June 23, 2005

Mr. Ted C. Feigenbaum, President and CEO
Maine Yankee Atomic Power Company
321 Old Ferry Road
Wiscasset, Maine 04578-4922

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING MAINE YANKEE FINAL STATUS SURVEY REPORT SUPPLEMENT 9A

Dear Mr. Feigenbaum:

On May 5, 2005, Maine Yankee Atomic Power Company (Maine Yankee) submitted Final Status Survey Report (FSSR) Supplement 9A. The attachment provides the staff's comments requiring resolution before the U.S. Nuclear Regulatory Commission (NRC) approval of FSS Supplement No. 9A. NRC's request for additional information (RAI) is the result of: (1) missing or insufficient technical information; or (2) missing or insufficient basis for technical conclusions. Maine Yankee is requested to provide the information identified in the attachment. NRC staff discussed the technical issues with Maine Yankee staff on June 20, 2005.

If you have any questions regarding this letter please contact me at 301-415-6607.

Sincerely,

/RA/

John T. Buckley, Project Manager
Decommissioning Directorate
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Docket No.: 50-309

License No.: DPR-36

Attachment: RAI

cc: Maine Yankee distribution list

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Request for Additional Information
Maine Yankee Final Status Survey Supplement 9A

1. Attachment 1, page 5 of 13, states, "Typically, a final status survey is conducted on building basement surfaces before fill material is placed in the basement."

The MY LTP requires that all building basements surfaces have a final status survey (FSS) conducted to demonstrate compliance with the DCGLs and release requirements. Please confirm that all building basement surfaces have had FSS or identify the areas that have not had FSS performed prior to having fill material placed over the surfaces.

2. Attachment 1, page 6 of 13, Section 4.2.1, states, "the LTP Section 3.2.4 indicated that the fuel building would be demolished to 3 feet below grade...All of the intervening walls and floors may be removed" and that, "The spent fuel pool liner would be removed due to known contamination levels." This section concludes with the statement, "All demolition activities associated with the fuel building have been completed."

The LTP states that some or all of the intervening walls and floors in the basement "may" be removed. The FSS Report (FSSR) is not clear on what demolition work was actually completed. Please clarify which walls and floors were removed and which remain in place.

3. Please clarify the following issues concerning FR-0400-SU1:

A. Consistent with the LTP, the survey unit design establishes a DCGL for concrete surfaces of 18,000 dpm/100 cm^2 gross beta activity, and a DCGLemc of 36,000 dpm/100 cm^2 gross beta activity. LTP Section 6.7.2 requires that, "The DCGL for contaminated concrete is expressed as dpm/100 cm^2 detectable beta. This form was required because the final survey will be performed using gross beta measurements."

- However, as discussed in Section C, gamma scans were performed using an investigation level of 1,800,000 dpm/m^2 gamma surveys using ISOCS measurements with a field of view of 12.6 m^2. The ISOCS averages the gamma activity over the entire 12.6 m^2 field of view. The survey unit results equate the 12.6 m^2 field of view to an average of 1,800,000 dpm/m^2 gamma activity and then averages the 1,800,000 dpm/m^2 to equate to the 18,000 dpm/100 cm^2 beta DCGL. Please justify the use of ISOCS gamma scans to meet the FSS beta scan requirements of LTP Section 6.7.2. In addition, demonstrate that an ISOCS gamma scan investigation level of 1,800,000 dpm/m^2 can be used to detect the gross beta DCGL and DCGLemc.

- In Table 2-2, the ISOCS scan MDC ranges are listed with values of up to 1480 dpm/100 cm^2. These values appear to be the averages of the ISOCS 12.6 m^2 field of view measurements, the weighted average of 1 m^2 readings and the average of the 1m^2 areas to 100 cm^2. It appears that the 1480 dpm/100cm^2 is derived from the total ISOCS measurement of 1,864,800 dpm/m^2 in the 12.6 m^2 view. Please justify the ISOCS scan MDC ranges.

Attachment

- Table 3-1, Sample Location S081 lists the post remediation ISOCS scan at 2 m as 274,570 dpm/m^2 for Cs-137 and 74,019 dpm/m^2 for Co-60. Since this data was from an ISOCS scan averaged over an area of at least 1 m^2, it appears the actual residual activity in S081 could exceed both the DCGL and the DCGLemc. The staff also notes that Maine Yankee has not notified the NRC of the proposed use of the ISOCS for measurements of concrete surfaces, and the derivation of the new DCGL based on the average gamma activity requires NRC approval in accordance with LTP Section 1.4. Please provide the justification for using ISOCS gamma measurements to demonstrate compliance with the concrete gross beta activity DCGL and DCGLemc approved in the LTP.

