



POLICY ISSUE

(Notation Vote)

March 19, 2021

SECY-21-0033

FOR: The Commissioners

FROM: Margaret M. Doane
Executive Director for Operations

SUBJECT: REQUEST FOR AN EXEMPTION FROM THE DECOMMISSIONING
SCHEDULE REQUIREMENTS FOR SHUTDOWN REACTORS AT THE
GE HITACHI VALLECITOS NUCLEAR CENTER

PURPOSE:

To provide the Commission with the U.S. Nuclear Regulatory Commission (NRC) staff's recommendation to approve the request from GE Hitachi (GEH, the licensee) for an exemption under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.12, "Specific exemptions," from both the requirement in 10 CFR 50.82(a)(3) to complete decommissioning the shutdown power reactors at the Vallecitos Nuclear Center (VNC) within 60 years of permanent cessation of the reactors' operations, and the requirement in 10 CFR 50.82(b)(4)(i) to complete decommissioning the shutdown nonpower reactor at the VNC without significant delay. This paper serves as the Executive Director for Operations' consultation with the Commission required under 10 CFR 50.12(a)(2)(vi), which is the condition the staff relies on exclusively for satisfying 10 CFR 50.12(a)(2). Also, because 10 CFR 50.82(a)(3) for power reactor licensees and 10 CFR 50.82(b)(4)(i) for nonpower reactor licensees detail the Commission's exclusive standards that licensees must satisfy to obtain an extended decommissioning period (i.e., "only when necessary to protect [the] public health and safety"), the NRC staff's use of 10 CFR 50.12 to grant this extension request is a change in the Commission's policy. Although the NRC staff has the delegated authority to review and grant or deny requests for exemptions under 10 CFR 50.12, Management Directive 9.17, "Organization

CONTACT: Jack D. Parrott, NMSS/DUWP
301-415-6634

and Functions, Office of the Executive Director for Operations,” requires the staff to “[p]resent all significant questions of policy to the Commission for resolution....”

SUMMARY:

The regulations in 10 CFR 50.82(a)(3) require power reactors to complete decommissioning within 60 years of permanent cessation of operations. The regulations in 10 CFR 50.82(b)(4)(i) require nonpower reactors to complete decommissioning without significant delay. In 2015, GEH requested alternate decommissioning schedules from those in 10 CFR 50.82(a)(3) for the two shutdown power reactors and 10 CFR 50.82(b)(4)(i) for the one shutdown nonpower reactor co-located at the VNC. GEH made this request so that it could decommission these shutdown reactors together with an operating nonpower reactor at the site at a time past the decommissioning schedule requirements in 10 CFR 50.82, “Termination of license.” The NRC staff is recommending to the Commission that the NRC approve the request for two of the reactors because, consistent with 10 CFR 50.12, this portion of the request is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense, and security and there are present material circumstances not considered when the regulation was adopted for which it would be in the public interest to grant the request. There were potential structural safety issues with the three reactors that precluded the staff from approving an alternate decommissioning schedule past 60 years. The licensee resolved those issues for two of the reactors, but the staff is awaiting further technical responses from GEH on the structural integrity of the building housing the third shutdown reactor. Therefore, for the portion of the exemption request related to the third shutdown reactor, the staff requests a delegation of authority to grant or deny this portion of the request consistent with the Commission’s direction to the staff on the portion of the request related to the first two reactors.

BACKGROUND:

The Atomic Energy Act of 1954, as amended, does not require a reactor licensee to complete decommissioning its reactor within a certain time period after permanently shutting down. In 1988, the Commission issued a final rule, “General Requirements for Decommissioning Nuclear Facilities” (Volume 53 of the *Federal Register* (FR), page 24018 (53 FR 24018; June 27, 1988)), establishing a 60-year period for an electric utility licensee to complete decommissioning and that a licensee other than an electric utility must complete decommissioning “without significant delay.” In a 1996 revision to these rules, “Decommissioning of Nuclear Power Reactors” (61 FR 39278; July 29, 1996), the Commission clarified that for power reactor licensees, decommissioning will be completed within 60 years of permanent cessation of operations and for nonpower reactor licensees, decommissioning will be completed without significant delay. The staff reaffirmed the technical and regulatory bases for the 60-year decommissioning schedule in the November 2017 regulatory basis for the “Regulatory Improvements for Power Reactors Transitioning to Decommissioning” rulemaking (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17215A010).

