



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 18, 2018

Scott P. Murray, Manager
Facility Licensing
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SUBJECT: INFORMATION NEEDED FOR THE GE HITACHI EXEMPTION REQUEST
FOR ALTERNATE DECOMMISSIONING SCHEDULES FOR LICENSES
DPR-1, DR-10 AND TR-1 AT THE VALLECITOS NUCLEAR CENTER (EPID
No. L-2017-LLA-0052)

Dear Mr. Murray:

By letter dated July 31, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17212B019), GE Hitachi Nuclear Energy (GEH) submitted a response to a US Nuclear Regulatory Commission (NRC) May 16, 2017 (ML17138A121) request for additional information (RAI) that was necessary to complete our evaluation of your request of July 10, 2015, and supplemented by letters dated October 15, 2015, and July 15, 2016 (ADAMS Nos. ML15195A088, ML15288A390, and ML16197A277 respectively) to exempt the shutdown reactors at the Vallecitos Nuclear Center (VNC) from the decommissioning scheduling requirements of Title 10 of the Code of Federal Regulations (CFR) Part 50.82 (50.82(a)(3) and 50.82(b)(4)(i)) using the exemption criteria of 10 CFR 50.12.

NRC has reviewed the information supplied with your RAI response and conducted a site visit and onsite audit on September 13, 2017. Based on these activities, NRC has determined that to be able to complete our evaluation of the exemption request, certain additional information must be supplied by GEH before the NRC staff can complete review of the GEH request and make the findings required in 10 CFR 50.12(a)(1). Specifically, GEH needs to show how you are ensuring confinement of residual radioactivity associated with the shutdown reactors at the VNC and evaluating and monitoring the long term physical safety of the reactor structures. This information is needed by the NRC for its safety evaluation to ensure that extending the decommissioning schedule for the shutdown reactors will not present an undue risk to public health and safety from a release of residual radioactivity into the site.

NRC review of the GEH RAI response

NRC RAI #1

NRC requested information on residual radioactivity in and around the shutdown reactors, and how that residual radioactivity will be monitored and controlled, and how GEH would comply with

10 CFR 20.1406(c), relative to the minimization of the introduction of residual radioactivity into the site, and 20.1501(a), relative to surveys and evaluation of subsurface residual radioactivity during the extended decommissioning period.

GEH response to RAI #1

GEH stated that GEH internal procedures are designed to comply with all licenses and permits on the Vallecitos site and that GEH's annual reports on Effluent Monitoring and Environmental Surveillance Programs demonstrate compliance with the relevant requirements of 10 CFR Part 20 including impacts to groundwater from leaks and spills. GEH also stated that the scope of the Effluent Monitoring and Environmental Surveillance Programs is considered sufficient to evaluate potential radiological hazards from residual radioactivity from the shutdown reactors and to minimize the spread of contamination, and that the NRC's annual inspections conclude that the licensee maintains the shutdown reactors in accordance with procedures and license requirements.

NRC evaluation of the GEH response to RAI #1

NRC does not agree with the GEH response. While NRC inspections have found that the licensee maintains the shutdown reactors in accordance with procedures and license requirements, the NRC finds, through the review of this exemption request and onsite observation, that GEH is not demonstrating compliance with the regulatory requirements of 10 CFR 20.1406(c) and 20.1501(a). The requirements of these regulations are not addressed in the licenses or procedures for the shutdown reactors at the VNC.

