UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

October 25, 2017

Mr. Matt Feyrer, Site Manager
Vallecitos Nuclear Center
6705 Vallecitos Road
Sunol, CA 94586-8524

SUBJECT: GE-HITACHI - NRC INSPECTION REPORT 050-00018/2017-001; 050-00070/2017-001; 050-00183/2017-001

Dear Mr. Feyrer:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on September 13-14, 2016, at your Vallecitos Nuclear Center in Sunol, California. The inspection covered the following decommissioning reactors under the subject licenses, Vallecitos Boiling Water Reactor (VBWR), General Electric Test Reactor (GETR), and Empire State Atomic Development Associates Incorporated Vallecitos Experimental Superheat Reactor (EVESR). A preliminary exit was conducted with you and members of your staff and representatives from the Wilmington, North Carolina office on September 14, 2017. The NRC performed further in-office evaluation of the decommissioning records and processes that you had implemented. Upon completion of the in-office review, the NRC inspectors discussed the results of this inspection in an exit with Mr. M. Leik and other members of your staff, as well as with Mr. S. Murray from the Wilmington, North Carolina office, on September 25, 2017. No violations were identified, and no response to this letter is required.

During this inspection, the NRC inspectors examined activities conducted under your licenses as they relate to public health and safety, and the environment, to confirm compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of the examination of selected procedures and representative records, tour of the reactors and supporting equipment, and interviews with personnel. The inspection results are documented in the enclosed report to this letter.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, 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 Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC's Website at http://www.nrc.gov/reading-rm/adams.html.
To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Rachel Browder, Senior Health Physicist, at 817-200-1452 or the undersigned at 817-200-1191.

Sincerely,

/RA/

Ray L. Kellar, P.E., Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket: 050-00018; 050-00070;
and 050-00183
License: DPR-1; TR-1; and DR-10

Enclosure:
NRC Inspection Report 050-00018/2017-001;
050-00070/2017-001; 050-00183/2017-001

cc:
S. Murray, GE Hitachi Nuclear Energy Americas LLC
G. Perez, Div. of Food, Drug, & Radiation Safety
Dr. R. Weisenmiller, California Energy Commission
Pleasanton Public Library

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.	050-00018; 050-00070; and 050-00183
License Nos.	DPR-1; TR-1; and DR-10
Report No.	050-00018/17-001; 050-00070/17-001; and 050-00183/17-001
Licensee:	GE-Hitachi Nuclear Energy
Facility:	Vallecitos Boiling Water Reactor (VBWR) GE Test Reactor (GETR) ESADA Vallecitos Experimental Superheat Reactor (EVESR)
Location:	6705 Vallecitos Road Sunol, California
Dates:	September 13-14, 2017
Inspectors:	Rachel S. Browder, C.H.P., Senior Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
	Stephanie G. Anderson, Health Physicist Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety
Accompanied By:	Bruce A. Watson, C.H.P., Branch Chief Reactor Decommissioning Branch Decommissioning, Uranium Recovery, and Waste Programs Office of Nuclear Materials Safety and Safeguards
	Jack D. Parrott, Project Manager Reactor Decommissioning Branch Decommissioning, Uranium Recovery, and Waste Programs Office of Nuclear Materials Safety and Safeguards
Approved By:	Ray L. Kellar, P.E., Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

GE-Hitachi Nuclear Energy
NRC Inspection Report 050-00018/17-001; 050-00070/17-001; and 050-00183/17-001

This U.S. Nuclear Regulatory Commission (NRC) inspection was a routine, announced inspection of licensed activities being conducted at the three permanently defueled reactors at the Vallecitos Nuclear Center. In summary, the licensee was conducting site activities in accordance with regulatory, license, and procedure requirements.

Organization, Management and Cost Controls at Permanently Shutdown Reactors

- The NRC inspectors concluded that the licensee was adequately implementing their organization that reflected the shutdown reactor's license requirements and adequately managed the workload to support the shutdown reactor's activities. In addition, the licensee's organization communicated effectively between Vallecitos Nuclear Center and GE-Hitachi, Wilmington, North Carolina office to provide an effective safety program to support the shutdown reactors.

