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Director of the Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-001
Attn: Document Control Desk

Subject: License Amendment Request - Revision to Radiological Emergency Plan (REP) Public Supplement

References:
1) NRC License R-33, Docket 50-73
2) NRC License DPR-1, Vallecitos Boiling Water Reactor (VBWR), Docket 50-18
3) NRC License DR-10, ESADA Vallecitos Experimental Superheat Reactor (EVESR), Docket 50-183,
4) NRC License TR-1, General Electric Test Reactor (GETR), Docket 50-70
5) GEH/NRC Telecom, 5/28/19
6) Letter, S. P. Murray (GEH) to NRC NRR, "License Amendment Request – Revision to Radiological Emergency Plan (REP), 7/1/19
7) Letter, S. P. Murray (GEH) to NRC NRR, "License Amendment Request – Revision to Radiological Emergency Plan (REP) Public, 7/17/19

Dear Sir or Madam:

Attached is a replacement redacted version of Attachment 2, Vallecitos Nuclear Center (VNC) REP Reduction in Effectiveness Evaluation that was submitted on July 17, 2019 (Reference 7). The only change to this document is a strike through of the "Security Related Information" footer. Replace the previous version under ADAMS accession number ML19207A079 with this document to make it publicly available.

Please contact me at 910-819-5950 if you have any questions or would like to discuss this matter further.

Sincerely,

Scott Murray, Manager
Facility Licensing

Attachment: VNC REP Reduction in Effectiveness Evaluation (Public)

cc: D. Hardesty, NRC NRR
J. Parrott, NRC NMSS
SPM 19-019

Attachment 2

Reduction in Effectiveness Evaluation

1.0 SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90 and 10 CFR 50.54(q), GE Hitachi (GEH) Vallecitos Nuclear Center (VNC) requests an amendment to the license for the Nuclear Test Reactor (NTR) R-33. Specifically, the changes would revise the test reactor's license in order to adopt the proposed Radiological Emergency Plan (REP) updated to conform to the current guidance contained in Regulatory Guide 2.6. The proposed REP establishes an updated licensing basis for the NTR (that covers the SAFSTOR reactor facilities that utilize the NTR REP), and complies with current NRC regulations in 10 CFR 50.34(b)(6)(v), 10 CFR 50 Appendix E, 10 CFR 50.54(q), and the guidance in the NRC-endorsed ANSI/ANS-15.16-2015, with several exceptions.

VNC has developed a REP based specifically upon ANSI/ANS-15.16-2015 planning standards, and organized such that each criterion (also called a planning element) is explicitly stated, followed by a description of how the VNC emergency preparedness program will address that criterion.

The proposed REP provides the basis for response actions that would be implemented in an emergency and the requirements for maintenance and administration of the VNC emergency preparedness program.

In addition to the alignment of the REP to the most current requirements and guidance, this update of the REP will provide program improvements to the classification and notification functions and clarification of ERO response requirements.

2.0 DETAILED DESCRIPTION

2.1 Proposed Changes

The proposed REP was developed based upon the latest requirements and guidance contained in 10 CFR 50 Appendix E, ANSI/ANS-15.16-2015 and the existing commitments within the NTR REP as approved by the NRC, with several exceptions.

Additionally, this change involves the removal of the Site Area Emergency classification level and revision of the Emergency Action Levels (EALs), by adoption of the current ANSI/ANS-15.16-2015 EAL scheme into site specific thresholds, and documentation of their technical bases.

Changes in the proposed REP that could be considered a reduction in effectiveness from ANSI/ANS-15.16-2015 or the current REP have been identified in this document as “RIE.” Detailed justification is provided for all of these RIEs in Section 3, Technical Evaluation, to demonstrate that the proposed REP continues to provide for an adequate response to radiological emergencies.

2.2 Proposed Radiological Emergency Plan Deviations Summary

The results of the comparison between; (1) the proposed REP and the current REP, and (2) the proposed REP and NUREG-0849 criterion, revealed the following changes that could be considered reductions in effectiveness, and therefore are evaluated in detail in Section 3.0.