- 1) NRC observations of compliance with 10 CFR 20.1406(c) relative to conducting operations to minimize the introduction of residual radioactivity into the site -

While at the site and in reviewing records, NRC observed: 1) a significant crack in the concrete structure around the reactor vessel in the Vallecitos Boiling Water Reactor (VBWR); 2) evidence of historical leakage of rain water into the ESADA Vallecitos Experimental Superheat Reactor (EVESR) that flooded the basement of that building; 3) historical and ongoing issues with excessive moisture and condensation inside the shutdown reactor buildings that has led to past pooling of water in those buildings; 4) evidence of corrosion of the steel structures inside the VBWR and EVESR; 5) the inability to access the lower portions of the VBWR due to the loss of safe stairway access and seismic concerns; and, 6) the fact that the VBWR reactor vessel is essentially full of water, left over from the operational period of the reactor, that contains residual radioactivity that has the potential to spread into the site if the VBWR reactor building loses its structural integrity. These conditions indicate that the structural integrity of the shutdown power reactor buildings is indeterminate and that there could be a structural failure leading to a leak of residual radioactivity to the site subsurface during the period of extended decommissioning. Therefore, NRC has determined that compliance with the requirements of 10 CFR 20.1406(c) is required to demonstrate that the exemption criteria of 10 CFR 50.12(a)(1), i.e., that granting the exemption will not present an undue risk to the public health and safety, is satisfied.

- 2) NRC observations of compliance with 10 CFR 20.1501(a) relative to the survey of areas, including the subsurface, that are reasonable under the circumstances to evaluate radiation levels, residual radioactivity, and any potential radiological hazards -

GEH stated in the response to the RAIs that current monitoring of down gradient groundwater at the site is an alternate to subsurface monitoring of the shutdown reactors and that no current results indicate subsurface contamination. However, GEH has presented no supporting analysis or data to demonstrate that any of the existing monitored groundwater wells are hydrologically downgradient of the shutdown reactors and/or that any of the sampled groundwater wells were put in to specifically monitor the subsurface of the shutdown reactors. However, while NRC finds that compliance with 10 CFR 20.1501(a) needs to be addressed, NRC finds that demonstration of compliance with this specific regulation is not needed to demonstrate meeting the exemption criteria of 10 CFR 50.12(a)(1) in that any residual radioactivity found in the groundwater would have resulted from a leak that has already occurred rather than resulting from a future introduction of residual radioactivity into the site from the shutdown reactors.

NRC RAI #2

NRC stated that there is not enough information in the request to determine if granting the exemption would meet any of the special circumstances of 10 CFR 50.12(a)(2).

GEH response to RAI #2

In your response to RAI #2, you chose to address special circumstances 10 CFR 50.12(a)(2)(ii) and 2(iv). The special circumstance in 50.12(a)(2)(ii) states that a special circumstance is present whenever "[a]pplication of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." Special circumstance 50.12(a)(2)(iv) states that a special circumstance is present whenever "[t]he exemption would result in benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption."

GEH response on 50.12(a)(2)(ii)

In your response on 50.12(a)(2)(ii), you stated that multiphase decommissioning at the site does not serve the underlying purpose of the NRC's Decommissioning Rule (53 FR 24019; June 27, 1988) in that due to the multiple locations of the shutdown reactors at the site and the presence of licensed operations on other parts of the site, there would be inherent operational safety and security inefficiencies with starting and stopping decommissioning of separate facilities as they shutdown, rather than doing them all at once. In addition, you stated that there would be a risk to finality of the release criteria of individual areas of the site once the entire site is evaluated for decommissioning.

NRC evaluation of the GEH response on 50.12(a)(2)(ii)

In NRC's RAI letter dated May 16, 2017, NRC stated that the underlying purpose of the Decommissioning Rule is to remove nuclear facilities safely from service and to reduce

residual radioactivity to a level that permits release of the property for unrestricted use and termination of the license in a timely manner (within the decommissioning time limits 10 CFR 50.82), and that significantly increasing the decommissioning period is not consistent with the purpose of terminating the license in a timely manner. However, NRC has determined that if no undue risk to public health and safety can be demonstrated during a period of extended decommissioning, then requiring the decommissioning of the shutdown reactors at VNC within the timeliness requirements of § 50.82 may not be necessary to achieve the underlying purpose of the Decommissioning Rule.