Self-Assessment, Auditing, and Corrective Action at Permanently Shutdown Reactors

- The NRC inspectors concluded that the licensee performed the annual audit of the radiation protection program as required by 10 CFR 20.1101. In addition, the licensee was implementing a corrective action program in accordance with the procedure and maintained oversight to adequately manage the program.

Decommissioning Performance and Status Review at Permanently Shutdown Reactors and Class III Research and Test Reactors

- The licensee conducted annual inspections and audits of the three shutdown reactors in accordance with regulatory, license, and procedure requirements. The licensee conducted annual radiological surveys as required by the licenses and reported the annual verification of inspection items and radiological survey results to the NRC. The licensee had implemented a fire protection program that reasonably prevented fires from occurring and was capable of rapidly extinguishing those fires that occurred.

Occupational Radiation Exposure

- The licensee did not perform activities at the shutdown reactors during 2016; and the licensee's calculated public dose assessment as a result of other regulated activities conducted at the facility was well below the regulatory limits.

Radioactive Waste Treatment, and Effluent and Environmental Monitoring

- The licensee implemented its effluent and environmental monitoring program in accordance with its Environmental Monitoring Manual and the regulatory requirements provided under 10 CFR Part 20.

Report Details

Summary of Plant Status

The GE-Hitachi Nuclear Energy Americas, LLC (GE-Hitachi or Licensee) continued to maintain the three reactors, Vallecitos Boiling Water Reactor (VBWR), General Electric Test Reactor (GETR), and Empire State Atomic Development Associates Incorporated Vallecitos Experimental Superheat Reactor (EVESR) in a possession-only, safe storage (SAFSTOR) condition, with no fuel remaining in the reactors or spent fuel pools. The condition of SAFSTOR is a decommissioning alternative in which the licensee is authorized to maintain the facility in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated to levels that permit release for unrestricted use within 60 years of permanent cessation of operations. Licensees who choose the SAFSTOR option must meet all NRC financial and safety regulations, both prior to and during the SAFSTOR period.

On December 15, 2015, the licensee submitted an alternate decommissioning schedule for reactor licenses DPR-1, DR-10, and TR-1, with a specific request for an exemption from the requirements of 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i), which is available in (ADAMS Accession Number ML15349A045). This exemption request supplemented an initial letter submitted on July 10, 2015 (ADAMS Accession ML15195A088) for an alternate decommissioning schedule, as described in 10 CFR 50.82. The NRC is evaluating the exemption request for completion of decommissioning beyond 60 years, under the criteria provided in 10 CFR 50.83(a)(3).

On April 24, 2015, (ADAMS Accession Number ML15114A437 and Accession Number ML15114A438) the licensee submitted a request for a partial site release of approximately 610 acres of non-impacted property for unrestricted use pursuant to 10 CFR 50.83(b). The acreage is considered undeveloped land and is primarily used for cattle grazing. The Vallecitos Nuclear Center encompasses approximately 1,600 acres in Sunol, California, of which approximately 135 acres are used for licensed purposes. The NRC verified the historical site assessment, performed independent surveys, and concluded the proposed release areas were non-impacted during the site inspection conducted on July 20-23, 2015 (ADAMS Accession Number ML15303A361). After holding a public meeting in Pleasanton, CA on July 22, 2015, and publishing a notice of the receipt of the release approval request in the *Federal Register* on July 20, 2015, (*80 FR 42846*), the NRC approved the request for partial site release of the northern section of Vallecitos Nuclear Center site by letter dated May 3, 2016 (ADAMS Accession Number ML16007A348).

1 Organization, Management and Cost Controls at Permanently Shutdown Reactors (36801)

1.1 Inspection Scope

The inspectors evaluated the licensee's organizational structure to support licensed activities and regulatory requirements.

