Gate #4 for Spent Fuel Storage Basin," Revision 1, as a result of the licensee's corrective actions from URI 07200001/2011001-01.

b. Observations and Findings

URI 07200001/2011001-01 was opened during an inspection where the inspectors performed a broad overview of the licensee's capability and readiness to cope with design basis and beyond design basis events such as those that occurred at the Fukushima Daiichi Nuclear Station in Japan. As part of that inspection, the inspectors evaluated the structures and components essential to the integrity of spent nuclear fuel. At GEH-MO, spent fuel is stored in a spent fuel basin (SFB). The SFB is a spent fuel pool consisting of several interconnected basin pools: the cask unloading basin, the fuel storage basin 1, and the fuel storage basin 2 (formerly the waste storage basin). An expansion gate is located in the SFB. The expansion gate was designed to allow an additional basin section (an additional waste storage basin 2 or fuel storage basin 3, for example) to be added to GEH-MO and connected to the existing SFB. The expansion gate consists of two large concrete walls partially surrounded by a stainless steel liner that are set against the inside and outside SFB concrete walls. The gates are joined together by tie rods pulling the walls together. Inspection Report (IR) 07200001/2011001 documents that the inspectors requested design documents demonstrating that the expansion gate was qualified for the DBE and ME as well as tornado missiles hazards as described in the Consolidated Safety



Analysis Report (CSAR). At the closure of that inspection, the licensee was unable to locate original design documentation for the SFB expansion gate.

On April 13, 2012, the licensee submitted to the NRC seismic engineering calculations regarding the expansion gate area. The calculations were reviewed during an inspection documented in IR 07200001/2012001, dated June 6, 2012. During that inspection, the inspectors had a number of open questions regarding the design and licensing basis of the SFB expansion gate. Following discussions with the licensee, the calculations were revised and approved as Revision 1 to Engineering Calculation 0000-0137-7388, "Structural Evaluation of Morris Expansion Gate #4 for Spent Fuel Storage Basin." The revised calculation was reviewed by the inspectors to ensure that the licensee demonstrated that the Basin Expansion Gate complied with the licensing basis for normal loads, DBE load, and ME load. The calculation adequately resolved the inspector's open questions and no violations of NRC requirements occurred. URI 07200001/2011001-01, "Design Verification of Basin Expansion Gate," is closed.

c. Conclusion

The licensee adequately evaluated the Basin Expansion Gate for normal, tornado impact, DBE, and ME loads.

**2.0 Exit Meeting**

The inspectors presented the inspection results to Mr. J. Tenorio and other members of the licensee staff on March 22, 2013. The licensee acknowledged the issues presented and did not identify and information discussed as being proprietary in nature.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **PARTIAL LIST OF PEOPLE CONTACTED**

M. Varno, Senior Vice President, Advanced Programs  
J. Tenorio, Plant Manager GEH-Morris Operations  
B. Partney, Acting Plant Manager, GEH-Morris Operations  
J. Legner, Administrator, GEH-Morris EHS and Procurement

### **INSPECTION PROCEDURE USED**

60858                      Away-From-Reactor ISFSI Inspection Guidance

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

<u>Opened</u>	<u>Type</u>	<u>Summary</u>
07200001/2012002-01	NCV	Failure to Follow Emergency Plan Requirements (Section 1.1)

<u>Closed</u>	<u>Type</u>	<u>Summary</u>
07200001/2012002-01	NCV	Failure to Follow Emergency Plan Requirements (Section 1.1)
07200001/2011001-01	URI	Design Verification of Basin Expansion Gate (Section 1.2)

<u>Discussed</u>	<u>Type</u>	<u>Summary</u>
None		

### **LIST OF ACRONYMS USED**

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
CR	Condition Report
CSAR	Consolidated Safety Analysis Report
DBE	Design Basis Earthquake
DNMS	Division of Nuclear Materials Safety
GEH-MO	General Electric-Hitachi Morris Operation
IR	Inspection Report
ISFSI	Independent Spent Fuel Storage Installation
ME	Maximum Earthquake
NCV	Noncited Violation
NRC	United States Nuclear Regulatory Commission
MCID	Materials Control, ISFSI, and Decommissioning Branch
MOI	Morris Operation Instruction
SFB	Spent Fuel Basin
URI	Unresolved Item

## **LIST OF DOCUMENTS REVIEWED**

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Morris Operation Emergency Plan; Dated October 20, 2010

SNM-2500; License for Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste, GE-Hitachi Nuclear Energy Americas, LLC; Amendment 13

MOI-201; Evacuation and Personnel Accounting; Revision 12

MOI-202; Tornado or Take Cover; Revision 11

MOI-222; On-Site Contamination Release; Revision 7

MOI-223; Off-Site Contamination Release; Revision 7

MOI-232; On-Site Support for Off-Site Responders; Revision 2

MOI-233; Situation Plan; Revision 12

Letter from Joe Tenorio to NRC; Notice of GE-Hitachi Morris Operation Emergency Plan Exercise for 2012; Dated October 26, 2012

Letter from Mark Varno to NRC; Morris Operations Biennial Emergency Plan Exercise; Dated December 20, 2012

Letter from Scott Murray to NRC; GEH Morris Operations Emergency Exercise Requested Information; Dated January 4, 2013

CR-4446; Biennial Exercise Adequacy; Dated December 12, 2012

GEH Morris Operation Emergency Exercise Scenario; Performed March 13, 2013

Engineering Calculation 0000-0137-7388, Structural Evaluation of Morris Expansion Gate #4 for Spent Fuel Storage Basin, Revision 1