

PSEGSPEnveRAIPEm Resource

From: Fetter, Allen
Sent: Tuesday, February 05, 2013 12:10 PM
To: 'PSEGRAIResponses@pseg.com'
Cc: PSEGSPEnveRAIPEm Resource; 'Robillard, David L'; Mallon, James; Saulsbury, Bo (saulsburyjw@ornl.gov); 'Zimmerman, Gregory P.'
Subject: PSEG Site ESPA Final RAI Env-12S (eRAI_7003)
Attachments: PSEG Site ESPA Final RAI Env-12S (eRAI_7003).pdf

Please find attached RAI Env-12S for the PSEG Site ESP Application. The Env-12S RAI is an aggregate of three supplemental questions pertaining to transportation. Following a clarification call on the draft supplemental RAI on January 31, 2013, it was determined that additional clarification call was not required. As such, this supplemental RAI as being issued as final.

The schedule we have established to the review of your application assumes technically correct and complete responses within 30 calendar days of receipt of RAIs. For any RAIs that cannot be responded to within 30 calendar days, it is expected that a date for receipt of this information will be provided to the staff within the 30-day period so that the staff can assess how this information might impact the published schedule.

Please contact me if you have any questions.

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Request for Additional Information Env-12S

Issue Date: 2/5/2013

Application Title: PSEG Site ESP Environmental Review - Docket 52-043

Operating Company: PSEG Power LLC, PSEG Nuclear LLC

Docket No. 52-043

Review Section: ESP EIS 6.0 - Fuel Cycle, Transportation, and Decommissioning

Application Section: ER

QUESTIONS

ESP EIS 6.0-11

Env-12S-1 (rTR-08S): Provide a detailed analysis for staff review of the number of annual radioactive waste, or radwaste, shipments for each reactor design being considered in the PSEG ESP application. As part of this analysis, resolve inconsistencies between the number of radwaste shipments in RAI response Table ESP EIS 6.0-5-2 and Table 5.7-7 of the ER.

Note: See also RAI ENV-12S-2.

Supporting Information: The response to RAI ENV-12, Question No. ESP EIS 6.0-5 (PSEG letter ND-2012-0071 dated Oct. 19, 2012, Accession No. ML12296A772) provides the annual number of shipments of radwaste using a container volume of 2.34 m³/shipment and normalized to 880 MW(e). These radwaste shipment numbers are contained in Table ESP EIS 6.0-5-2 (Normalized Number of Shipments).

These shipment numbers, however, are not consistent with the radwaste volumes and shipments contained in Table 5.7-7 (Radwaste Shipment Data) in the ER. For example, for the ABWR, Table 5.7-7 lists an annual radwaste volume of 165 m³. Using a container volume of 2.34 m³/shipment and normalizing to 880 MW(e) should yield about 43 shipments, while Table ESP EIS 6.0-5-2 lists 15.8 shipments.

For the U.S. EPR, Table 5.7-7 lists an annual radwaste volume of 187.4 m³. Using a container volume of 2.34 m³/shipment and normalizing to 880 MW(e) should yield about 45.7 shipments, while Table ESP EIS 6.0-5-2 lists 7.5 shipments.

For the US-APWR, Table 5.7-7 lists an annual radwaste volume of 432.7 m³. Using a container volume of 2.34 m³/shipment and normalizing to 880 MW(e) should yield about 105.6 shipments, while Table ESP EIS 6.0-5-2 lists 13.5 shipments.

ESP EIS 6.0-12

Env-12S-2 (rTR-08S): Provide a detailed analysis for staff review of the number of annual new fuel, spent fuel, and radwaste shipments for the AP1000 design. In this analysis, resolve inconsistencies between the new fuel, spent fuel, and radwaste shipments required for one AP1000 unit and the net electrical generation normalization for two units.

Note: See also RAI ENV-12S-1.