[RIE 1]	VNC Non-Part 50 Special Nuclear Material (SNM) facilities have been removed from the scope of the proposed REP.	Section 3.1 Attachment 1 Row #5 Attachment 1 Row #61 Attachment 1 Row #66
[RIE 2]	The Emergency Director is no longer required to be on site 24/7 in the proposed REP.	Section 3.2 Attachment 1 Row #31 Attachment 1 Row #35
[RIE 3]	Specific names and locations of off-site support organizations VNC maintains written agreements with have been removed from the proposed REP.	Section 3.3 Attachment 1 Row #47
[RIE 4]	The Site Area Emergency classification level has been removed from the proposed REP.	Section 3.4 Attachment 1 Row #57
[RIE 5]	The state notification time requirement has been specified as 60 minutes in the proposed REP.	Section 3.5 Attachment 1 Row #71

2.3 Reason for the Proposed Changes

The REP was originally based upon ANSI/ANS-15.16-1982. ANSI/ANS-15.16-2008 was issued to align with changes to 10 CFR 20, Standards for Protection Against Radiation. In 2014, ANSI/ANS-15.16-2008 was revised to incorporate security-related events into the emergency plan in a risk-informed way. Because of the low inventory of radioactive material, most research and test reactors do not meet the threshold levels that initiate either a General Emergency or a Site Area Emergency. In fact, many do not meet the threshold for an Alert classification. As such, the revisions to ANSI/ANS-15.16 ensured that security-related events were incorporated into emergency plans without creating emergency classifications that did not or would not otherwise exist.

The reasons for the revision to the VNC REP are as follows:

(1) Update the REP to the current format and planning standards contained in ANSI/ANS-15.16-2015, to the level of detail specified in the NUREG-0849 standard review plan.

(2) Relax the requirement for an on-site Emergency Director to allow their absence when NTR and SAFSTOR reactor facility operations are not in progress.

(3) Revise the REP EALs to conform to the initiating conditions contained in ANSI/ANS-15.16-2015 and develop a site specific technical basis for each threshold indication, which removes the Site Area Emergency classification level at VNC.

(4) Remove specific titles and locations of off-site support organizations that have written agreements with VNC.

(5) Specify the state notification requirement as 60 minutes. The REP currently does not specify a notification time requirement and thus implies conformance to the 10 CFR 50 Appendix E requirement of 15 minutes.

By updating the REP, VNC will restore alignment to the most current NRC requirements and guidance. Additionally, it will provide relief from current staffing, response and administrative commitments in closer alignment with the needs of a low power test reactor facility.

2.4 NTR Radiological Emergency Plan Background

2.4.1 September 1984: First NRC approved NTR REP implemented at VNC.

2.4.2 August 1992: NRC approves January 1992 revision of NTR REP that removes references to SNM-960 non-reactor and SAFSTOR reactor facilities.

2.4.3 April 2001: As part of NTR Amendment No 21 (2001 License Renewal) the NRC reviewed the REP dated March 1996 and concluded that it maintained acceptable compliance with applicable portions of Appendix E to 10 CFR Part 50 and that it provides acceptable assurance that the licensee continues to be prepared to assess and respond to emergency events.

This revision is considered the latest NRC approved NTR REP (supersedes the 1984 approved version and the subsequent changes made prior the March 1996 revision).

2.4.4 January 2013: The availability of the Emergency Operations Coordinator (EOC), now titled Emergency Director, was changed from a ‘three-shift-per-day, seven-day-per-week schedule’ statement to a ‘five-day-per-week schedule’, but added ‘The on-duty Secondary Response EOC will assume Initial Response EOC responsibilities during off-hours.’ Changes made in this revision were not submitted for prior NRC approval.

2.4.5 November 2013: SNM-960 licensed facilities were added back into the NTR REP with regards to EPZs (operational boundaries) and applicable emergency classification level thresholds. Changes made in this revision were not submitted for prior NRC approval.

3.0 TECHNICAL EVALUATION

3.1 VNC Non-Part 50 SNM Facilities

The NRC approved VNC REP scope was limited to the reactor facilities on site (NTR, VBWR, EVESR, and GETR). The current VNC REP includes non-reactor radiological facilities licensed for special nuclear materials (SNM-960 and CA 0017-01). The scope of the reactor facilities REP was expanded in the November 2013 revision to include the VNC non-reactor radiological facilities. Change evaluation documentation is not retrievable for the November 2013 revision, however no submittal for prior NRC approval was made at that time; therefore, the change was not considered a reduction in effectiveness in adding the non-reactor radiological SNM-960 licensed facilities into the REP.

VNC is a large site with facilities that fall under multiple NRC and California State licenses. The October 1982 VNC emergency plan was written for the entire site. The scope of that site emergency plan was continued until relief was approved by the NRC in 1990.

GE Nuclear Energy requested the renewal of the SNM-960 license in April 1989. As part of that request for renewal, VNC asked that License Condition 12 be deleted. SNM-960 License Condition 12 required VNC to follow the provisions of the radiological contingency plan submitted to the NRC in October 1982, and subsequent revisions. The subsequent emergency preparedness regulations for fuel cycle facilities (54FR14051) offered an option to demonstrate that a plan was not needed. VNC evaluated potential accidents and their effects on the surroundings and concluded that a radiological contingency plan was not necessary for the SNM-960 licensed facilities. The NRC approved the deletion of Condition 12 from the SNM-960 license in a letter dated 20 December 1990.