While meeting the timeliness requirements of § 50.82 may not be necessary to achieve the underlying purpose of the Decommissioning Rule, NRC has determined that for GEH to demonstrate that there would be no undue risk to public health and safety during an extended decommissioning period, and to reduce the potential spread of residual radioactivity at the site, compliance with 10 CFR 20.1406(c) is required. The regulations in § 20.1406(c) require that licensees, to the extent practical, conduct operations to minimize the introduction of residual radioactivity into the site, including the subsurface. However, NRC did not find in your request, or in the response to the RAI, how you have evaluated potential sources of residual radioactivity and taken actions to minimize the potential movement of residual radioactivity into the subsurface of the site.

GEH response on 50.12(a)(2)(iv)

In your response on Section 50.12(a)(2)(iv), you described efficiencies in the technical evaluation of the dose assessment, less disruption of the surrounding community, and public understanding of the decommissioning process that would come from a consolidated approach to decommissioning the licensed facilities at the VNC.

NRC evaluation of the GEH response on 50.12(a)(2)(iv)

While the technical efficiency, stakeholder impact and communication benefits you describe, of a consolidated decommissioning of the licensed facilities of the VNC, could be valid, you did not explain how granting the exemption would result in a benefit to public health and safety. Therefore, NRC could not find that this special circumstance could be supported by the information supplied with your request or in the information supplied with your response to the RAI.

NRC findings and request for additional information

Based on this review, NRC finds that GEH needs to demonstrate compliance with 10 CFR 20.1406(c) to meet the exemption criteria of 10 CFR 50.12. Specifically these actions are needed to 1) support the criteria in 10 CFR 50.12(a)(1) that granting that exemption will not present an undue risk to the public health and safety due to release of residual radioactivity during the period of extended decommissioning; and 2) show that the application of the timeliness requirements in the Decommissioning Rule is not necessary to achieve the safe decommissioning of the site (Special Circumstance 50.12(a)(2)(ii)). Specifically GEH should:

- 1) Provide an engineering structural analysis of the shutdown reactor facilities at the VNC that includes an analysis of their ability to maintain integrity of the building for purposes of ensuring confinement of the residual radioactivity. The analysis should include the ability of the structures to prevent water intrusion into the building, and maintain structural integrity for the unfettered access of individuals to inspect the condition of the facilities. This analysis should also include an estimate of the three shutdown reactors' ability to maintain structural integrity and confinement of residual radioactivity after any seismic loads that could affect the facilities over the time of extended decommissioning.
- 2) Provide your plan for routine maintenance and surveillance of the shutdown facilities related to structural integrity and any special surveillance requirements that would be necessary should a seismic event occur during the current licensing period or during the requested extension to the decommissioning period.
- 3) Provide a plan and schedule for when access to the lower portions of the VBWR will be safe for GEH employees and NRC staff and inspectors to enter so that they can effectively carryout surveillance and inspection requirements.

Compliance with other provisions of the Decommissioning Planning Rule

In addition to the NRC's findings relative to the requirements of the 50.12 exemption request, NRC has found that GEH may not be in compliance with other provisions of the Decommissioning Planning Rule (DPR), namely the requirements in 10 CFR 20.1501(a) and 50.75(g). While NRC had determined that demonstration of compliance with these regulations is not needed to evaluate approval of the 50.12 exemption request, NRC needs this additional information to determine if GEH is in compliance with §§ 20.1501(a) and 50.75(g). Specifically, NRC requests that:

- 1) GEH show how the site is in compliance with the applicable safety regulations in 10 CFR 20.1501(a) which requires licensees to make or cause to be made, surveys of areas, including the subsurface, that are reasonable under the circumstances to evaluate the magnitude and extent of radiation levels; and concentrations or quantities of residual radioactivity; and the potential radiological hazards of the radiation levels and residual radioactivity detected. This will include how the site is meeting these requirements for radiological surveying and monitoring of the subsurface and groundwater around the shutdown reactors;
- 2) GEH show how they are in compliance with 10 CFR 50.75(g) regarding recordkeeping for radiological surveys and decommissioning records for the shutdown reactors. Describe how you are documenting locations and amounts of residual radioactivity in decommissioning records.