Supporting Information: The response to RAI ENV-12, Question No. ESP EIS 6.0-5 (PSEG

letter ND-2012-0071 dated Oct. 19, 2012, Accession No. ML12296A772) provides the annual number of shipments of new fuel, spent fuel, and radwaste for the AP1000 normalized to 880 MW(e). RAI response Table ESP EIS 6.0-5-1 (Net Electric Generation Normalization) provides the normalization factor for the AP1000, which is listed as 0.40 for two units and which is based on the electrical output from two units [2300 MW(e) x 0.963]. RAI response Table ESP EIS 6.0-5-2 (Normalized Number of Shipments) contains the shipment numbers for the AP1000.

However, the shipments listed in RAI response Table ESP EIS 6.0-5-2 for the AP1000 appear to be based on one unit but normalized to the electrical output for two units. For example, Table 5.7-6 (Irradiated Fuel Shipment Data) of the ER lists an annual reload quantity of 24.4 MTU for a single AP1000 reactor, which would be 48.8 MTU for two units. Using a container capacity of 0.5 MTU/shipment and normalizing to 880 MW(e) for the electrical output from two AP1000 reactors [2300 MW(e) x 0.963] as listed in Table ESP EIS 6.0-5-1 should yield about 38.8 annual shipments of spent fuel, while RAI response Table ESP EIS 6.0-5-2 lists 19.5 shipments.

This same problem in normalization for the AP1000 appears to also occur for new fuel and radwaste shipments.

ESP EIS 6.0-13

Env-12S-3 (rTR-14S): Provide the radionuclide inventories (Ci/MTU) for the ABWR and AP1000 that include the inventory of the radionuclide Co-60 contained within crud deposits on the spent fuel assemblies, and reexamine the conclusion that the US-APWR radionuclide inventory is the bounding design when Co-60 contained within crud deposits is included in the radionuclide inventories for all reactor types (US-APWR, U.S. EPR, ABWR, and AP1000). Provide electronic copies of the RADTRAN computer code runs (i.e., input and output files) performed in this reexamination.

Supporting Information: The response to RAI ENV-12, Question ESP EIS 6.0-10 (PSEG letter ND-2012-0071 dated Oct. 19, 2012, Accession No. ML12296A772) provides the radionuclide inventories for the US-APWR, U.S. EPR, ABWR, and AP1000 in terms of Ci/MTU. The radionuclide inventories are listed in RAI response Table ESP EIS 6.0-10-1 (Comparison of 5-Year Decayed Fission Product Inventories).

In RAI response Table ESP EIS 6.0-10-1, the radionuclide inventories for the US-APWR and U.S. EPR includes Co-60 contained within crud.

For the AP1000, the radionuclide Co-60 is not listed in the radionuclide inventory in RAI response Table ESP EIS 6.0-10-1. The reference for the AP1000 radionuclide inventory is listed as the Summer COL ER; however, the Summer COL EIS (NUREG-1939) lists 4.09 Ci/MTU of Co-60 as crud (see Table 6-10 in NUREG-1939).

There is 3630 Ci/MTU of Co-60 listed in the radionuclide inventory for the ABWR in RAI response Table ESP EIS 6.0-10-1. The reference for the ABWR radionuclide inventory is listed as the South Texas Project COL ER; however, the South Texas Project COL EIS (NUREG-1937) lists this quantity, 3630 Ci, of Co-60 as being an activation product in spent fuel (i.e., Co-60 contained within structural material). The South Texas Project COL EIS provides a separate entry for Co-60 inventory as contained within crud (169 Ci/MTU, see Table 6-10 in NUREG-1937).

In addition, the response to RAI ENV-12, Question ESP EIS 6.0-10 states that US-APWR radionuclide inventory is the bounding design from the analysis using the US-APWR radionuclide inventory and value for the total Ci/MTU. Based on the above information on Co-60 contained within crud for the other reactor designs, the US-APWR radionuclide inventory may not be the bounding design from the perspective of the radiological transportation accident risks that must be presented in an EIS. The applicant is being asked to either re-verify this conclusion or to document which other design is considered bounding for the transportation of spent nuclear fuel.