



**Maureen R. Zawalick**  
Vice President  
Generation Business  
and Technical Services

Diablo Canyon Power Plant  
Mail code 104/6/608  
P.O. Box 56  
Avila Beach, CA 93424

805.545.4242  
Internal: 691.4242

April 29, 2021

PG&E Letter HBL-21-007

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Humboldt Bay Power Plant, Unit 3  
Docket No. 50-133, OL-DPR-7  
Response to NRC Request for Additional Information on the License Amendment  
Request to Revise the License Termination Plan

Reference:

1. PG&E Letter HBL-21-001, "License Amendment Request 21-01, Revise Methodology in License Termination Plan," dated February 8, 2021 (ML21039A515)
2. NRC Letter, "Humboldt Bay Power Plant, Unit 3 – Request for Additional Information on License Amendment Request to Revise the License Termination Plan (EPID L-2021-LLA-0012)," dated April 1, 2021 (ML21091A047)

Dear Commissioners and Staff:

In Reference 1, Pacific Gas and Electric Company (PG&E) submitted License Amendment Request 21-01, to propose revisions to the License Termination Plan for Humboldt Bay Power Plant. In Reference 2, the NRC provided a request for additional information (RAI), regarding Reference 1. The Enclosure to this letter provides PG&E responses to the RAIs.

PG&E makes no new or revised regulatory commitments (as defined in NEI 99-04) in this letter.

If you have any questions or require additional information, please contact Mr. Philippe Soenen at (805) 459-3701.

I state under penalty of perjury that the foregoing is true and correct.

Executed on April 29, 2021.

Sincerely,



**Maureen R. Zawalick**  
*Vice President, Generation Business and Technical Services*

Enclosure

cc: Humboldt Distribution  
cc/enc: Scott A. Morris, NRC Region IV Administrator  
Gonzalo L. Perez, Branch Chief, California Dept of Public Health  
Amy M. Snyder, NRC Reactor Decommissioning Branch Project  
Manager

**Responses to NRC Requests for Additional Information on License  
Amendment Request to Revise the License Termination Plan (EPID L-2021-  
LLA-0012)**

**RAI 1)**

**a)** Identify the Quality Control (QC) measures and reference the procedures that the licensee plans to use to verify that the assumptions about the insignificant Radionuclides of Concern (ROCs) remain valid for each survey unit, and  
**b)** explain how the licensee will use Minimum Detectable Concentration (MDC) values or QC data to verify the deselection assumptions.

**Basis:** 10 CFR 20.1402 Radiological criteria for unrestricted use.

**Discussion:** The licensee requests an amendment for use of characterization data or general assumptions to consider select ROCs to be relatively insignificant and therefore can be “deselected” from the ROCs under consideration in a survey unit when evaluating data for Final Status Surveys. The proposed commitment for doing so is that:

*“the deselection process for radionuclides that were not specifically statistically evaluated in each specific survey area shall be performed. The sum-of-fractions for the deselected radionuclides shall be no more than 10 percent of the limit. The input for the Hard-to-Detect (HTD) isotopes for the sum-of-fractions calculation may be based on actual analytical characterization data or Minimum Detectable Concentration (MDC) values. The basis for input parameters chosen should be included with the area’s deselection documentation.”*

The NRC staff note that the licensee had been previously analyzing approximately 10 percent of the samples collected in a survey unit for all ROCs for QC purposes. It is the NRC staff’s understanding from the approved LTP that the purpose of obtaining this QC data was to verify surrogate relationships established for the HTD ROCs. However, based on licensee communications and the final status survey reports submitted to date, the licensee did not use the surrogate relationship strategy and does not anticipate doing so going forward. In the proposed amendment application for the LTP, the licensee deleted (see first paragraph on pages 5-14 of the red line/strikeout in submittal HBL-21-01) this QC verification strategy. The NRC staff could not identify any similar text requiring QC analysis of all ROCs in a survey unit elsewhere in the LTP. However, in the approved LTP, the licensee effectively commits to using the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) approach for final status surveys.

Because the licensee is using assumptions potentially based on previously collected characterization data, as well as general assumptions as to what ROCs may have been present in the survey units being assessed, the NRC staff believe that some