The re-institution of the SNM-960 licensed facilities into the November 2013 REP was inappropriate and not based on physical, operational or administrative changes to those facilities (regulatory, radiological or otherwise). There were no changes or new regulations/guidance related to research and test reactors or the SAFSTOR facilities that warranted the inclusion of the SNM-960 licensed facilities back into the REP.

The proposed revision removes the SNM-960 licensed facilities from under the governance of the REP, consistent with the SMN-960 and CA-0017-01 licenses and the 1996 NRC approved version of the REP.

The change to the scope of the proposed REP, which removes the SNM-960 licensed facilities, continues to meet all aspects of 10 CFR 50 Appendix E and Regulatory Guide 2.6 applicable to the NTR and continues to cover the SAFSTOR reactor facilities.

The removal of the SNM-960 licensed facilities is considered a reduction in effectiveness based on it being a commitment documented in the current version of the REP. There are no regulatory, licensing or site specific reasons for the SNM-960 licensed facilities to be included in the scope of the VNC reactor facilities REP.

VNC requests NRC approval to remove the applicability of the SNM-960 licensed facilities from the current REP, which restore alignment with the NRC approved version of the REP, restores conformance with the SNM licenses, and removes potential emergency declaration of events that do not warrant it.

VNC continues to maintain response and notification procedures as required by the regulations governing the SNM-960 licensed facilities. The structure and processes used by the VNC ERO and other response personnel will continue to be used during off-normal events at those facilities.

3.2 Emergency Director Continuous Coverage

The NRC approved REP specifies that the Emergency Operations Coordinator (now titled Emergency Director) acting as the initial response EOC, be present on-site to provide continuous coverage on a three-shift, seven-day-per-week basis. The current REP specifies that the continuous coverage will be provided during normal working hours, or off-hours, as required.

The change relaxing the Emergency Director continuous coverage site specific requirement was made in the January 2013 revision of the REP without being submitted for prior NRC approval.

10 CFR 50 Appendix E and Regulatory Guide 2.6 do not provide requirements or guidance regarding continuous coverage of the facility by ERO personnel at test and research reactors. ANSI/ANS-15.16-2015 Section 3.3.5 and NUREG-0849 element 3.1.e specifies that the emergency plan should describe the organizational considerations for the capability of the ERO to function around-the-clock for a protracted period of time following the initiation of emergencies that have or could have radiological consequences requiring around the clock emergency response. However, NUREG-0849 specifies that this element is only applicable to research and test reactors > 2 MW (not applicable to NTR). Thus, no regulation or guidance document requires a low power research and test reactor to maintain a qualified ERO member continuously on site. The January 2013 change to the REP did not violate a regulatory or guidance requirement.

NTR Technical Specifications (TS) Section 6.1.3 requires the following when the reactor is not secured:

a. A licensed operator in the control room.
b. A second person present at the site familiar with NTR Emergency Procedures and capable of carrying out facility written procedures.
c. A licensed Senior Reactor Operator shall be present at the NTR Facility or readily available on call.

Additionally, TS require the presence of a licensed Senior Reactor Operator present at the NTR Facility during the following events:

a. During the recovery from an unscheduled shutdown.
b. During reactor fuel loading or reactor fuel movement.
c During any experiment or facility changes with a reactivity worth greater than one dollar.

There is no NTR TS requirement for a licensed operator or an ERO member to be present on site when the reactor is secured.

The VNC REP requirement for an ERO member to be present on site at all times can be traced back to the original emergency plan and was carried forward until January 2013. The requirement to maintain an ERO member present on site at all times was a site specific REP commitment. The change to remove the requirement to maintain an ERO member to be present on site at all times was made in conjunction with site operational and staffing reductions. Although the change did not violate regulation, guidance or TS requirements, it did reduce the effectiveness of the NRC approved REP and was implemented without obtaining prior NRC approval.

VNC maintains a process to ensure there is an identified individual on duty as the Emergency Director at all times. [[

]] If an off-normal event occurs an officer will make the appropriate announcements and notify the Emergency Director. Notification means include [[

]].