1.2 Observations and Findings

The licenses for the three shutdown reactors requires in part, that activities involving access to the facility area and use of any area shall be conducted under the direction of a designated facility manager with functional responsibility and commensurate authority

to maintain the facility in a safe and secure condition at all times. In addition, the license explains that although there is no distinct decommissioning organization, the shutdown reactors should be supported by the site management at Vallecitos Nuclear Center and health physics, training and safety organizations.

The NRC inspectors reviewed the licensee's organization and procedure requirements for access to the shutdown reactors. The Vallecitos Nuclear Center's organization was structured under the "Operations", "Commercial", and "Support" divisions. The Support division at Vallecitos Nuclear Center included environmental, health and safety, as well as security. The Support division staff reported to the General Manager in the Wilmington, North Carolina office, and had daily interactions with the Vallecitos Nuclear Center site manager regarding licensed activities. The NRC inspectors observed there were good communications across the organization to support the activities at the shutdown reactors.

The NRC inspectors reviewed the licensee's Procedure 6.1, "Access Control," Revision 8 that required the facility manager or designee to authorize each entry into the shutdown reactors. The facilities manager position was structured under the Operations division and reported to the Site Manager at Vallecitos Nuclear Center. The NRC inspectors reviewed several access control entry documents into the shutdown reactors, and concluded that the facility manager had functional responsibility to maintain the facility in a safe and secure condition at all times. The NRC inspectors concluded that the licensee had implemented a program for access to the shutdown reactors as required by license requirements.

Based on discussions with the management and staff at Vallecitos Nuclear Center, the NRC inspectors concluded that the management at Vallecitos was involved with the managed the work load, maintained tracking of corrective actions, and implemented the programs in accordance with the regulatory and license requirements.

1.3 Conclusions

The NRC inspectors concluded that the licensee was adequately implementing their organization that reflected the shutdown reactor's license requirements and adequately managed the workload to support the shutdown reactor's activities. In addition, the licensee's organization communicated effectively between Vallecitos Nuclear Center and GE-Hitachi, Wilmington, North Carolina office to provide an effective safety program to support the shutdown reactors.

2 Self-Assessment, Auditing, and Corrective Action at Permanently Shutdown Reactors (40801)

2.1 Inspection Scope

The inspector reviewed the licensee's self-assessment and corrective action program related to the oversight of the three shutdown reactors.

2.2 Observations and Findings

The regulation under 10 CFR 20.1101(c) requires licensees to assess the radiation protection program content and implementation. The licensee performed Self-

Assessment Number NOS-2017-38 on May 1-26, 2017, for the annual review of the radiation protection program. The assessment was performed by the Manager of Facility Licensing, from the GE Hitachi, Wilmington, North Carolina office, so there was independence in the performance of the assessment. The licensee did not identify any deficiencies and no recommendations were made to the implementation of the program. The inspectors reviewed the annual report and determined that the licensee performed a thorough assessment of its radiation protection program.

The licensee implemented its corrective action program under Procedure CP-16-108, "Corrective Action Program," Revision 10.1. The procedure was utilized by all the nuclear sites and facilities under GE-Hitachi oversight, including Vallecitos Nuclear Center. Any employee may initiate a condition report in accordance with the procedure and software programs loaded on the employee's computer. Vallecitos Nuclear Center had a corrective action coordinator, who reviewed the initial submittals, tracked the condition reports for the facility, and generated status reports for the weekly management organization status review meetings. The Condition Review Group (CRG) in the Wilmington, North Carolina office reviewed the new condition reports on a daily basis. The CRG made assignments, including due dates, responsible management, and the Priority Level for the condition report. The Priority Levels ranged from A to D, with A being a significant condition adverse to quality, B was a condition adverse to quality, C was similar to broke/fix or conditions that had minimal effect on the safe or reliable operation of a component or facility, and D was considered an improvement item. The licensee was focused on completing condition reports in a timely manner and the typical lifecycle was approximately 45 days. In addition, throughout the lifecycle, the CRG had the ability to add/modify/delete actions, as needed, to ensure process requirements were met.