By letter dated July 10, 2015 (ADAMS Accession No. ML15195A088), as supplemented by letters dated October 15, 2015 (ADAMS Package Accession No. ML15288A389), and July 15, 2016 (ADAMS Accession No. ML16197A277), GEH requested an alternate decommissioning schedule for two shutdown power reactors (the Vallecitos Boiling Water Reactor (VBWR) and the Empire State Atomic Development Associates Vallecitos Experimental Superheat Reactor

(EVESR)) and one shutdown nonpower reactor (the General Electric Test Reactor (GETR)) at the VNC in Sunol, CA, so that they could be decommissioned with the operational nonpower Nuclear Test Reactor (NTR) at the site at a time past the decommissioning schedule requirements in 10 CFR 50.82.

GEH initially requested an alternate decommissioning schedule under 10 CFR 50.82(a)(3) for the VBWR and EVESR and under 10 CFR 50.82(b)(4)(i) for the GETR.¹ However, its supplement of July 15, 2016, revised that request to seek an exemption from 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i), using the criteria of 10 CFR 50.12. GEH requests the exemption to decommission the shutdown reactors at the VNC at the same time as the NTR, the remaining operational nonpower reactor at the VNC, for which GEH has requested a renewed license to operate until at least 2041² (ADAMS Accession No. ML21053A071). The VBWR, the oldest of the shutdown reactors, entered possession-only status on September 9, 1965, marking the beginning of its 60-year decommissioning period, which will end on September 9, 2025. GEH's basis for its request is that integrated decommissioning of all the reactors at the VNC would be safer, more secure, and more efficient than decommissioning the shutdown reactors while other operations are continuing onsite.

DISCUSSION:

Applicable Standards

GEH has requested an exemption from 10 CFR 50.82(a)(3) for the VBWR and EVESR and from 10 CFR 50.82(b)(4)(i) for the GETR. The regulations in 10 CFR 50.82(a)(3) require the completion of decommissioning within 60 years of permanent cessation of operations and the regulations in 10 CFR 50.82(b)(4)(i) require the completion of decommissioning without significant delay. Both regulations state that extensions of these deadlines will be approved "only when necessary to protect [the] public health and safety." Under these regulations, factors that the Commission will consider in evaluating extensions include the "unavailability of waste disposal capacity and other site-specific factors affecting the licensee's capability to carry out decommissioning, including [the] presence of other nuclear facilities at the site."

On page 24,023 of the 1988 final rule statement of considerations (SOC), the Commission reiterated and expounded on the factors that it will consider in evaluating extensions:

The case-by-case considerations, such as shortage of radioactive waste disposal space offsite or presence of an adjacent reactor whose safety might be affected by dismantlement procedures, or other similar site-specific considerations, mean that the appropriate delay for a specific facility must be based on factors unique

¹ The 1992 renewal of the GETR license (Legacy ADAMS Accession No. 9210140373) allowed for the safe storage of the GETR, a nonpower reactor not covered under the provisions of 10 CFR 50.82(a)(3) but rather under the decommissioning timeliness requirements for nonpower reactors in 10 CFR 50.82(b)(4). This renewal action acknowledged the licensee's approach of maintaining all the shutdown reactors at the VNC in a safe storage condition until all of the reactor facilities (including the still operating NTR) licensed under 10 CFR Part 50, "Domestic licensing of production and utilization facilities," are shut down and then could be decommissioned in an integrated fashion. This effectively ties the decommissioning timeframe for the GETR to the decommissioning schedule for the VBWR and EVESR under 10 CFR 50.82(a)(3).