*QC evaluation is warranted based on the MARSSIM approach and to confirm the assumptions that the licensee is making, as well as to confirm that no recent impacts to the land area (due to decommissioning or restoration activities) have occurred that might disrupt anticipated radionuclide distribution across the site. Also, the NRC staff consider environmental transport mechanisms, such as resuspension/dust blowing and surface water runoff, could result in unexpected transport of the deselected ROCs to a survey unit, especially if no environmental cross contamination controls are in place. As such, if the licensee wants to delete the approved QC analysis strategy to verify surrogate relationships at the time of final status survey, it must propose another strategy that will address a QC requirement to verify its assumptions that the deselected radionuclides are not present at concentrations such that the Sum of Fractions (SOF) of the deselected ROCs would exceed 10 percent of the dose criteria. Assuming the licensee will continue to analyze samples for QC data and verify the deselection assumptions, the NRC staff requests the licensee to explain how it would use the data (for example, use the larger MDC value of the QC data for a deselected ROC value under consideration, do not use negative concentration values for assessing against the 10 percent SOF criteria [2.5 mrem/y criteria], consideration of background, etc.).*

***Intent of RAIs:*** *The NRC staff expects that a licensee describe, as a commitment in the LTP, the QC steps it will take to verify its assumptions for deselected radionuclides hold true when evaluating a survey unit. In such case, a licensee is expected to also provide the mathematical method it will use for deselection of ROCs.*

- A licensee is expected to identify both when it will utilize the MDC values versus actual sample results, and from where it will obtain the MDC values (e.g., from the QC sample analyses or from the maximum MDC commitment values in the LTP or other?).*
- A licensee is expected to identify how it will verify the deselected radionuclides assumptions (e.g., use QC data to do a 10 percent SOF compare [2.5 mrem/y]?). If the assumptions are not based on data but rather general knowledge as to the absence of select ROCs, the NRC staff expects that a licensee identify the criteria it would apply to the QC data to verify a general knowledge assumption.*
- If a licensee plans to use previous characterization data to deselect ROCs, the NRC staff expects a licensee to identify the mathematical methods it will use for demonstrating consistency with the <2.5 mrem/y dose criterion (e.g., average values of ROC concentrations from what may be a limited data set are not likely to be considered suitably conservative in this case and negative concentrations are not to be utilized to directly compare against a dose based criterion [i.e., to estimate dose] although they may be used to generate suitable statistical information associated with a data set).*

**PG&E Response to RAI 1:**

- a) PG&E will continue to use the guidance in MARSSIM section 4.9.2, which is included in Humboldt Bay Power Plant (HBPP) Procedure HBAP C-202 "Final Status Survey Quality Assurance Project Plan" and HBPP Implementing Procedure RCP FSS-2 "Preparation of FSS Survey Plans." These documents prescribed for QC purposes a minimum of 5 percent randomly selected samples from each survey unit be analyzed for a suite of deselected hard-to-detect (HTD) isotopes. During the data quality assessment, Procedure RCP FSS-14 "Data Quality Assessment," the QC data results of these analyses are to be compared to the deselection assumptions. If the quality assurance results support insignificant dose contribution, less than 10 percent of the limit, then the HTDs assumptions are confirmed to be insignificant and that survey unit's deselection dose is assigned to that survey unit.

Survey units that have been surface scanned and sampled in accordance with RCP FSS-2 were controlled to prevent recontamination in accordance with HBPP Procedure C-220, "Cross Contamination Prevention and Monitoring Plan." Additionally, work instructions for decommissioning activities in adjacent areas contained instructions to limit the potential for spread of contamination into previously surveyed areas. Whenever events were identified that could have resulted in contamination to a previously surveyed unit, follow up surveys were performed in the previously surveyed areas to determine any need for additional remediation and/or repeat final status survey.

- b) Whenever greater than MDC value(s) are identified on the 5 percent of HTD QC samples, the sum of fractions calculation is utilized for the deselected HTD isotope(s) dose, using the greater than MDC value(s), provided the 10 percent dose level assumed has not been exceeded. If the calculation indicates greater than 10 percent dose for the HTD sum of fractions, the dose for the isotope(s) with a greater than MDC value are removed from the deselected isotopes and are used for dose calculation in the survey unit. In each case, the overall dose for the survey unit is bounded with the QC sample greater than MDC nuclide(s) dose being added to the overall dose from the HTD isotopes.

There is no identified case that the summation of the greater than MDC deselected dose resulted in greater than 2.5 millirem (mrem)/year (yr). The process bounded the HTD deselected average dose to 2.5 mrem/yr. Positives above the MDC, that have been confirmed through reanalysis, would be an indication an isotope may be present, and the deselection assumptions may need to be revised. In that case the isotope dose would be included directly to the SOF assigned dose.

MDC values for HTDs were utilized early in the project until sufficient analytical final status surveys data was available for statistical analysis. Once the compiled data was reviewed and qualified, an average for deselected dose by survey unit class was calculated to be used as the deselected dose per the given classification of the survey unit.

PG&E does not plan to modify or include additional data for the deselected doses. Additionally, to develop a bounding HTD dose, the maximum hypothetical HTD dose was compiled from the data set. The resultant bounding hypothetical HTD dose was determined to be 3 mrem/yr.