The inspectors reviewed a summary of the condition reports generated since the last inspection performed on September 2016 that involved the shutdown reactors. A snapshot of the corrective action program at the Vallecitos Nuclear Center identified 62 open action items, in which 20 of those actions were assigned to the environmental, health and safety group. At the same time, Vallecitos Nuclear Center had closed 158 actions during the calendar year 2017 and there were no past due action items that were still open. The tracking of the CAP items was performed weekly by the management team at Vallecitos Nuclear Center, which provided visibility to the corrective action program at the facility.

The following condition reports were reviewed. The NRC inspectors reviewed the associated tasks and determined that the condition reports adequately addressed the issue that was documented.

- CR 26393, GETR water sample result was missing (Priority C evaluation)
- CR 21922, Fire Drill Performance conducted October 26, 2016 (Priority C evaluation)
- CR 18612, Recommendations from licensee's 2016 self-assessment of the radiation protection program (Priority C evaluation)

2.3 Conclusions

The NRC inspectors concluded that the licensee performed the annual audit of the radiation protection program as required by 10 CFR 20.1101. In addition, the licensee was implementing a corrective action program in accordance with the procedure and maintained oversight to adequately manage the program.

3 Decommissioning Performance and Status Review at Permanently Shutdown Reactors (71801) and Class III Research and Test Reactors (69002)

3.1 Inspection Scope

The inspectors reviewed the licensee's control and oversight of the three shutdown reactors.

3.2 Observations and Findings

a. Status and tours of the shutdown reactors

1. Vallecitos Boiling Water Reactor

Vallecitos Boiling Water Reactor (VBWR) is a possession-only reactor under License No. DPR-1, Amendment 21. It was a 50 megawatt (MW) power reactor that achieved full power operations in 1957, after receiving its Construction Permit No. CPPR-3 on May 14, 1956. It was shut down on December 9, 1963, for an extended period of time and subsequently was deactivated. All fuel has been removed from the facility. The possession-only facility license DPR-1, License Condition 4 states in part, that there should be an audible control device maintained on the doors to the containment building. In addition, License Condition 5 authorizes GE-Hitachi to dispose of component parts or devices from the VBWR facility in accordance with the provisions of 10 CFR Part 20. The licensee removed extensive components from the facility between October 2007 and November 2008. All reactor systems have been removed except for the reactor vessel. The only water remaining in the facility was inside the reactor vessel.

The inspectors toured the facility with Headquarters personnel, and licensee representatives. The inspectors confirmed there was an alarm device functioning on the manual doors to the containment building that provided an alarm at the 300 area alarm panel and at the Central Alarm Station. There were safety rails installed, as necessary, and the licensee was satisfactorily maintaining temporary lighting. The inspectors observed that the roll-up door was secured, which was installed in place of the equipment hatch.

The licensee used a portable ventilation system with filtration because the plant ventilation system had been dismantled and was no longer available. The licensee monitored the water level in the reactor vessel and the inspectors confirmed that it had remained essentially constant at approximately 95 inches of water, since the last NRC inspection conducted in September 2016.

The licensee initiated CR 26850, Action 1 to update the Facilities Maintenance Procedure, 6.2, "Patrols and Inspections" to include inspections at each shutdown reactor after a natural phenomenon, such as, earthquakes or floods. Since the reactor

vessel for VBWR was surrounded by lead bricks, any significant natural phenomenon may contribute to different radiological conditions around the reactor vessel that should be evaluated.

2. ESADA Vallecitos Experimental Superheat Reactor

The ESADA Vallecitos Experimental Superheat Reactor (EVESR) is a possession-only reactor under License No. DR-10, Amendment No. 7. The EVESR was a light water moderated, steam cooled, superheat, experimental research reactor that used slightly enriched uranium dioxide as fuel. It operated at a maximum of 17 MW thermal and was initially licensed in 1963. It achieved full power operation in 1964, and was shut down on February 1, 1967, and subsequently deactivated. All fuel and other special nuclear material has been removed and shipped offsite. In addition, a significant amount of equipment used to operate the reactor, such as nuclear instrumentation, piping, pumps, and valves have been removed. The polar crane was non-functional, and the licensee indicated there were not any plans to remove heavy equipment from the facility. The licensee identified a jib crane, which was stated to have a limit of approximately 2 tons, so its use would be limited.