² The NTR operating license was issued in 1957 and renewed in 1984 and 2001.

to that facility and could result in extension of completion of decommissioning beyond 60 years.

If a licensee cannot meet this regulatory standard for the extension of the completion of decommissioning, then the NRC may instead, on its own initiative or upon request of the licensee, review an extension under 10 CFR 50.12 as an exemption from the applicable requirement in 10 CFR 50.82(a)(3) or 10 CFR 50.82(b)(4)(i). This position is based on the SOC from the 1985 final rule that established 10 CFR 50.12, "Specific Exemptions; Clarification of Standards" (50 FR 50764; December 12, 1985). On page 50,775 of that FR notice, the Commission explained the applicability of 10 CFR 50.12 vis à vis other exemption provisions of 10 CFR Part 50 (emphasis added):

On a related point, the relationship between the general exemption criteria in § 50.12(a) and other provisions in Part 50 that contain specific exemption criteria or alternative methods of compliance, the Commission would emphasize that § 50.12(a) is the exemption provision that applies *generally* to the provisions of 10 CFR Part 50. If another regulation in Part 50 provides for specific exemption relief, or for alternative methods of compliance, the criteria of the specific regulation are the appropriate considerations. If the exemption criteria in the specific regulation are met, the rule has been complied with, and no exemption under § 50.12(a) is necessary. It is only in those cases where the specific exemption or alternative compliance criteria cannot be satisfied, that the application of the general criteria in § 50.12(a) will be appropriate. If the specific exemption criteria, or the alternative methods of compliance, can be satisfied, there is no need to also satisfy the criteria of § 50.12(a).

The NRC staff determined that GEH's request to extend the completion of decommissioning the VBWR, EVESR, and GETR under the exemption criteria of 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i) was not necessary to protect the public health and safety because there is no shortage of radioactive waste disposal space offsite, and there are no other nuclear facilities at the site whose safety or security might be affected by decommissioning activities at the shutdown reactors, or other similar site-specific considerations that could not be reasonably mitigated.

Analysis of GEH's Request Under 10 CFR 50.12

After the NRC staff determined that GEH could not meet the applicable criteria of 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i), it reviewed GEH's request to extend the completion of decommissioning the VBWR, EVESR, and GETR using the exemption criteria of 10 CFR 50.12. The staff found that the NRC could not approve this request under 10 CFR 50.12 because the licensee had not demonstrated that granting the request would not present an undue risk to the public health and safety as required by 10 CFR 50.12(a)(1). Therefore, the staff sent GEH a request for additional information (RAI). GEH responded to the RAI, and Office of Nuclear Material Safety and Safeguards staff conducted an onsite follow-up audit of these responses.

Evaluation of the 10 CFR 50.12(a) (1) Criteria

Through this review process, the NRC staff identified concerns with the structural integrity and aging management of the VBWR, EVESR, and GETR. These concerns were most evident for the VBWR containment building, which has noticeable cracking and spalling of the concrete structures; corrosion of the steel elements; and a history of moisture condensation, water intrusion, and water pooling in the basement. The staff's safety concern is that this building is structurally compromised to the extent that an unmonitored release of residual radioactivity could occur. Such a release would violate 10 CFR 20.1406(c), which requires licensees to conduct operations to minimize the introduction of residual radioactivity into the site, in accordance with the radiological criteria for license termination in 10 CFR Part 20, "Standards for protection against radiation." The EVESR and GETR also show evidence of water intrusion and minor corrosion of structural elements, but not the cracking and spalling seen in the VBWR. Because the structural condition of all three reactor buildings was indeterminate, the staff needed additional information to make the safety determination. In an additional RAI, the staff asked GEH to demonstrate the adequacy of the structural integrity of the shutdown reactor buildings and how they will be maintained to ensure no undue risk to the public health and safety during any extended decommissioning period.

