



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

November 21, 2008

Mr. David W. Turner  
Manager, Vallecitos Nuclear Center  
GE-Hitachi Nuclear Energy Americas LLC  
6705 Vallecitos Road  
Sunol, California 94586

SUBJECT: NRC INSPECTION REPORT 070-00754/08-003

Dear Mr. Turner:

An NRC inspection was conducted on November 4-6, 2008, at your Vallecitos Nuclear Center site. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspection included an examination of selected procedures and representative records, observations of activities, and interviews with personnel. The enclosed report presents the results of this inspection. No violations were identified, and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and your response, if you choose to provide one, 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's Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact the undersigned at (817) 860-8197 or Mr. Robert J. Evans, Senior Health Physicist, at (817) 860-8234.

Sincerely,

/RA/

Jack E. Whitten, Chief  
Nuclear Materials Safety Branch B

Docket No.: 070-00754  
License No.: SNM-960

Enclosure:  
NRC Inspection Report 070-00754/08-003

cc w/enclosure:

Donald Krause, Manager  
Regulatory Compliance and Environmental Safety  
GE-Hitachi Nuclear Energy Americas LLC  
Vallecitos Nuclear Center  
6705 Vallecitos Road  
Sunol, California 94586

James D. Boyd, Commissioner  
California Energy Commission  
1516 Ninth Street (MS 34)  
Sacramento, CA 95814

Helen Hubbard  
P.O. Box 563  
Sunol, CA 94586

Marylina Kelley  
Executive Director, Tri-Valley CARES  
2582 Old First St  
Livermore, CA 94551

Pleasanton Public Library  
Attn: Ms. Karol Sparks  
400 Old Bernal Ave  
Pleasanton, CA 94566

Rene G. Steinhauer  
5524 Oakmont Cir  
Livermore, CA 94550

bcc w/enclosure:

ATHowell

CLCain

JEWhitten

Merritt N. (Nick) Baker, NMSS/FCSS/FFLD

EMGarcia

RJEvans

Fees

RIV Materials Docket File

SUNSI Review Complete: EMG ADAMS: ☒Yes ☐No Initials: EMG  
☒Publicly Available ☐Non-Publicly Available ☐Sensitive ☒Non-Sensitive

DOCUMENT NAME: S:\dnms\!nmsb-b\emg\80075403.doc

final r:\dnms\

| RIV:DNMS:NMSB-B | RIV:DNMS:NMSB-B | C:NMSB-B  |
|-----------------|-----------------|-----------|
| EMGarcia        | RJEvans         | JEWhitten |
| /RA/            | /RA/            | /RA/      |
| 11/10/08        | 11/10/08        | 11/21/08  |

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 070-00754  
License No.: SNM-960  
Report No.: 070-00754/08-003  
Licensee: GE-Hitachi Nuclear Energy Americas LLC  
Facility: Vallecitos Nuclear Center  
Location: Sunol, California  
Dates: November 4-6, 2008  
Inspectors: Robert J. Evans, PE, CHP, Senior Health Physicist  
Emilio M. Garcia, Health Physicist  
Approved By: Jack E. Whitten, Chief  
Nuclear Materials Safety Branch B  
Attachment: Supplemental Inspection Information

ENCLOSURE

## **EXECUTIVE SUMMARY**

### Vallecitos Nuclear Center NRC Inspection Report 070-00754/08-003

This routine, announced inspection included a review of radiation protection, management organization and controls, and nuclear criticality safety. In summary, the licensee was conducting facility operations in accordance with license and regulatory requirements.

#### **Radiation Protection**

- The licensee implemented the radiation protection program in compliance with regulatory requirements and license conditions. Occupational exposures were below regulatory limits (Section 1).

#### **Management Organization and Controls**

- The licensee continued to staff management level positions with individuals that met the academic training and experience requirements specified in the license application. Further, the licensee conducted radiation protection program reviews in accordance with license requirements (Section 2).

#### **Nuclear Criticality Safety Program**

- The licensee implemented criticality controls as required by regulations and the license (Section 3).

