

February 22, 2010

MEMORANDUM TO: Stacey L. Rosenberg, Chief
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

FROM: Holly D. Cruz, Project Manager **/RA/**
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE DECEMBER 17, 2009, CATEGORY 2 PUBLIC MEETING (WITH PORTIONS CLOSED) BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) AND THE PRESSURIZED WATER REACTOR OWNERS GROUP (PWROG) REGARDING THE PWROG APPROACH TO RESOLVE NRC STAFF QUESTIONS ON TOPICAL REPORT WCAP-16793, "EVALUATION OF LONG TERM CORE-COOLING CONSIDERING PARTICULATE AND CHEMICAL DEBRIS IN THE RECIRCULATING FLUID"

On December 17, 2009, a Category 2 public meeting (with portions closed) was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of the PWROG at the Executive Boulevard Building, Conference Room 01-B13, 6003 Executive Boulevard, Rockville, MD 20852, to discuss the PWROG's approach to resolving NRC staff questions on Topical Report (TR) WCAP-16793, "Evaluation of Long Term Core-Cooling Considering Particulate and Chemical Debris in the Recirculating Fluid." The meeting results will be used to support a NRC decision on the adequacy of the PWROG's plan for providing an acceptable method for addressing the in-vessel effects of debris-laden circulated fluid on long-term core cooling. A list of meeting attendees is enclosed and the meeting agenda dated December 3, 2009 is available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML0940476.

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During NRC opening remarks, Mr. Michael Scott, Safety Issues Resolution Branch Chief, noted that the NRC staff had interacted substantially with the PWROG in the months leading up to the public meeting and the NRC expects to bring closure to this issue in 2010. Following the opening remarks, Mr. Gordon Wissinger, of AREVA NP, Inc. (AREVA), and Ms. Susan Baier, of the Westinghouse Electric Company (Westinghouse) presented a briefing regarding the PWROG's plans to address the requests for additional information (RAIs) issued by NRC staff. The NRC staff interacted with the PWROG throughout the presentation and provided staff views on each of the issues. The following is a brief summary.

Mr. Wissinger and Ms. Baier presented the background of the TR, discussing the PWROG plan to demonstrate that there is reasonable assurance the long-term core cooling requirements of 10 CFR 50.46 are satisfied. The TR will, at a minimum, address blockage at the core inlet, collection of debris at spacer grids, and the deposition of fiber and chemical precipitates on fuel rods. Revision 1 of the TR, including Westinghouse and AREVA fuel assembly (FA) test reports, was submitted in April 2009. In response to the revised submittal, the NRC staff issued 43 RAIs. Of the 43 RAIs submitted, 16 require additional testing to develop the requested data. The issues associated with these 16 RAIs are: demonstrating that silicon carbide is a suitable substitute for Microtherm in the fuel assembly testing, confirming that the most limiting range of particulate to fiber ratios has been identified for the Cold-Leg Break and Hot Leg Break scenarios, and demonstrating that the test results obtained using the Westinghouse FA are applicable to the AREVA FA. Mr. Wissinger and Ms. Baier discussed the proposed plan to address the 16 RAIs and presented a comparison of AREVA and Westinghouse test results.

After the briefing, the NRC staff caucused separately to further discuss the PWROG approach. When the meeting reconvened, Mr. William Ruland, Division of Safety Systems Director, commented that the NRC staff has been focused on the importance of "putting the issue behind us."

Follow-up Actions

In response to the PWROG presentation, the following PWROG follow-up actions were identified. Actions 1 through 6, listed below, are to be completed by January 15, 2010, and actions 7 and 8 are to be included in the RAI responses due by February 10, 2010.

1. Complete additional test to confirm the PWROG claim that Microtherm behaves similarly to silicon carbide particulate in FA testing at the lower particulate-to-fiber ratios,
2. Provide a draft of the proposed "margin calculator" for both hot and cold legs, to be included in the TR for NRC staff review,
3. Provide a plant-specific sample calculation using the "margin calculator" for both hot and cold legs,
4. Provide information on the timing and concentration for the "spill-over" phenomenon being credited to show additional margin in available head for a hot-leg break,
5. Review and better document the assumptions for the boiling-condition heat-transfer coefficient used in the one-dimensional heat transfer calculation of cladding temperature,

6. Perform additional hot-leg flow tests to examine the sensitivity of the pressure drop across the FA to the variation in the ratio of particulate to fiber (between 10:1 and 50:1) in the circulated coolant. Three tests in addition to those already completed were agreed upon),
7. Provide a commitment in the RAI responses to address boric acid issues in a separate project,
8. Address the adequacy of flow during all hot-leg break conditions to limit boric acid build-up to an acceptable level, and
9. Demonstrate how the equation: $dP=R*v^{1.6}$ is used as part of the "margin calculator."

A copy of the PWROG presentation handout is available in ADAMS as Accession No. ML093570160.

Members of the public were in attendance and also participated via bridgeline. Public meeting feedback forms were provided, none were received.

Project No.: 694

Enclosure: List of Attendees

cc w/encl: See next page

6. Perform additional hot-leg flow tests to examine the sensitivity of the pressure drop across the FA to the variation in the ratio of particulate to fiber (between 10:1 and 50:1) in the circulated coolant. Three tests in addition to those already completed were agreed upon),
7. Provide a commitment in the RAI responses to address boric acid issues in a separate project,
8. Address the adequacy of flow during all hot-leg break conditions to limit boric acid build-up to an acceptable level, and
9. Demonstrate how the equation: $dP=R*v^{1.6}$ is used as part of the "margin calculator."

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ADAMS Accession No: ML100050519 (Package); ML093340476 (Notice); ML093570160 (Handouts); ML100050493 (Summary) NRC-001

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Memo to Stacey L. Rosenberg from Holly D. Cruz dated February 22, 2010

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Project No. 694

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