- Table 3-1, for sample locations S040, S045 and S081, the SSPA-3 results are 143,000, 143,000, and 52,400 cpm gamma, respectively. Although the measurement areas are not provided, it appears that these activities could exceed the DCGL and DCGLemc. Please demonstrate that these gamma results do not exceed the gross beta DCGL and DCGLemc.

B. The survey design assumes all measurements are on concrete surfaces, and all results, including the soils, are compared with the concrete surface DCGL. The soil measurements were converted from volumetric to area results and reported as a comparison to the concrete surface DCGL. Given the presence of soils, it appears that the survey design should have included instructions for soil samples and measurements. Please explain why soil measurements were not compared with the soil specific activity DCGLs listed in LTP Table 6.11. In addition, please provide other survey parameters, such as scan MDCs, to demonstrate compliance with the LTP.

C. Please provide gamma surveys or sample data that demonstrates that there is no contamination at depth in the concrete foundation remnants. The staff requires specific clarification of the following:

- Table 3-1, lists SSPA-3 readings of 143,000 cpm, 143,000 cpm, and 52,400 cpm for sample locations S040, S045, and S081 respectively. These measurements exceed the 30,000 cpm limit for fixed contamination. The record does not include an explanation as to the presence of cracks or crevices and no concrete sample results are provided that demonstrate that remediation was completed. Please provide this information.

- Table 3-1, footnotes 1 and 2, "Total Beta" activity in units of dpm/100 cm^2 was derived for Sample Location S136 from a concrete sample that was analyzed by a gamma spectroscopy. It is not clear why the total beta activity was determined from gamma spectroscopy measurements since LTP Section 5.5.1(a) specifies that concrete sampling will be performed “if the efficiency or uncertainty of beta measurements are too high.”

D. In CR-05-023, it is stated that the State of Maine found residual radioactivity in a concrete crack using a different survey method. The NRC Staff does not believe that the use of different equipment is a valid reason for not detecting residual contamination in excess of the 30,000 cpm gamma limit. Therefore, Maine Yankee should re-evaluate the conclusions and corrective actions. This issue will be referred to Regional Inspector.

4. FR-0111-SU15 and SU16 - please clarify the meaning of, "media appropriate geometries" and provide a justification of the geometries employed and the media measurements for these survey units.

5. FR-0111-SU16 - please provide a description of the concrete surfaces, the beta surface survey data, and the gamma surveys or sample data that demonstrates there is no contamination at depth in accordance with LTP Section 5.5.1 for the concrete surface remnants buried.

6. FR-2600-SU1, Section B, states, "Therefore, as discussed previously with the NRC, the measurements obtained in this survey unit will be taken on the interior surfaces of the MH and HH vaults."

The staff would like to clarify that the discussion referenced by Maine Yankee was focused on the acceptability of surveying the cables as they were removed from the electric bank conduits in order to justify not surveying the miles of conduits. The Staff agreed that the surveys of the cables would be representative of any residual radioactivity in the conduits and there would be no need to survey the conduits other than the access points. Maine Yankee and NRC staffs did not discuss the surveys to be taken in manholes or hand holes.

7. FR-2600-SU1 references Condition Report CR05-012, "Potential Contamination of FR2600 Survey Unit 1," that documents the discovery of contamination around Manhole 1 (MH-1). Please clarify the following issues concerning FR2600 SU1 and CR05-012:

A. The CR draws the conclusion that any potential contamination was from FR0111 SU16 which contains Class 1 soils above the manway. The CR makes the assumption that the contamination is evenly distributed in the 3 inch depth of soil and water on the floor and equates the soil specific activity to areal concrete surface activity and compares the concrete surface activity with the Class 3 DCGL of (50% of 9800 dpm/100 cm^2) 4900 dpm/100 cm^2 concrete pipe DCGL instead of the LTP approved soil DCGL. Attached to the CR, is an ISOCS report dated March 17, 2005, that derives the floor activity of 1750 dpm/100cm^2 (Cs-137) from an ISOCS scan with a 9.29 m^2 field of view and a weighted average of 174,980 dpm/m^2 for Cs-137 and 113,350 dpm/m^2 for C0-60 and a total activity of the two nuclides of 288,530 dpm/100 m^2. Please justify the comparison of the contaminated soil in the pipe with the concrete pipe DCGL instead of the soil DCGL. In addition, please clarify how the floor activity was derived as well as the ability to detect 4900 dpm/100 cm^2 (ie 50% of the DCGL).