## **Report Details**

### **Summary of Plant Status**

During the inspection, work activities in progress included research of unirradiated and irradiated uranium reactor fuel and irradiated hardware. The licensee was in the process of decontaminating and refurbishing hot cell No. 4 with the support of the U.S. Department of Energy. The residual radioactive material being removed from hot cell No. 4 was being packaged and shipped for offsite disposal.

## **1      Radiation Protection (83822)**

### **1.1      Inspection Scope**

The inspectors reviewed the licensee's radiation protection program for compliance with the requirements of 10 CFR Part 20 and the license.

### **1.2      Observations and Findings**

The inspectors reviewed the licensee's exposure records for 2007 and 2008 to ensure that no individual had exceeded the regulatory limits specified in 10 CFR 20.1201. Exposure monitoring included both external and internal doses. Occupational doses consisted of combined doses from exposures to radioactive materials licensed by both the State of California and the NRC, including the NRC's special nuclear materials (SNM) and test reactor licenses.

The licensee utilized optically stimulated luminescent (OSL) dosimeters for monitoring personnel exposures. Electronic dosimeters were used to track daily doses and were used as a backup to the OSL dosimeters. In summary, all personnel exposures were below the regulatory limits specified in 10 CFR Part 20.

During 2007, the licensee monitored 567 individuals for occupational exposures. The highest total effective dose equivalent exposure was 1.270 rems with a regulatory limit of 5 rems. As of September 30, 2008, the highest total effective dose equivalent for 2008 was 1.389 rems. Doses to the lens of the eye, skin of the whole body, and extremities remained below regulatory limits during 2007 and 2008.

All doses were from external sources only. There were no assigned committed effective dose equivalent exposures during 2007-2008. Based on whole body counting results, no radioactive material was detected in site personnel in quantities approaching the investigation levels, and the breathing zone air sample results were small fractions of the annual limit of intake.

During calendar year 2007, the licensee had three declared pregnant workers. As of November 27, 2008, the licensee had three declared pregnant worker for 2008. Regulation 10 CFR 20.1208 specifies an occupational dose equivalent limit of 0.5 rems to an embryo/fetus of a declared pregnant worker during the entire pregnancy. The licensee's records document that the embryos/fetuses received doses below the detection level of the monitoring system (0.001 rems).

The inspectors conducted extensive site tours of building 102 including the hot cells gallery, service corridor, dry pit, storage pool, and building basement. The inspectors also toured buildings 103, 304, waste evaporator plant building, and the hillside storage area. The inspectors conducted independent radiological surveys using a Thermo Electron Corporation RadEye G survey meter (NRC No. 086962, calibration due date April 29, 2009). Radiological controls, including postings and barriers, were in place. All radiation and high radiation areas had been posted by the licensee. High radiation areas were being controlled by the licensee. Good housekeeping and fire protection practices were noted in all areas toured.

### 1.3 Conclusions

The licensee implemented the radiation protection program in compliance with regulatory requirements and license conditions. Occupational exposures were below regulatory limits.

## **2 Management Organization and Controls (IP 88005)**

### 2.1 Inspection Scope

The inspectors reviewed the licensee's organizational structure to ensure that the licensee had sufficient staff and managerial oversight for the work in progress. The inspectors also evaluated the effectiveness of the licensee in identifying, resolving, and preventing issues that degrade safety.

### 2.2 Observations and Findings

#### a. Site Staffing

Three managerial positions were staffed with new individuals. The new Manager Regulatory Compliance and Environmental Health and Safety assume his position on September 4, 2008. Based on a review of the records maintained by the licensee, this individual exceeded the minimum qualifications for the Manager Radiation Safety Component as specified in Appendix A to the license application. On June 20, 2008, a new individual assumed the position of Facilities and Maintenance Manager. This individual had 13 years of experience in the nuclear field, a Bachelor of Science in Physics, and a Master of Science in Operational Management. On October 6, 2008, a new individual assumed the position of Radiological Engineer Specialist. Based on review of the records maintained by the licensee, this individual exceeded the minimum qualifications for the Specialist Radiation Safety Component as specified in Appendix A to the license application. In summary, the licensee continued to staff management level positions with individuals that met the academic training and experience specified in the license application.

