December 26, 2006

ORGANIZATION: General Electric Nuclear Energy (GE)

PROJECT: Economic Simplified Boiling Water Reactor (ESBWR) Design Certification Review

SUBJECT: SUMMARY OF MEETING HELD ON DECEMBER 4-5, 2006, TO DISCUSS ESBWR FISSION PRODUCT REMOVAL AND ASSOCIATED PROPRIETARY TOPICAL REPORTS

The Nuclear Regulatory Commission (NRC) held a meeting with General Electric Nuclear Energy (GE) on December 4-5, 2006, at the Hyatt Regency in Albuquerque, New Mexico. The purpose of the meeting was to discuss the ESBWR fission product transport and removal in the containment and associated proprietary topical reports (References 1 and 2) related to Design Control Document (DCD) Tier 2, Revision 1, Sections 6.5 and 15. A list of attendees is provided in Enclosure 1.

This meeting was closed to the public because the information discussed was determined to be proprietary in accordance with 10 CFR 2.390. A non-proprietary summary of the meeting is provided in Enclosure 2. Enclosures 3 and 4 are Sandia National Laboratory and GE's non-proprietary meeting slides which can be accessed through the Agencywide Documents Access and Management System (ADAMS). This system provides text and image files of NRC's public documents. The enclosures may be accessed through the ADAMS system under Accession Nos. ML063460024 (Enclosure 3) and ML063520356 (Enclosure 4). If you do not have access to ADAMS or if there are problems in accessing the handouts located in ADAMS, contact the NRC Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737 or by e-mail to pdr@nrc.gov.

Reference 1 General Electric Licensing Topical Report, NEDE - 33279P, "ESBWR Containment Fission Product Removal Evaluation Model," October 2006.

Reference 2 Research Report No. VTT-R-04413-06, "Estimation and Modeling of Effective Fission Product Decontamination Factor for ESBWR Containment - Part 1," October 2006.

/RA L. Rossbach for:/

Shawn Williams, Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-010

Enclosures: As stated

cc w/encls: See next page

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ADAMS ACCESSION NO: ML063460022

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CLOSED Meeting w/GE
To Discuss ESBWR Proprietary Topical Reports on
Containment Fission Product Removal
December 4-5, 2006
Meeting Attendance List

Name	Affiliation
Shawn Williams	NRC
Margaret Kotzalas	NRC
Jay Lee	NRC
Josh McGuire	NRC
Kris Parczewski	NRC
Yamir Diaz-Castillo	NRC
Don Kalinich	Sandia National Lab
Randy Gauntt	Sandia National Lab
Dana Powers	Sandia National Lab
Wayne Marquino	GE
Erik Kirstein	GE
Chris Pratt	GE
Illona Lindholm	GE consultant (VTT)

Non-Proprietary Meeting Summary
December 4-5, 2006 Meeting

The purpose of the meeting was to discuss ESBWR fission product transport and removal in the containment associated with the staff's review of Design Control Document (DCD) Tier 2, Revision 1, Sections 6.5 and 15. GE requested that this meeting be closed to public attendance because the topics of discussion were of a proprietary nature. The NRC staff reviewed the meeting topics and concluded that the information to be discussed were proprietary and that the meeting would be a closed meeting.

NRC's contractor, Sandia National Laboratories (SNL) presented preliminary results of their confirmatory MELCOR analysis concerning fission product aerosol deposition and removal rates in the ESBWR containment. SNL's preliminary results (median value case) for drywell pressure transient and fission product aerosol deposition and removal rates in the containment are in good agreement with those calculated by GE/VTT for Accident Scenario 1 (reactor bottom drain line break). SNL's meeting slides are included as Enclosure 3.

The remaining tasks for SNL that were discussed at the meeting are:

- Complete a statistical characterization of uncertainty distributions (an uncertainty analysis for aerosol removal rates) for Accident Scenario 1 using multiple realization cases (150 sample calculations).
- Perform confirmatory MELCOR analysis for fission product aerosol deposition and removal rates for Accident Scenarios 2 and 3, complete with uncertainty analyses.
- Perform a rate analysis of steady state iodine transport within the containment using iodine re-volatilization from the reactor vessel (iodine production) and iodine removal by the passive containment coolant system condensers (iodine depletion).
- Develop a stand-alone aerosol deposition and removal model for specific ESBWR design for determining aerosol deposition in the main steam lines, drain lines, and main condenser using the BWR generic model (NRC to issue a new task order).
- Check the radiation G-value used for estimating hydrochloric acid (HCl) production from electrical cables (Hypalon) in the containment.

GE's contractor, the Technical Research Centre of Finland VTT (VTT), discussed and presented results in the proprietary VTT Research Report No. VTT-R-04413-06, "Estimation and Modeling of Effective Fission Product Decontamination Factor for ESBWR Containment," dated October 18, 2006. The primary purpose of the report is to determine the capacity of the passive containment coolant system condensers to remove airborne fission products from the containment.

GE discussed and presented results in the proprietary GE Licensing Topical Report NEDE-33279P, "ESBWR Containment Fission Product Removal Evaluation Model," dated October 18, 2006. This report summarizes the methodology used by GE to evaluate the potential dose consequences due to a design basis Loss of Coolant Accident. The report presented the fission product transport and removal characteristics for only Accident Scenario 1. GE's non-proprietary meeting slides are included as Enclosure 4.

The remaining tasks for GE/VTT that were discussed at the meeting are:

- Complete the fission product transport and removal evaluation and the radiological consequence doses calculations for Accident Scenarios 2 and 3. Incorporate the results into the topical report or issue a supplement to the topical report.
- Provide paint specifications for the paints used in the containment surfaces.
- Determine the containment pool pH values and calculate the resulting radiological consequence doses using various cesium hydroxide (CsOH) formation rates (zero to 100% formation).
- Confirm the main steam isolation valve leakage pathway selected to ensure that it is consistent with the pathway evaluated as shown in Figure 4-2 (page 37) of GE Licensing Topical Report NEDC - 31858P, "BWROG Report for Increasing MSIV Leakage Rate and Elimination of Leakage Control System," issued February 1991 (i.e., third MSIV, drain line isolation valve power supply).

Based on the content and discussion of GE's proprietary Topical Reports a number of preliminary Requests for Additional Information (RAI) were discussed. Staff will formally send RAIs to GE in January. The preliminary RAIs identified and discussed are related to:

- Containment paint specifications
- Containment pool pH values and radiological consequence doses using various cesium hydroxide (CsOH) formation rates (zero to 100% formation)
- Description and isometric drawings of the ESBWR main steam isolation valve leakage pathway, complete with location of MSIV and main steam drain line isolation valve and power source to it
- Assumed leak rate through the Passive Containment Cooling System
- Primary containment leakage rate test program
- Main condenser iodine removal model
- Main control room model for the Emergency Bottled Air System
- Reactor Building leakage model

The staff further identified the following potential COL Action Items:

- Verification for meeting Safe Shutdown Earthquake (SSE) criteria for the main steam lines, main steam drain lines, and the main condenser
- Amount of electrical cable (Hypolan) used in the containment

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