B. Section B, identifies Reference 6 (CR-05-012) as the document evaluating the broken top/wall and the missing hand hole. Please clarify whether the hand hole cover was removed or the entire vault with the hand hole was removed. If the entire vault was removed, please provide soil sample data to show that the soils under the vault areas met release requirements.

C. FR 2600-SU1, Section C, states that gamma scans were performed in 19 vaults at ~50% of the DCGL of 4430 dpm/100 cm^2 for Cs-137, and 470 dpm/100cm^2 for Co-60. MY LTP Section 6.7.2 requires that, "The DCGL for contaminated concrete is expressed as dpm/100cm^2 detectable beta. This form was required because the final survey will be performed using gross beta measurements." Since the ISOCS averages the gamma activity over the field of view and provides a weighted activity average over 1 m^2, the measurement technique employed may exceed the 50% of the DCGL when the average activity converted to an area 100 cm^2. In

CR05-012, ISOCS scans of MH-1, activities in dpm/m^2 are converted to dpm/100cm^2 and it is implied that the surface activity is below the DCGL of 9800 dpm/100 $cm^{2,}$ and 50% of the DCGL for a Class 3 area. This approach appears to be inconsistent with the LTP for surveying concrete surfaces. Please explain how the use of the ISOCS meets the LTP requirement to perform beta FSSs.

Further, the staff is concerned that since the ISOCS averages gamma activity over the area of view, it may not be capable of detecting residual radioactivity in some areas in excess of 50% of the DCGL, as well as the DCGL. The staff also notes that Maine Yankee has not notified the NRC of the proposed use of the ISOCS for measurements of concrete surfaces. In addition, the derivation of the new DCGL (in units of dpm/m^2) based on the average gamma activity requires NRC approval in accordance with LTP Section 1.4

8. FR-2600-SU1, Section B, states "The vaults generally make up the low points for this survey area. As such, the MHs and HHs have the highest potential for containing residual radioactivity in the duct bank conduits." It appears that all 14 direct measurements in Table 2, as shown on Maps FR 2600 1a thru 1k, are from the walls of the manholes and hand holes and not on floors where the highest potential for contamination exists. Please clarify how/why all direct measurements were taken on walls and not on the floors where the highest potential for contamination exists, and justify how the collection of the data is consistent with LTP Sections 5.4.4 and 5.4.5 (d) and NUREG-1575.

9. FR-2600-SU1, Section C, indicates that an evaluation was performed to determine the attenuation effects of water and sediment levels in the manholes ranging from 0.5 to 1 inches in depth, and a worst case sediment depth of 5 inches. However, in CR05-012, it is documented that the soil, debris, and water were removed from the vaults. Please justify why the water, debris, and sediments were not removed prior to performing the FSS measurements and how these physical constraints factored into the FSS sampling locations for this survey unit. In FR-2600-SU1, Section B, paragraph 4, it is noted that the soil samples were also collected from locations where soil and sediment existed in the bottom of the vaults. Please provide soil/sediment samples for all man hole and hand holes, the locations and results.

10. FR-2600-SU1, Section B, states that the ISOCS field of view ranged between 4.2 m^2 and 39.0 m^2. Please justify the geometries utilized, the measurements made including the scan MDCs and MDAs, based on the size of the vaults.

11. FR-2600-SU1, Section B, states that, "Background values were established based on ambient background values in the survey unit ... the average background value shown in Table 1 was determined retrospectively from the data obtained during the surveys." From the data presented in Table 2, there appears to be two background values used to determine the net background activity in dpm /100cm^2. While both calculations of net activity apparently use 320 cpm as the background count rate, the use of the reduced efficiency as applied to damp surfaces appears to have been used to determine the background activity. Please justify the application of the reduced efficiency to the ambient background which is not affected by damp surfaces, and provide the calculation details and bases for the retrospective background determination using data during from the surveys.