GEH engaged a structural engineering firm to evaluate the structural integrity of the shutdown reactors. The final GEH response to the RAI included a proposed maintenance and surveillance plan. The staff evaluated the plan to ensure that there was reasonable assurance that through the proposed alternate decommissioning period, these buildings would not pose an undue risk to the public health and safety and would be able to demonstrate compliance with 10 CFR 20.1406(c). The staff found that the maintenance and surveillance plan was inadequate for all three reactors because it did not contain adequate acceptance criteria, monitoring of critical parameters, or evaluation of the results. Also, the staff needed additional justification for what structural parameters were to be inspected and the required qualifications of the inspectors.

For the EVESR and GETR

The staff requested additional information on structural inspection and parameter monitoring for the EVESR and GETR. In response, GEH added this information to the EVESR and GETR maintenance and surveillance plan. This addition allowed the staff to find in its safety evaluation report that, in accordance with 10 CFR 50.12(a)(1), granting the exemption for the EVESR and GETR is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security.

For the VBWR

The staff found that, in addition to the inadequacy of the maintenance and surveillance plan, the seismic evaluation of the VBWR submitted in response to the RAI relied on several unverified conditions and inadequately justified design assumptions. Therefore, the staff could not make a reasonable assurance determination on the acceptability of either the VBWR maintenance and surveillance plan or the seismic evaluation, and it issued a follow-up RAI to GEH on the VBWR. GEH has requested an extension until April 28, 2021, to respond to that RAI, so its ability to meet the criteria of 10 CFR 50.12(a)(1) for the VBWR is indeterminate at this time.

Evaluation of the 10 CFR 50.12(a)(2) Criteria

The NRC staff determined that the licensee did not demonstrate the presence of any of the special circumstances of 10 CFR 50.12(a)(2), except for the special circumstance in 10 CFR 50.12(a)(2)(vi), which has to do with a material circumstance not considered when the regulation was adopted for which it would be in the public interest to grant the exemption. The staff determined that the material circumstance not considered was the renewal of the licenses for operating reactors at multiunit sites that have a shutdown reactor. As provided in the SOC for the 1985 proposed rule, "Decommissioning Criteria for Nuclear Facilities" (50 FR 5600; February 11, 1985), and the 1988 final rule, the underlying purpose of the requirement to complete decommissioning within 60 years is to allow for an optimal amount of radioactive decay of the residual contamination and to dismantle the facilities. However, at facilities with shutdown reactors and reactors that have been granted renewals to continue to operate, maintaining safety and institutional control of the shutdown reactors past 60 years can be assured because of the continued presence of the licensee at the operational reactors and continuing NRC oversight.

Allowing a delay in decommissioning the shutdown reactors until the entire site can be decommissioned comprehensively can be in the public interest because the licensee can then decommission the reactors to consistent residual contamination criteria across the site rather than potentially having individual areas of the site decommissioned to different criteria. Additionally, with comprehensive decommissioning, the licensee could incur lower overall decommissioning and operational costs while maintaining safety.

This decision may be viewed as a precedent for other sites that have both shutdown and operational reactors that expect the operational reactors to continue to operate significantly past the permanent cessation of operations of the shutdown reactors, and that expect to decommission the site in an integrated fashion. Sites that have both shutdown and operational reactors include Dresden Nuclear Power Station, Enrico Fermi Nuclear Plant, and Millstone Power Station. For these three sites, the licensing terms of the operational reactors are currently scheduled to end before the 60-year limit for decommissioning the shutdown reactors. However, with possible license renewals for the operational reactors, the licensees of these sites could also request to extend the decommissioning period for the shutdown reactors past 60 years. In fact, the recent subsequent license renewal of Peach Bottom Atomic Power Station, Units 2 and 3 pushes their potential shutdown dates approximately 20 years past the 60-year limit for decommissioning Peach Bottom, Unit 1. While the NRC's decision on this GEH request sets a precedent for other requests, the staff will evaluate future alternate decommissioning schedule requests on a case-by-case basis.