The inspectors toured the facility with Headquarters personnel and licensee representatives. The inspectors confirmed there was an alarm device functioning on the airlock door to the containment building that provided an alarm at the 300 feet elevation area alarm panel and at the Central Alarm Station. The licensee had a portable dehumidifier to remove significant quantities of condensation that tended to build-up in the facility, although the licensee indicated that since using the dehumidifier they were not observing as much condensation as previously identified. The licensee had temporary lighting installed and it was operating sufficiently to ensure the passageways and stairs were safely lit. The stack was no longer operational and the licensee was using a portable ventilation system.

The radiation levels were less than 1 milliRoentgen per hour (mR/hr) throughout the facility, except in certain areas. The inspectors measured approximately 35 mR/hr on the two emergency cooling discharge valves located on the 534-ft level, using a Ludlum Model 19 micro-R meter, Serial Number 033906, calibration due date of July 21, 2018. The licensee maintained concrete blocks over the reactor vessel and the head/shield plug storage pit. In addition, a wooden cover was installed over the empty spent fuel storage pool, with an installed railing to prevent entry since the wooden cover was not designed to support a load. The licensee maintained control of the keys to the locked cover installed over the stairwell that provided access to areas below the main 549-ft level. In addition, the licensee controlled access to areas inside the bioshield and reactor that was consistent with the requirements of 10 CFR 20.1601, “Control of Access to High Radiation Areas.”

3. General Electric Test Reactor

The General Electric Test Reactor (GETR) is a possession-only reactor under License No. TR-1, Amendment No. 17. The reactor was a 50 MW thermal experimental test, development, and isotope production reactor that utilized highly enriched plate fuel and was initially licensed to operate in 1959. The reactor was shut down in 1977 and subsequently deactivated. All fuel and isotope production targets containing special nuclear material have been removed from the facility and shipped offsite. The reactor,

systems and piping, and spent fuel pool have been drained of water. The containment polar crane was functional and only required re-certification for it to be considered operable. The licensee had secured the ventilation stack in November 2016, so there was no requirement to continue to perform particulate monitoring, since it was only required during operations under Technical Specifications, Appendix A, Item C.2.

Following was the 2016 GETR stack monitor results, when the stack was operational.

Analysis	Result	micro-Curies per cubic centimeter (µCi/cc)
Alpha concentration	7.14×10^{-16}	µCi/cc
Beta concentration	1.94×10^{-14}	µCi/cc

The inspectors toured the facility with Headquarters personnel, and licensee representatives. Dose rate measurements observed by the inspectors based on the Ludlum Model 19 micro-R meter, were less than 1 mR/hr throughout the facility, except in certain areas. The inspectors measured approximately 2.5 mR/hr around the control rods underneath the reactor vessel and approximately 6-8 mR/hr around the locked door to the experimental exhaust system. The licensee had stored hardware such as fuel transfer containers and coupon storage containers in the dry spent fuel pool. The inspectors toured the area where the control rods were refurbished to support activities at the time the reactor was operational, and observed that the area remained as it had been left at the time the facility was shutdown.

The tank farm located outside the control room building had three underground tanks and one above ground tank, with each one having a capacity of 25,000 gallons. The underground tanks were monitored on a quarterly basis. As needed, the water from the tanks was transferred by piping to the above ground tank and subsequently transported by a mobile tank to the onsite waste evaporator plant for processing. In addition, the licensee monitored well (B-2) which was located outside the GETR control room on a bi-annual basis. Following are the results of the samples collected during 2016 from the B-2 well. The licensee explained that the December 2016 sample was lost during transit, in that the laboratory never received the sample. The licensee initiated Condition Report (CR) #26393 to add a compliance calendar item to track sample deliveries and confirm receipt of the laboratory analysis report.

