July 3, 2003

Mr. Gordon Bischoff, Project Manager
Westinghouse Owners Group
Westinghouse Electric Company
Mail Stop ECE 5-16
P.O. Box 355
Pittsburgh, PA 15230-0355

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION – WCAP-15791-P, "RISK-INFORMED EVALUATION OF EXTENSIONS TO CONTAINMENT ISOLATION VALVE COMPLETION TIMES" (TAC NO. MB5751)

Dear Mr. Bischoff:

By letter dated June 6, 2002, the Westinghouse Owners Group submitted for staff review Topical Report WCAP-15791, "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times." The staff has completed its preliminary review of WCAP-15791-P and has identified a number of items for which additional information is needed to continue its review. The staff recently discussed this request for additional information (RAI) with Ken Vavrek of your staff, and it was agreed that a response would be provided within 15 days of receipt of this letter.

Pursuant to 10 CFR 2.790, we have determined that the enclosed RAI does not contain proprietary information. However, we will delay placing the RAI in the public document room for a period of ten (10) working days from the date of this letter to provide you with the opportunity to comment on the proprietary aspects only. If you believe that any information in the enclosure is proprietary, please identify such information line by line and define the basis pursuant to the criteria of 10 CFR 2.790.

If you have any questions, please call me at (301) 415-1436.

Sincerely,

/RA/

Drew Holland, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 694

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

WCAP-15791-P, "RISK-INFORMED EVALUATION FOR EXTENSIONS TO CONTAINMENT ISOLATION VALVE COMPLETION TIMES"

WESTINGHOUSE OWNERS GROUP

PROJECT NO. 694

1. Page 5-1 of WCAP-15791-P indicates that the containment isolation signals will not isolate systems required for accident mitigation. Please confirm that the emergency core cooling system, decay heat removal system, and their supporting systems do not contain any isolation valves which are either classified as containment isolation valves (CIVs) or are designed to be closed on containment isolation signals.

2. The topical report (TR) references a deterministic evaluation approach to determine the minimum penetration size that will result in a large release from containment atmosphere. The TR concludes that penetration pipe size diameters of 5", 6", and 3" can be screened out for sub-atmospheric, ice condenser, and dry ambient containment types. This result seems counter-intuitive, since for the same volumetric leak rate (%/day) a smaller containment should have a similar hole size. Also, these sizes are significantly larger than the 1" and 2" diameter line size criteria typically used in the methodologies to identify penetrations whose failures could result in a large early release.

   Please provide the following:

   a. An assessment of the impact of a line size screening criteria similar to the containment penetration screening criteria used in a typical probabilistic risk assessment (PRA) (e.g., a 2" line diameter). This should include an estimate of the number and types of lines in the size range between 2" and 6".

   b. Provide the details of the calculations performed to determine the pipe size screening criteria for one of the containment types. Explain how choked flow considerations are accounted for in the calculation.

   c. If a PRA-type screening criteria is not adopted, please provide the results of offsite consequence calculations demonstrating that early health effects would not occur given a severe accident with containment breach sizes equivalent to the screening criteria proposed in the TR.

3. The TR states that the impact on core damage frequency (CDF) and incremental conditional core damage probability (ICCDP) were not evaluated. The TR states that containment isolation is a function of containment response to an event and not the ability of the plant design to prevent or mitigate core damage. Provide an evaluation of the impact on CDF for the containment isolation configurations and systems associated with an accident mitigation function (engineered safety feature actuation system, sample lines, letdown, containment cooling, reactor coolant system (RCS) inventory control, or

containment sprays, for example. See pages 1-1, 8-2 of the TR). In addition, discuss the impact of an open system during maintenance activities (preventive maintenance or corrective maintenance (CM) (valve hardware removed, for example). Discuss the ICCDP associated with valves that also have a safety function (in addition to primary containment isolation) that are in a closed position during maintenance.

4. Discuss the applicability and basis for eliminating the distinction between penetration flow paths that contain two or more CIVs and penetration flow paths that contain one CIV and a closed system. This is discussed on page 1-2 of the TR.

5. The TR lists the types of containment penetrations as ;

   - Penetration flow paths connected to the containment atmosphere,
   - Penetration flow paths connected to the RCS, and
   - Penetration flow paths connected to the steam generators (SGs).

   Do these penetration classifications include non-primary connections, cooling lines, heat exchangers, etc.? Does RCS only include lines connected to the RCS pressure boundary? The list does not seem complete. See page 8-1 of the TR.

6. The TR states that only one valve can be in maintenance in a single penetration. Are additional valves in maintenance (additional penetrations) additive with respect to large early release frequency (LERF) and ΔLERF? See page 8-2 of the TR. The technical specifications appear to allow separate entry for each penetration. In addition, Tier 2 requirements are stated to not be applicable for the proposed allowed outage time (AOT) extension. Does this consider multiple valves out for maintenance at an increased AOT? Discuss the impacts of multiple simultaneous and sequential entries into the TS. This is related to Question 2.

7. Discuss common cause for only identical type valves. Discuss control circuits and associated hardware that may be the same for different valve types. What are the major contributors to spurious valve actuation? See page 8-3 of the TR.

8. The proposed AOT times appear to be calculated based on using the guidance in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" and RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," as a target and varying the AOT to fit the guidance of the RG. Discuss how the uncertainty of the calculated LERF and the incremental conditional large early release probability is accounted for in the proposed AOT results such that the guidance presented in RGs 1.174 and 1.177 is met.

9. The technical specification markups add the AOT times for various valve Categories 1 through 13. How are these categories related to the TR valve groups? See page A-3 of the TR.

10. The TR proposes a completion time of 168 hours to perform online preventive maintenance. Does the TR also assume CM will be performed such that CM risk impacts are also included in the evaluation?

11. CDF_T is stated to include internal events only. Please discuss considerations for external events including CDF_T and LERF. See Table 8.1 of the TR.

12. The following statement is on page 9-3:

> Note 3: CDF due to SGTR is not provided since WCGS has no containment penetrations from the SGs due to their containment boundary definition.

The staff does not understand how there could be no containment penetrations from the SGs due to their containment boundary definition. Provide a detailed explanation of this design concept.

cc:
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