

REQUEST FOR ADDITIONAL INFORMATION
GE-HITACHI REQUEST FOR ALTERNATE DECOMMISSIONING SCHEDULES FOR THE
SHUTDOWN REACTORS AT THE VALLECITOS NUCLEAR CENTER
GE HITACHI
EVESR and GETR
DOCKET NOS. 50-183 and 50-70

Regulatory Requirement

10 CFR 20.1406, "Minimization of Contamination," item (c) states that [l]icensees shall, to the extent practical, conduct operations to minimize the introduction of residual radioactivity into the site, including the subsurface, in accordance with the existing radiation protection requirements in Subpart B and radiological criteria for license termination in Subpart E of this part. Compliance with 10 CFR 20.1406(c) is required to ensure that the requested exemption will not present an undue risk to the public health and safety, as required by the 10 CFR 50.12(a)(1) criteria.

Background

As described in the staff regulatory guidance position 5 in NRC Regulatory Guide (RG) 4.22, in 10 CFR 20.1406(c), the NRC requires all licensees to minimize the introduction of radiological contamination into the site environment. To do so, licensees should implement procedures and practices that minimize the occurrence of leaks and spills from piping, tanks, and storage containers. Licensees should also have procedures that will (1) identify the plant systems and radioactive materials storage containers with the potential for leaks and spills, (2) identify, to the extent practical, degraded equipment and containers before release and spills occur, and (3) detect leaks and spills throughout the facility as soon as they occur or soon thereafter. These principles apply to all of the NRC licensed facilities at the Vallecitos Nuclear Center, including the VBWR, EVESR and GETR, to minimize the introduction of residual radioactivity into the site, including the subsurface.

By letter dated January 18, 2018 (ADAMS Accession No. ML17312B359), the NRC requested GEH to provide, among other things, a routine maintenance and surveillance plan for the shutdown facilities related to maintaining their structural integrity to address 10 CFR 20.1406(c). In its response to RAI No. 1 by letter dated November 15, 2019 (ADAMS Accession No. ML19319B845), GEH provided Report No. 1900001.402, "Maintenance and Surveillance Plan: Vallecitos Nuclear Center Shutdown Reactors," to support this request and address the regulatory requirement.

Issues

Based on the NRC staff review of the GEH maintenance and surveillance plan related to maintaining structural integrity (Report No. 1900001.402), the staff identified the following issues requiring further information and clarification to make a safety determination on whether structural degradations will be adequately managed during the extended decommissioning period in a manner that structural integrity is maintained to minimize the introduction of residual radioactivity into the site, including the subsurface.

1. Table 6-1 identifies the acceptance criteria for the maintenance and surveillance plan. However, additional criteria for structural degradation described in Sections 3 and 5.5.1 (e.g., action triggers for new cracks, spalled concrete, leaching/efflorescence of concrete, new thru-leakage, steel corrosion) based on standard engineering guidelines (e.g., ASCE 11-99, ACI 349.3R) were not included in the maintenance and surveillance plan to ensure that structural degradations will be adequately managed and corrective actions are taken before a loss of intended function.
2. Section 5.5.2.1 describes the water sampling process. It is not clear why pH, chlorides, sulfates and iron content were not included for analysis of water infiltration to adequately assess structural degradations such as corrosion. Further, no acceptance criteria have been identified within the current plan for evaluating these results.
3. Section 5.5 states, in part, that a subject matter expert may be required for unusual findings. However, it is not clear what "unusual findings" represent in terms of the results of an inspection.
4. Section 5.2 defines the qualification requirements for personnel performing inspections and/or assessments. Since these requirements are not consistent with industry guidelines and standards associated with the inspection/evaluation of existing structures (e.g. ACI 349.3R), additional justification is necessary to ensure that personnel will be adequately qualified to detect and manage structural degradations before a loss of intended function.
5. Section 4.2 discusses the range of depth of carbonation calculated for the concrete in the reactors that will reduce the protective pH of the concrete structural member. However, it is not clear if the plan will assess and/or monitor actual depth of carbonation of the reactors concrete to ensure that they remain within the acceptable limits for the extended decommissioning period.
6. It is not clear how the plan will determine, monitor and manage potential reduction of compressive strength and stiffness of concrete to ensure that ongoing structural degradation remains within specified minimum design limits during the extended decommissioning period (i.e., to assure that adequate structural margin is maintained during the ongoing deterioration).

Request

To provide reasonable assurance that the maintenance and surveillance plan will be adequate to detect and manage structural degradations in a manner that structural integrity is maintained to minimize the introduction of residual radioactivity into the site, including the subsurface, address with sufficient technical detail the issues identified above as follows:

1. Describe the modifications to the maintenance and surveillance plan that would incorporate the additional acceptance criteria noted in Issue 1 that were not included in the current plan for the other structural degradations or provide a justification as to why they are not needed in the plan.

2. Describe the modifications to the maintenance and surveillance plan that would incorporate the chemical analyses of sampled water for pH, chlorides, sulfates and iron content for assessing structural degradations and the acceptance criteria for the analyses or provide a justification as to why they are not needed in the plan.
3. Describe the changes to the maintenance and surveillance plan that would define “unusual findings,” as stated in Section 5.5 in the context of an inspection.
4. Provide a justification for the acceptability of the proposed personnel qualification requirements to ensure that personnel will be adequately qualified to detect and manage structural degradations or define specific personnel qualification requirements consistent with industry standards such as ACI 349.3R.
5. Describe the modifications to the maintenance and surveillance plan that would monitor and/or manage the depth of carbonation in the reactors building concrete against specific acceptance criteria or provide a justification as to why it is not needed in the plan.
6. Describe the changes to the maintenance and surveillance plan that would determine and manage aging effects of potential reduction of compressive strength and stiffness of concrete in maintaining structural integrity or provide a justification as to why the plan is sufficient.