Month	Gross beta (µCi/ml)	Gross Alpha (µCi/ml)	Tritium (µCi/ml)
June 2016	4.58×10^{-7}	1.51×10^{-7}	< MDC*
December 2016	sample was lost		

*MDC = minimum detectable concentration

The inspectors also observed that the licensee effectively maintained step-off pads for contamination control at the exits from each of the three reactors. In addition, the postings were adequate and in compliance with the requirements under 10 CFR Part 20.

b. License Compliance Reviews

Each of the shutdown reactors have license conditions that require annual reports be performed and submitted to the NRC, as required. The inspectors reviewed the annual shutdown reactor reports for calendar year 2016, which were submitted to the NRC on March 23, 2017 (ADAMS Accession Number ML17083A160). Based on the annual

report and observations during the inspection, the inspectors concluded that the shutdown reactors continued as in previous years, without any unexpected issues or changes to the facility status. The licensee performed its surveillances in accordance with Procedure number 6.1, "Access Control," Revision 8, which provided a step-by-step instruction for conducting entries into the three shutdown reactors. Based on the observed entries that were conducted and the documentation generated to support the entries, the inspectors determined that the licensee had adequately implemented its instruction for entering the shutdown reactors, which ensured safe access to the facilities. The dose rates, radiological contamination levels, and air sample results were consistent with historical data documented in previous annual reports. The results indicated that all radiological measurements remained low and the licensee did not identify any unexpected anomalies.

The licensee Procedure Number 6.2, "Patrols and Inspections," Revision 7, provided the instructions to ensure that the three reactors were inspected regularly and that periodic radiation and contamination surveys were conducted to ensure compliance with each of the three reactor Technical Specifications and 10 CFR Part 20 requirements. The licensee was required to perform weekly patrols that consisted of items including but not limited to external door locks, ground water sump levels, postings, and power to the 300 feet elevation area alarm panel. The licensee performed quarterly routines at GETR that included radiation survey measurements and verification of radiation signs and barriers. Finally, the licensee performed annual inspections and radiation survey measurements inside each of the three shutdown reactors. The procedure requirements were consistent with the Technical Specifications for each of the three reactors. Based on the documents reviewed, the inspectors determined that the patrols and inspections had been performed in accordance with the Procedure 6.2, "Patrols and Inspections," Revision 7. The licensee had initiated CR 26850, Task #2 to identify the appropriate managerial oversight to review the weekly patrols and how any program deficiencies were corrected.

The inspectors reviewed the licensee's program implementation described in the "Environmental Monitoring Manual," Revision 2. The manual described that the hydrology of the site was studied by geologists from the U.S. Geological Survey, Department of the Interior on two different occasions, during 1955 and 1980. Both studies concluded that the path of travel would be southwesterly from the site or westward from the Vallecitos sub basin by way of the Vallecitos Creek. The NRC inspectors recognized that there were no immediate wells surrounding VBWR and EVESR; and that there was one well (B-2) located outside the GETR control room, which was monitored and tested by the licensee under the GETR license, refer to Section 3.2.a.3 of this inspection report for more information. The licensee was not aware of any spills or contamination events at the shutdown reactors that would necessitate the drilling of additional monitoring wells. There have been no indications of groundwater contamination in the wells located in the southwesterly direction from the shutdown reactors.

The inspectors discussed with the licensee that these wells were a considerable distance from the location of the shutdown reactors and could not be used exclusively to draw conclusions regarding the absence of groundwater contamination. The inspectors and Headquarters representatives explained that a number of factors would need to be

considered, including evidence provided in the licensee's historical decommissioning records, in order to draw conclusions regarding the groundwater surrounding the shutdown reactors.

