



Program Management Office
1000 Westinghouse Drive, Suite 380
Cranberry Township, PA 16066

Project Number 694

August 11, 2014

OG-14-275

US Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Attention: Mr. Jonathan Rowley, Project Manager
Mail Stop O-12D20

Subject: PWR Owners Group
**Outline of Industry Resolution Plan for separation of GSI-191 and Boric
Acid Precipitation Issues**

Dear Mr. Rowley,

Pursuant to recent discussions between NRC staff and the Pressurized Water Reactor Owners Group (PWROG), the need for an outline of a resolution plan for the separation of GSI-191 and boric acid precipitation (BAP) was identified. To that end, attached is the outline prepared by the PWROG.

If you have any questions regarding this information, please contact John Maruschak (412) 374-3512 or maruscjt@westinghouse.com.

Sincerely,

Jack Stringfellow, Chairman
PWR Owners Group

NJS:jtm:rfn

Enclosures (1): 1. "BAP/GSI-191 Resolution Plan Outline" (Non-Proprietary).

DO48
MLR



cc: PWROG Management Committee
PWROG SEE Subcommittee
PWROG Licensing Subcommittee
PWROG PMO
J. D. Andrachek – Westinghouse
T. S. Andreychek – Westinghouse
T. D. Croyle – Westinghouse
J. A. Gresham – Westinghouse
J. P. Spring – Westinghouse
K. Greenwood – AREVA
R. Schomaker – AREVA
G. Wissinger – AREVA

BAP/GSI-191 Resolution Plan Outline

The following outlines the PWROG's resolution plan for the separation of GSI-191 and boric acid precipitation (BAP). The objective of this resolution plan is to provide the background, summary of issues, and the PWROG technical bases for why the GSI-191 in-vessel fiber program can proceed to closure without inclusion of significant BAP testing and analyses (for either HLB or CLB), and concurrently, to demonstrate why the original BAP evaluation model (EM) concerns may be brought to closure assuming that the impact of fiber is shown to be inconsequential to currently established methods for active BAP control (e. g. hot leg switchover).

Ultimately, this outline will result in a revised bases document that will be provided to the NRC for the staff's use in establishing an internal NRC position relative to the closure of GSI-191 and its separation from BAP. The bases document will be a consolidation of work completed under the GSI-191 in-vessel fiber program and will include supplemental analyses similar to that submitted to the NRC in May 2013 (OG-13-205). Since the PWROG in-vessel fiber program is a work in progress, all the supporting evaluations or testing relevant to BAP separation will not have been completed at the time the revised bases document is issued. A portion of the resolution plan will be based on results and conclusions that will be subsequently verified and documented in WCAP-17788.

The outline is defined as follows:

- 1) Problem Statement / Objective
- 2) History of GSI-191 Resolution / Boric Acid Precipitation Control (BAPC) EM / Interaction
- 3) Overall Approach to BAPC – High Level Overview of Technical Approach to Cold Leg Break (CLB) and Hot Leg Break (HLB)
- 4) Assessment of In-Vessel Debris on CLB BAPC
 - a) Program determination of acceptable fiber limit for CLB and bases for determination of that value
 - b) Discussion of CLB methodology based on fiber quantities defined by maximum CLB fiber limit
 - i) Applicability to W non-UI and CE plants
 - ii) Applicability to B&W plants
 - c) Margin discussion for CLB defense in depth (May 23, 2013 addendum) allowing complete blockage between core and lower plenum
- 5) Assessment of In-Vessel Debris on HLB BAPC (Based on April 16, 2014 presentations)
 - a) Overall Thermal Hydraulic (TH) modeling approach to ensure that bulk core flows remain in excess of boil-off up to and after complete core inlet blockage
 - b) Review effect of alternate flow paths (AFPs) and the timing of flow transition
 - c) Transport of debris laden flow through AFPs and possible distribution in the core
 - i) Potential blockage of the flow openings in AFP
 - ii) Potential blockage of flow in other locations (top of the core and/or spacer grids)
 - iii) Impact of suspended debris on transport properties and fluid properties
 - d) Other related technical concerns related to the approach and flow through the AFP

- e) Applicability to UPI plants
- 6) Resolution of Long-Term BAPC Concerns
 - a) Documentation that all other issues identified in 2004-2005 are addressed (and that only the question regarding fiber remains)
 - b) Summary of the CLB and HLB evaluations/investigations (from above) => projected fiber limits for CLB and HLB do not adversely impact currently licensed BAPC measures and timing
 - c) Categorization of plants based on available credit for lower plenum (NRC Proposed Categories A, B, and C)
 - d) Proposed actions for Category C plants
 - e) Proposed licensing plan – Identify that PWROG and NRC will need to establish an agreeable structure for incorporation of these assessments into the plant licensing bases and the manner in which plants will be able to make subsequent design changes which impact long-term core cooling, consistent with 10CFR50.46.
 - i) Implementation of 10CFR50.46c and implications to BAP resolution

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