#### b. Site Audits and Program Reviews

Appendix A, Section 4.4, of the license application specifies the Vallecitos Technological Safety Council (VTSC) requirements. The inspectors reviewed the licensee's implementation of the VTSC. The VTSC met quarterly, and a quorum was always present. The VTSC discussed relevant issues including recent events and trends.

The inspectors also reviewed the licensee's radiation protection annual program review for 2007 and the incident investigation reports for 2008. The inspectors concluded that the licensee was effectively identifying, reviewing, and trending radiological incidents at the site.

### 2.3 Conclusions

The licensee continued to staff management level positions with individuals that met the academic training and experience requirements specified in the license application. Further, the licensee conducted radiation protection program reviews in accordance with license requirements.

## 3 **Nuclear Criticality Safety Program (88020)**

### 3.1 Scope of Inspection

The inspectors conducted tours of the site to review activities in progress and to determine whether risk-significant fissile material operations were being conducted safely and in accordance with regulatory requirements.

### 3.2 Observations and Findings

The inspectors conducted extensive tours of the facility. The inspectors observed the status of plant equipment and the control of nuclear materials. Overall, the licensee was maintaining nuclear materials in accordance with license and regulatory requirements.

The inspectors observed the status of equipment critical to nuclear safety, including the safety-related equipment specified in Table 8.1, "Equipment and Facility Design Criteria and Guidelines," of Appendix A to the license application. This table lists the alarms, interlocks, and safety features for facility equipment. The equipment includes requirements for door interlocks, air filtration, hot cell support services, and ventilation hood airflows. The inspectors observed that all equipment was installed and functioning as specified by Table 8.1 requirements.

The inspectors conducted a review of the licensee's SNM inventories. The licensee was noted to be maintaining a list of SNM. During tours of the facilities where SNM was being stored, the inspectors noted the use of tamper indicating seals and special labels for inventory control. Separation of SNM was also observed. Separation of SNM was being maintained, in part, to prevent accidental criticality.

During the inspection, the licensee conducted a monthly test of the criticality alarms. One of two alarm systems failed to actuate, and the test was suspended. Administrative controls were implemented to prevent the movement of SNM until the alarm was repaired. Although the cause of the alarm was not clearly specified by the licensee at the end of the inspection period, the failure appeared to be the result of incomplete movement of an internal radioactive check source. This type of failure may not have prevented the criticality control system from performing its intended function during an emergency.

### 3.3 Conclusions

The licensee implemented criticality controls as required by regulations and the license.

## 4 **Exit Meeting Summary**

The inspectors presented the inspection results to the Manager, Vallecitos Nuclear Center, and other members of licensee staff at the exit meeting on November 6, 2008. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.

## **SUPPLEMENTAL INSPECTION INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

J. Ayala, Specialist, Radiation Monitoring  
D. Boorn, Instrument Technician  
S. French, Physical Security Specialist  
J. Grinold, Manager, Facilities and Maintenance  
D. Hall, Radiological Engineer Specialist  
C. Hill, Materials Operations Supervisor  
D. Krause, Manager, Regulatory Compliance and Environmental Health and Safety  
D. Turner, Manager, Vallecitos Nuclear Center

### **INSPECTION PROCEDURES USED**

IP 83822, Radiation Protection  
IP 88005, Management Organization and Controls  
IP 88020, Nuclear Criticality Safety

### **ITEMS OPENED, CLOSED, OR DISCUSSED**

#### Opened

None

#### Closed

None

#### Discussed

None

### **LIST OF ACRONYMS USED**

|      |                                             |
|------|---------------------------------------------|
| CFR  | Code of Federal Regulations                 |
| IP   | Inspection Procedure                        |
| OSL  | optically stimulated luminescent dosimeters |
| SNM  | Special Nuclear Materials                   |
| VTSC | Vallecitos Technological Safety Council     |