The NRC inspectors evaluated the locations utilized by the licensee for maintaining its historical decommissioning records as required by 10 CFR 50.75(g). This regulation was initially published in the Federal Register on February 11, 1985 (*50 FR 5600*), which was after the dates that the three reactors were shutdown. The proposed regulation stated in part, that the intent was to assure that all important information was kept until license termination and that it be readily accessible when needed. In addition, the proposed regulation allowed the use of references to relevant information and locations in order to avoid unnecessary duplication of records kept for other purposes. This intent was followed through when the regulation was finalized in 1988 (*53 FR 24049*). The inspectors reviewed the efforts that the licensee had made in maintaining its decommissioning records in order to meet this regulatory requirement for the shutdown reactors. Currently, the licensee was maintaining its decommissioning records at Vallecitos Nuclear Center and at GE Hitachi, Wilmington, North Carolina office. The NRC inspectors concluded that this was acceptable in meeting the intent of the regulatory requirement. Further, the licensee initiated CR #26800 to establish a documented centralized location containing all known records pertinent to the decommissioning of Vallecitos licensed facilities, including how the records will be maintained and controlled for access.

c. Fire Protection

The licensee is required under 10 CFR 50.48(f) to maintain a fire protection program to: (1) reasonably prevent fires from occurring; (2) rapidly detect, control, and extinguish those fires that do occur and that could result in a radiological hazard; and (3) ensure that the risk of fire-induced radiological hazards to the public, environment, and plant personnel are minimized. The three shutdown reactors are required to have a fire protection program however, they are not required to maintain fire detection or suppression equipment at their facilities because the majority of flammable materials have been removed. However, the inspectors reviewed the fire protection program from an emergency preparedness perspective to reasonably prevent fires from occurring and to rapidly extinguish those fires. The inspectors noted that the licensee had implemented a fire extinguisher program with a significant number of fire extinguishers present onsite. The inspectors noted that Procedures 1.16, "Fire System Maintenance and Inspection," Revision 3 and C-5, "Fire Protection Procedure," Revision 7, did not fully describe the fire extinguisher program that the licensee had implemented. The licensee initiated CR #26850, Action 3 to address the inclusion of fire extinguisher instructions and frequency of inspections into procedures and Action 4 to identify the appropriate managerial oversight to review the completed fire extinguisher inspections and how any program deficiencies were corrected.

3.3 Conclusions

The licensee conducted annual inspections and audits of the three shutdown reactors in accordance with regulatory, license, and procedure requirements. The licensee conducted annual radiological surveys as required by the licenses and reported the annual verification of inspection items and radiological survey results to the NRC. The

licensee had implemented a fire protection program that reasonably prevented fires from occurring and was capable of rapidly extinguishing those fires that occurred.

4 Occupational Radiation Exposure (83750)

4.1 Inspection Scope

The inspectors reviewed the licensee's control and oversight of the three shutdown reactors.

4.2 Observations and Findings

The licensee used the COMPLY computer code to analyze the doses to members of the public based on the annual measured releases from the entire site during 2016. The inspectors recognize that no operations or decommissioning activities were conducted at the three shutdown reactors and therefore, the emissions were from other regulated activities performed at the site.

The calculated effective dose equivalent from the entire site was 0.7 millirem per year (mrem/y) at the property line. The licensee also calculated the projected dose at the industrial area boundary, which is onsite. This calculated dose was 4.8 mrem/y. These values were less than the 2016 data and significantly less than 10 mrem/yr total effective dose equivalent from air emissions of radioactive material to the environment, which is the regulatory constraint established in 10 CFR 20.1101(d).

The regulations under 10 CFR 20.1301 provides the dose limits for individual members of the public. This regulation specifies that the total effective dose equivalent to individual members of the public from licensed operations shall not exceed 100 millirem in a year. The licensee measured ambient gamma radiation levels at 20 environmental samples stations located around the site, in which 7 of the locations were designated as "background" dosimeter locations. The licensee explained that the "background dosimeters" were not subtracted from the sample stations dosimeters, but were used for informational purposes only.

The sample results were documented in the 2015 Effluent Monitoring and Environmental Surveillance Programs annual report. The average result was 69 mrem/y with a variation of 14 mrem, with no background results subtracted. Based on the dosimetry results, the inspectors concluded that the dose limits for individual members of the public was not exceeded.