The VNC process for staffing the Emergency Director position is equivalent to other research and test reactors. For example:

- Purdue University PUR-1 reactor (10 kW) E-Plan does not require an Emergency Director on-site during off-hours. Campus police are responsible for contacting the Emergency Director when they are not on site.
- NC State University PULSTAR reactor (2 MW) E-Plan does not require an Emergency Director on-site during off-hours. Campus police are responsible for contacting the Emergency Director when they are not on site.
- UMASS Lowell research reactor (1 MW) E-Plan does not require an Emergency Director on-site during off-hours. Campus police are responsible for contacting the Emergency Director when they are not on site.

The removal of the requirement to maintain an Emergency Director on-site 24/7 is considered a reduction in effectiveness based on it being a site specific commitment contained in the NRC approved version of the REP.

There are no regulatory or licensing based reasons to require the on-site presence of the Emergency Director 24/7.

VNC requests NRC approval to reduce the requirements for Emergency Director presence on-site to whenever NTR is operational or entries into EVESR, GETR, or VBWR are in progress. This change will make VNC ERO staffing consistent with other research and test reactor sites. There is no other site specific consideration at VNC which would warrant the need for 24/7 on-site staffing of the Emergency Director position.

3.3 Off-Site Support Organization Descriptions

The NRC approved and current versions of the REP contain specific names, and as applicable location, of the off-site support organizations VNC maintains written agreements with. The proposed REP describes the off-site support organizations VNC maintain written agreements with, but does not specify the name or the location of those off-site support organizations.

10 CFR 50 Appendix E.IV.A.6 states that the emergency plan shall include a description of the local off-site services to be provided in support of the licensee's emergency organization.

ANSI/ANS-15.16-2015 Section 3.3.3 and NUREG-0849 element 3.1.c specifies that the emergency plan should describe the arrangements and agreements, confirmed in writing with local support organizations, to augment and extend the capability of the facility's emergency organization.

University test and research reactor emergency plan reference comparisons provide the following:

- Purdue University PUR-1 reactor E-Plan contains specific names of the support organizations (other than the off-site medical center, all other support services are provided by Purdue support organizations).
- NC State University PULSTAR reactor E-Plan contains an appendix that lists the off-site support organizations that written agreements are maintained with.
- UMASS Lowell research reactor E-Plan contains specific names of the campus and off-site support organizations that written agreements are maintained with.

This change to the REP removes the names of specific off-site support organization with whom written agreements are maintained, but preserves the description of the support services they provide. Thus, the change does not deviate from the wording of regulation and guidance.

The removal of the names of specific off-site support organization with whom written agreements are maintained is considered a reduction in effectiveness based on it being a commitment documented in the NRC approved and current versions of the REP. VNC requests NRC approval to remove of the names of specific off-site support organization with whom written agreements from the REP.

VNC will continue to document the commitment to maintain agreements with the various offsite support organizations in the REP. The removal of specific names of the organizations will require fewer changes when the agreements are changed. The written agreements will continue to be reviewed biennially and updated as needed in accordance with Section 10.2.2 of the REP.

3.4 Site Area Emergency Classification Level and EALs

The NRC approved REP EAL set is based on ANSI/ANS-15.16-1982 initiating conditions. The current REP EAL set is based the ANSI standard and a set of thresholds developed to encompass all VNC SNM areas licensed for radioactive materials. Additional thresholds are also contained in the site emergency implementing procedures.

SNM-960 licensed facilities do not require an emergency plan and are not within the scope of the REP (refer to Section 3.1 for effectiveness evaluation of the SNM-960 licensed facilities). The current EAL set does not have a documented technical basis.

This change to the REP EALs is a complete revision to conform to the criteria in ANSI/ANS-15.16-2015, including the development of a technical basis for each site specific EAL threshold. This change also removes site specific EAL thresholds that apply only to the SNM-960 licensed facilities and modifies EAL thresholds such that they will not apply to SNM-960 licensed facilities (leaving them applicable to only the reactor facilities). Specifically, the proposed EAL thresholds are limited to events involving NTR or the SAFSTOR reactor facilities, or events that affect the NTR or the SAFSTOR reactor facilities.

The new EAL scheme develops site specific indications and parameters and uses site specific terminology. It is considered a scheme change based on the significance of the threshold changes being made. In accordance with 10 CFR 50 Appendix E.IV.B.2, a licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change. The new EAL scheme and its technical bases are documented in Sections 4 and 5 of the proposed REP (refer to Attachment 4 of this submittal).

In the development of a technical basis for the site specific EAL threshold values it was determined that the radiological conditions that define a Site Area Emergency classification level were not possible at VNC. NTR is the most significant source term at VNC, which is licensed to operate at power levels not in excess of 100 kW (thermal).