As the regulations in 10 CFR 20.1501(a) and 50.75(g) relate to the NRC's promulgation of the DPR, NRC Regulatory (Reg.) Guide 4.22, "Decommissioning Planning during Operations," describes methods acceptable to the NRC for implementation of these requirements. With regards to the environmental surveying, monitoring and radiological safety programs, GEH needs to describe to NRC how you meet requirements contained in 10 CFR 20.1501(a) or alternatively comply with the guidance in Reg. Guide 4.22 that specifically identifies industry guidelines contained in NEI 07-07 "Ground Water Protection Initiative" (ML072610036) on how

power reactor licensees, both operational and in decommissioning, are expected to demonstrate compliance with the DPR for subsurface areas of decommissioning facilities. During the September 13, 2017, site visit, NRC staff reviewed with your staff the guidance that specifically identifies industry guidelines in NEI 07-07. NRC found that GEH has not implemented the guidance in NEI 07-07 to demonstrate compliance with the DPR nor have you implemented an alternative compliance strategy. Specifically: 1) address how you plan to meet the objectives in NEI 07-07 regarding developing and implementing a ground water protection program, communicating with stakeholders, and performing program oversight; or, 2) provide an alternate plan to meet the requirements of 10 CFR 20.1501(a) and 50.75(g). NRC has found that GEH's current compliance with the environmental release requirements of 10 CFR Part 20, Appendix B, the ALARA requirements of 10 CFR 20.1101, and the dose limits of 10 CFR 20.1301 for your current environmental and groundwater monitoring program do not demonstrate compliance with the requirements of 10 CFR 20.1501(a) in that they do not address the subsurface environment associated with the shutdown reactors at the VNC.

Other Information Requests

During the NRC site visit, GE committed to evaluating existing groundwater wells required to be sampled by the current environmental monitoring program, where water samples have not been obtained for many years. Please provide an evaluation of the status of these wells. In addition, please verify the ground water flow direction(s) for the site and that these wells are within the hydrologic flow paths from the shutdown reactors. Please also provide the results of your evaluation, including any models developed along with your plan and schedule for any corrective actions identified.

With regards to the current radiological safety program, please provide the radiological surveillance procedures for surveying the facilities and an evaluation that your current radiological measurement program accurately detects and measures the radiological hazards at the different shutdown reactor facilities considering the amount of radioactive decay that has occurred since the respective reactors have been shutdown. For surface measurements, your evaluation should ensure surface activities are consistent with ANSI/HPS standards including ISO 7503, "Measurement and Evaluation of Surface Contamination." Please also provide the portion of the GE-V Quality Assurance Plan that identifies radiological survey requirements and those procedures for demonstrating compliance with the survey requirements that have been performed inside the shutdown reactor facilities. NRC has determined that these surveys are reasonable under the circumstances (10 CFR 1501(a)(2)) to demonstrate compliance with the DPR and provide an evaluation of the potential radiological hazards of the radiation levels and residual radioactivity detected inside the shutdown facilities that covers the period of extended decommissioning specified in your exemption request.

Regarding the demonstration of compliance with 10 CFR 50.75(g), i.e., the requirements for recordkeeping for decommissioning, please identify requirements in the GE-V Quality Assurance Plan for capturing and maintaining records important to decommissioning, and your procedure(s) for doing the same, and provide the plan and procedures for NRC review.

In addition, during the September 13, 2017 site visit, GE performed a surveillance of the water level monitoring in the VBWR reactor vessel. Please also provide the procedure and documentation supporting the operation of the water level indicator.

Please provide this information within 30 days of the date of this letter or provide a plan for when this information can be provided.

Please contact me at (301) 415-6634 if you have any questions.

Sincerely,

/RA/

Jack D. Parrott, Senior Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium
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Office of Nuclear Material Safety
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Docket Nos.: 50-18, 50-183 and 50-70
License Nos.: DPR-1, DR-10 and TR-1

CC: GE Vallecitos Mailing List

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