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

February 9, 2017

Mr. Matt Feyrer, Site Manager
Regulatory Compliance
Vallecitos Nuclear Center
6705 Vallecitos Road
Sunol, CA 94586

SUBJECT: GENERAL ELECTRIC HITACHI - REQUEST FOR ADDITIONAL INFORMATION FOR LICENSE AMENDMENT NO. 24 OF THE GENERAL ELECTRIC HITACHI NUCLEAR TEST REACTOR LICENSE R-33 (CAC NO. MF5799)

Dear Mr. Feyrer:

The U.S. Nuclear Regulatory Commission (NRC) is continuing its review of the request for an amendment to Facility Operating License No. R-33 for the General Electric Hitachi Nuclear Test Reactor submitted on February 16, 2015 (available on the NRC's public Web site at www.nrc.gov under Agencywide Documents Access and Management System Accession No. ML15048A006).

During our review of your amendment request, questions have arisen for which we require additional information and clarification. We request that you provide responses to the enclosed request for additional information within 30 days from the date of this letter.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.30(b), "Oath or affirmation," you must execute your response in a signed original document under oath or affirmation. Your response must be submitted in accordance with 10 CFR 50.4, "Written communications." Information included in your response that is considered sensitive or proprietary, that you seek to have withheld from the public, must be marked in accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." Any information related to security should be submitted in accordance with 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements." Following receipt of the additional information, we will continue our review of your amendment request.

If you have any questions about this review or if you need additional time to respond to this request, please contact me by telephone at 301-415-3724, or via electronic mail at Duane.Hardesty@nrc.gov.

Sincerely,

/RA/

Duane Hardesty, Senior Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-73
License No. R-33

Enclosure:
As stated

cc: See next page

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DATED: February 9, 2017

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OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

REGARDING LICENSE AMENDMENT FOR THE

GENERAL ELECTRIC HITACHI NUCLEAR TEST REACTOR

LICENSE NO. R-33; DOCKET NO. 50-73

The U.S. Nuclear Regulatory Commission (NRC) is continuing its review of your application for an amendment of Facility Operating License No. R-33 for the General Electric Hitachi Nuclear Test Reactor (NTR) containing four enclosures submitted by letter dated February 16, 2015 (available on the NRC's public Web site at www.nrc.gov under Agencywide Documents Access and Management System Accession No. ML15048A006). During our review of your amendment request, questions have arisen for which we require additional information and clarification. Provide responses to the following request for additional information (RAI) within 30 days from the date of this letter.

The NRC staff reviewed this requested licensing action with the format and content guidance provided in NUREG-1537, Part 1 "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Format and Content," and acceptability with guidance provided in NUREG-1537, Part 2 "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria." The NRC staff takes the position that the statements in these documents provide acceptable guidance to licensees and, unless acceptable alternatives are justified by the licensee, should be utilized whenever appropriate.

RAI 1

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.34(b)(1) requires all current information, such as the results of environmental and meteorological monitoring programs, which has been developed since issuance of the construction permit be included in the final safety analysis report (SAR). The guidance provided in NUREG-1537 Part 1, Section 2.3, "Meteorology," states, "[t]he applicant should describe the meteorology of the site and its surrounding areas. Sufficient data on average and extreme conditions should be included to permit an independent evaluation by the reviewer."

Enclosure 4, page 6-9/6-10 states, "The annual average dilution-dispersion factor for the NTR, and the other stacks at VNC, was calculated from valid hourly records of measured meteorological conditions for a two-year period in 1976 and 1977."

GEH stated actual meteorological data was used to calculate the dispersion factor. However, GEH did not provide sufficient data for wind speed, direction or stability class, to support the NRC staff's independent evaluation applicable to and commensurate with the risks of the dispersion of airborne releases of radioactive material in the unrestricted environment at the site.

Provide site specific metrological data for wind speed, direction and stability class to support GEH's limiting dispersion factor of 3.48E-11 seconds per milliliter (sec/ml) or justify why additional information is not necessary.

RAI 2

The regulations in 10 CFR 50.34(b)(1) requires all current information, such as the results of environmental and meteorological monitoring programs, which has been developed since issuance of the construction permit be included in the final SAR.

Enclosure 4, page 6-9/6-10 states, "The single maximum calculated annual average X/Q value of 3.48E-11 sec/ml was selected from the 16 sector average values. This value, which is shown to occur in the east-southeast sector at 622 meters from the stack, is used to determine the NTR stack release limits."

Enclosure 1, page 2 states, "The Chi/Q geometry inputs were evaluated and indicated that the six sectors impacted by the land sale are the NW sector sweeping clockwise to the ENE sector. The adequacy review assumed a bounding distance to the NTR of 510 meters (which was the minimum distance used in the RALOC analysis)." "The sector results of the adequacy review case showed the most limiting annual average Chi/Q is 2.2E-11 sec/ml occurring in the Southwest (SW) Sector. The adequacy review annual average Chi/Q is bounded by the current GE NTR annual average of 3.48E-11 sec/ml by approximately 37%."

It appears to the NRC staff that in the derivation and assumptions for the dispersion factor the metrological data and the distance to the site boundary in the South East (SE) and South West directions have not changed despite the proposed land sale. It is not clear to the NRC staff why a new dispersion factor (2.2E-11 sec/ml) was calculated if the previous assumptions remained the same.

Provide a dispersion factor at the site boundary 510 meters to the North East (NE) of the stack, explain why the current dispersion factor of 3.48E-11 sec/ml occurring to the SE of the NTR stack is the most conservative dispersion factor for the 16 sectors, or justify why additional information is not necessary.

RAI 3

The regulations in 10 CFR 50.34(b)(3) require the SAR to include the kinds and quantities of radioactive materials expected to be produced in the operation and the means for controlling and limiting radioactive effluents and radiation exposures within the limits set forth in 10 CFR Part 20.

The guidance provided in NUREG-1537 Part 1, Section 11.1.1.1, "Airborne Radiation Sources," states, "[t]he applicant should estimate the release of airborne radionuclides to the environment and should use these releases to determine consequences in the offsite environment. The applicant should discuss compliance with the applicable regulations (10 CFR Part 20). Note that while airborne radioactive sources from accidents are discussed in Chapter 13, the calculational methodologies developed here should be applicable to accident release analysis. Therefore, the models and assumptions used for the prediction and calculation of the dose rates and accumulative doses in both the restricted, controlled (if present), and unrestricted areas should be provided in detail."

Enclosure 1, page 2 states, “The Chi/Q geometry inputs were evaluated and indicated that the six sectors impacted by the land sale are the NW sector sweeping clockwise to the ENE sector. The adequacy review assumed a bounding distance to the NTR of 510 meters (which was the minimum distance used in the RALOC analysis).”

While technical specification 3.4.3 4 provides a release limit based on the 3.48E-11 sec/ml dispersion factor, the expected concentrations, and applicable radiation dose rates, including gamma-ray shine from elevated plumes and inhaled or ingested dose commitments are not identified at the closest site boundary to the NTR facility.

Provide calculations showing that the sums of internal and external doses to a member of the public at 510 meters NE of the NTR facility, or justify why additional information is not necessary.