The NTR Safety Analysis Report (SAR) states that even if catastrophic non-mechanistic failure of the NTR is assumed, there are no potential consequences more severe than those associated with the accidents analyzed in Chapter 13. SAR Table 13-3 provides dose summaries for site boundary exposure to the NTR Design Basis Accident (DBA), that result in a Total Body 2 hour submersion dose of 4.54E-3 Rem (4.5 mRem) and CDE Thyroid of 1.61E-1 Rem (161 mRem). These values are significantly below the ANSI/ANS-15.16-2015 24 hour and 1 hour thresholds required for a Site Area Emergency. Thus, the Site Area Emergency classification level is not applicable at VNC.

The change to the EAL classification scheme complies with and continues to meet all aspects of 10 CFR 50 Appendix E and Regulatory Guide 2.6 applicable to the NTR.

The removal of the Site Area Emergency classification level may be considered a reduction in effectiveness based on it being a requirement in the NRC approved and current versions of the REP. There is no technical basis or regulatory requirement for a Site Area Emergency classification level for the VNC NTR or SAFSTOR facilities. Thus, maintaining site specific EALs and response procedure actions for a Site Area Emergency classification level provides no benefit or added safety capability, because an event can never reach that level at VNC.

The change to the EAL classification scheme is an improvement in the capability to perform the classification emergency planning function, and therefore is not a Reduction in Effectiveness. However, the scope of the EAL scheme change requires NRC approval prior to implementation.

3.5 State Event Notification Time Requirement

The NRC approved and current versions of the REP do not specify timeliness criteria for notification of the California Office of Emergency Services (OES) or the NRC following declaration of an emergency. VNC site emergency procedures (SEPs) implementing the process for Cal OES and NRC notification do not specify timeliness criteria. No commitment is made in the NRC approved and current versions of the REP to notify local agencies of a declared event at VNC.

10 CFR 50 Appendix E.IV.D.3 states; a licensee shall have the capability to notify responsible state and local governmental agencies within 15 minutes after declaring an emergency.

Regulations do not specify an NRC notification timeliness criterion for research and test reactors. 10 CFR 50.72, applicable to operating nuclear power reactors, specifies that the licensee shall notify the NRC Operations Center of the declaration of any of the emergency classes specified in the licensee's approved emergency plan immediately after notification of the appropriate state or local agencies and not later than one hour after the time the licensee declares one of the emergency classes.

By default, VNC event notification to the state must conform to 10 CFR 50 Appendix E criterion since no exemption is taken or otherwise stated in the NRC approved and current versions of the REP.

This proposed change is considered a reduction in effectiveness as it alters the timeliness aspect of the notification function by potentially increasing the time between event declaration and informing the state agency of the event.

In accordance with NSIR/DPR-ISG-02, the NRC has approved numerous state notification timeliness exemptions to power reactor licensees who have submitted permanently defueled and Independent Spent Fuel Storage Installation only emergency plans.

VNC requests an exemption from the requirement of 10 CFR 50 Appendix E.IV.D.3 regarding 15 minute notification of state agencies. The basis for this request is that the highest emergency classification level for NTR is an Alert, which requires no assistance from off-site state agencies and no protective actions for members of the public. Specifically, VNC requests NRC approval of commitment that the state will be notified [[ ]] of an event declaration (initial or an escalation).

VNC has included specific wording in the proposed REP that the NRC be notified immediately after notification of California Office of Emergency Services (Cal OES) [[ ]] after event declaration (initial or an escalation).

3.6 Impact of Proposed Changes on State Emergency Plan

VNC discussed the REP with the Cal OES Radiological Preparedness Unit to inform them of proposed changes including removal of the Site Area Emergency classification level. Cal OES had no additional comments.

4.0 REFERENCES

4.1 10 CFR 20, Standards for Protection Against Radiation

4.2 10 CFR 50.34(b)(6)(v), Contents of applications; Technical Information, Final Safety Analysis Report, Emergency Plans

4.3 10 CFR 50.54, Conditions of Licenses

4.4 10 CFR 50 Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities

4.5 Regulatory Guide 2.6, Emergency Planning for Research and Test Reactors, Revision 2

4.6 ANSI/ANS-15.16-2015, Emergency Planning for Research Reactors

4.7 NUREG-0849, Standard Review Plan for the Review and Evaluation of Emergency Plans for Research and Test Reactors, October 1983

4.8 EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, October 1991

4.9 Technical Specifications for the Nuclear Test Reactor Facility License R-33, Amendment 23

4.10 VNC Reactor Facilities Radiological Emergency Plan, March 1996 [NRC approved plan]

4.11 VNC Reactor and Radiological Facilities Radiological Emergency Plan, January 2018 [current plan]