Recent Public Comments Related to the 60-Year Decommissioning Schedule

Although the NRC staff did not consider public comments in the regulatory review discussed above, the NRC recently received comments related to the 60-year decommissioning schedule as part of the current "Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning" rulemaking (RIN 3150-AJ59). As discussed in Appendix H of the regulatory basis document for the "Regulatory Improvements for Power Reactors Transitioning to Decommissioning" (ADAMS Accession No. ML17215A010), these comments included that: the safe storage (SAFSTOR) decommissioning strategy allowed under the

60-year decommissioning schedule for power reactors should be removed and all decommissioning activities should be required to be completed within 10 years of the last power reactor shutdown at the site; and the 60-year limit for decommissioning is too long and results in extended socioeconomic impacts to the surrounding community throughout this period. Additionally, comments stated that the 60-year timeframe for decommissioning should not be changed because all decommissioning and license termination activities to date have been completed safely within this period, have had adequate funding as assured by the decommissioning trust funds, and have remained protective of public health and safety. Furthermore, the comments noted that the timeframe provides flexibility to licensees to choose a decommissioning strategy and timeframe that optimize the resources of the licensee, facility, and waste disposal capability. No comments supported extension of the 60-year period. As part of its rulemaking effort, the staff evaluated these comments, the basis for the existing decommissioning regulations, lessons learned, as well as an assessment of ongoing decommissioning activities, and determined that no public health or safety improvements would be gained by regulatory changes to the decommissioning timeframe. Therefore, the staff recommended no rulemaking changes to the timeframe associated with decommissioning.

Input from the State of California

The NRC staff requested input from the State of California on the GEH request. By letter dated February 2, 2021 (enclosed), the Chair of the California Energy Commission responded that the California Energy Commission opposes the NRC approving an alternate decommissioning schedule for the GEH shutdown reactors at the VNC.

Options for Commission Consideration

Option 1: Approve a 10 CFR 50.12 exemption from the applicable decommissioning schedule requirements of 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i) for the EVESR and GETR and delegate to the staff only the authority to grant or deny such an exemption for the VBWR based on GEH's demonstration of the VBWR's continued structural integrity.

GEH has demonstrated that the implementation of the maintenance and surveillance plan for the EVESR and GETR aligns with the requirements of 10 CFR 20.1406(c). This demonstration assures the NRC that those facilities are safely implementing activities typical for facilities in SAFSTOR. A similar demonstration for the VBWR would also assure the NRC that that facility would be safely implementing activities typical for facilities in SAFSTOR. A Commission decision to delegate to the staff the authority to grant such an exemption for the VBWR would only apply to that facility. The NRC staff will evaluate any future alternate decommissioning schedule requests from other licensees on a case-by-case basis.

Pros

- The proposed extension would allow GEH to potentially decommission all of its NRC-licensed facilities at the VNC in an integrated fashion, which would be expected to result in consistent residual contamination criteria across the site rather than potentially having individual areas of the site decommissioned to different criteria. Additionally, with

comprehensive decommissioning, the licensee could incur less overall decommissioning and operational costs without impacting the public health and safety.³

- The EVESR and GETR decommissioning activities can be safely delayed without impacting the public health and safety with continued GEH maintenance and surveillance and NRC oversight. The staff would not approve an exemption delaying the decommissioning of the VBWR unless this same finding could be made for the delayed decommissioning of the VBWR.

Cons

- Delayed decommissioning would require increased NRC oversight of the shutdown facilities.
- Approving this request may lead to requests from licensees for other sites with a combination of shutdown and operational reactors to delay decommissioning their shutdown reactors for extended periods of time until the operating reactors are shut down. This could result in uncertainty for the public as to when shutdown reactors will be decommissioned.
- The California Energy Commission opposes NRC approval of the GEH request for an alternate decommissioning schedule for the shutdown reactors at the VNC.
- No recent public comments related to the 60-year decommissioning schedule supported extension of the 60-year period.