4.3 Conclusions

The licensee did not perform activities at the shutdown reactors during 2016; and the licensee's calculated public dose assessment as a result of other regulated activities conducted at the facility was well below the regulatory limits.

5 Radioactive Waste Treatment, and Effluent and Environmental Monitoring (84750)

5.1 Inspection Scope

The inspectors reviewed the licensee's effluent and environmental monitoring report for the facility.

5.2 Observations and Findings

The licensee submitted its 2016 annual report for the Effluent Monitoring and Environmental Surveillance Programs on February 28, 2017, as required by various site licenses and permits issued by the NRC and the State of California. The licensee submitted a revised report on August 28, 2017, (ADAMS Accession Number ML17240A387), to correct a stack emission limit for the nuclear test reactor on Figure 7, of the report. The inspectors recognize that no operations or decommissioning activities were conducted at the three shutdown reactors during 2016.

The inspectors reviewed the sample collection requirements provided in the Environmental Monitoring Manual and concluded that the licensee was performing its sample collection in accordance with the manual to support the environmental monitoring program at the facility. The licensee collected and analyzed environmental data for air, groundwater, sediments, and vegetation in accordance with its procedures. In addition, the licensee performed analyses of both gross alpha and gross beta/gamma for water collected from surface water basins 1-4. Other analyses of the environmental samples collected were performed by State-certified offsite laboratories. The analysis results documented that no radiological material was released equal to, or greater than the regulatory limits provided in 10 CFR Part 20, Appendix B, Table II, for air and water.

The licensee generated several corrective actions associated with the environmental monitoring program. These included verifying the receipt of samples by the offsite laboratory and receipt of laboratory results, and obtaining QA certification of the offsite laboratory (CR 26850). The licensee identified questionable alpha results in the monitoring Well #7 located at the southwest basins, and the NRC inspectors questioned the gross-beta result for the August sample for monitoring well 102A, which is located inside Building 102. After discussion with the inspectors, the licensee agreed that these discrepancies should also be tracked using the corrective action program and in the future the description and resolution should be documented in the annual effluent monitoring and environmental surveillance program report.

5.3 Conclusions

The licensee implemented its effluent and environmental monitoring program in accordance with its Environmental Monitoring Manual and the regulatory requirements provided under 10 CFR Part 20.

6 Exit Meeting Summary

On September 25, 2017, the NRC inspectors presented the final inspection results to Mr. M. Leik and other members of your staff, as well as with Mr. S. Murray from the Wilmington, North Carolina office. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Leik, EHS and Regulatory Compliance Manager
S. Murray, Manager, Facility Licensing
J. Ayala, Radiation Protection Supervisor
M. Schrag, Facilities Manager
B. Neri, Fire Protection
E. Hadberg, Radiation Monitor Technician
F. Rocchiccioli, Corrective Action Program

INSPECTION PROCEDURES USED

IP 36801	Organization, Management and Cost Controls at Permanently Shutdown Reactors
IP 40801	Self-Assessment, Auditing, and Corrective Action at Permanently Shutdown Reactors
IP 69002	Class III Research and Test Reactors
IP 71801	Decommissioning Performance and Status Review at Permanently Shutdown Reactors
IP 83750	Occupational Radiation Exposure
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

None

Discussed

None

LIST OF ACRONYMS

CFR	*Code of Federal Regulations*
CR	Condition Report
CRG	Condition Review Group
EVESR	Empire State Atomic Development Associates Incorporated Vallecitos Experimental Superheat Reactor
GETR	General Electric Test Reactor
MW	Megawatt
NRC	U.S. Nuclear Regulatory Commission
VBWR	Vallecitos Boiling Water Reactor

GE-HITACHI - NRC INSPECTION REPORT 050-00018/17-001; 050-00070/17-001; 050-00183/17-001, DATED OCTOBER 25, 2017

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☒ SUNSI Review By: RSB	ADAMS: ☒ Yes ☐ No	☐ Sensitive ☒ Non-Sensitive	☐ Non-Publicly Available ☒ Publicly Available	Keyword NRC-002

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