Option 2: Deny the exemption request for all three shutdown reactors at the VNC.

Pros

- Denying the GEH exemption request would reduce the need for increased NRC oversight of the shutdown facilities to monitor the licensee's maintenance and surveillance activities during the extended decommissioning period and the licensee's monitoring of the residual contamination at the facility.
- There will be no appreciable safety benefits in dose rate or source term reduction by completing decommissioning past the regulatory timeline.
- The staff believes that the licensee can safely decommission the three shutdown reactors by 2025 while the NTR and other facilities remain in operation.
- Denial of the exemptions is consistent with existing regulatory timelines.

³ GEH has not provided a financial analysis to quantify any cost savings from delaying and integrating the decommissionings. Surety bonds provide the required decommissioning financial assurance for the three reactors.

Con

- Denying the exemption request would not give the licensee the option of implementing consistent residual contamination criteria across the site and incurring less overall decommissioning and operational costs, even though any potential risk to the public health and safety from delaying decommissioning is considered low with continued NRC oversight.

CONCLUSION:

Under Option 1, the licensee would continue implementation of the maintenance and surveillance plans for the EVESR and GETR and, if the NRC staff were to find it adequate, the maintenance and surveillance plan for the VBWR, or else complete the decommissioning of the VBWR consistent with the timing requirements in 10 CFR 50.82(a)(3). This would meet the requirements in 10 CFR 50.12 that the exemption from 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i) is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security, and that a material circumstance is present that was not considered when the regulation was adopted for which it would be in the public interest to grant the exemption. Under Option 2, the licensee would be required to complete the decommissioning of the EVESR, GETR, and VBWR consistent with the applicable timing requirements in 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i).

RECOMMENDATION:

The NRC staff recommends Option 1 to approve a 10 CFR 50.12 exemption from the applicable decommissioning schedule requirements of 10 CFR 50.82(a)(3) and 10 CFR 50.82(b)(4)(i) for the EVESR and GETR and to delegate to the staff the authority to grant or deny such an exemption for the VBWR based on the licensee's demonstration of the VBWR's continued structural integrity.

RESOURCES:

The NRC will inspect and oversee the licensing of the shutdown reactors at the VNC consistent with NRC regulations, procedures, and guidance. Approval of the exemption request will require GEH to continue implementation of the maintenance and surveillance plans for the EVESR, GETR, and, if approved by the NRC staff, VBWR, and may require increased NRC inspection oversight.

The Commissioners

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COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

Margaret M. Doane

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Doane
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Margaret M. Doane
Executive Director
for Operations

Enclosure:
Letter from the California Energy
Commission

SUBJECT: REQUEST FOR AN EXEMPTION FROM THE DECOMMISSIONING
SCHEDULE REQUIREMENTS FOR SHUTDOWN REACTORS AT THE GE
HITACHI VALLECITOS NUCLEAR CENTER Dated: March 19, 2021

**ADAMS Accession Nos.: ML19317D858 (Package), ML19304B459 (Memo), ML21034A607
(Enclosure) *via E-mail**

OFFICE	NMSS/DUWP/RDB/PM*	NMSS/DUWP/RDB/BC*	NMSS/DUWP*
NAME	JParrott	BWatson	PHolahan
DATE	02/25/2021	01/12/2021	01/06/2021
OFFICE	R-IV/DNMS*	QTE*	OGC/GCRPS/RMR/NLO*
NAME	LHowell	JDougherty	HBenowitz
DATE	01/06/2021	01/26/2021	02/24/2021
OFFICE	OGC/GCHA/AGCOR/NLO*	NMSS Tech Editor*	NMSS
NAME	JWachutka	WMoore	RLewis for JLubinski
DATE	02/24/2021	02/26/2021	03/05/2021
OFFICE	OEDO		
NAME	MDoane		
DATE	03/19/2021		

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