April 16, 2003

MEMORANDUM TO: Marsha Gamberoni, Deputy Director
New Reactor Licensing Project Office
Office of Nuclear Reactor Regulation

FROM: Joelle L. Starefos, Project Manager ***/RA/***
New Reactor Licensing Project Office
Office of Nuclear Reactor Regulation

SUBJECT: MARCH 28, 2003, AP1000 TELEPHONE CONFERENCE CALL SUMMARY

On Friday, March 28, 2003, a telephone conference call was held with Westinghouse Electric Company (Westinghouse) representatives and Nuclear Regulatory Commission (NRC) staff to discuss AP1000 Request for Additional Information (RAI) numbered 440.173. Westinghouse submitted responses to this RAI on November 26, 2002 (ADAMS Accession No. ML023360097), and February 14, 2003 (ADAMS Accession No. ML030520402). A list of call participants is included in Attachment 1. Attachment 2 contains NRC staff comments regarding the subject RAI that were sent to Mr. Michael Corletti of Westinghouse via electronic mail on March 27, 2003, and that were used to facilitate discussions during the telephone conference call.

Following is a brief summary of the discussions regarding the identified RAI (see comments in Attachment 2):

RAI 440.173

Westinghouse agreed to update the RAI response to give a more mechanistic description of how the computer code is handling this evaluation. Westinghouse also agreed to evaluate the need to update WCAP-15833.

Docket No. 52-006

Attachment: As stated

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DATE	4/16/03	4/16/03	4/16/03

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MARCH 28, 2003
TELEPHONE CONFERENCE CALL SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
Joelle Starefos	Mike Corletti
Steve Bajorek	Bob Kemper
Gene Hsii	Katsu Okawa
Walt Jensen	

Attachment 1

NUCLEAR REGULATORY COMMISSION STAFF
COMMENTS THAT WERE SENT TO WESTINGHOUSE TO
FACILITATE DISCUSSIONS OF THE RAI RESPONSES
FOR CALL HELD ON MARCH 28, 2003

Comments on RAI 440.173 Response Provided February 14, 2003

In the most recent Westinghouse response, dated February 14, 2003, a complete series of figures were provided for the simulations reported in Section A.4 of WCAP-15833. They show the effect of varying the entrainment rate in WCOBRA/TRAC simulations of AP1000 for an Inadvertent ADS Actuation transient. The February 14, response satisfies the original request; however, a review of this new information leads to some new questions.

Provide additional details and explain the calculations affecting de-entrainment and circulation patterns in the upper plenum and other regions of the vessel, if necessary. For example, consider the Base Case. After about 130 seconds, the collapsed liquid level in the upper plenum stabilizes at a nominal level of about 1.0 ft. Most of the upper plenum liquid appears to reside in the outer global Channel 47. Water that is entrained in Channel 15 flows through Gaps 21 and 24 to the hot legs. De-entrainment occurs along this path, as evidenced by the fact that the Gap flows consist of both continuous and entrained liquid. After 130 seconds, there is effectively no continuous liquid flow at the top of Channel 47. That is, de-entrainment has little effect on the upper plenum inventory in this case, as liquid entrained in Channel 15 finds its way to the hot legs.

In the 4.0*Entrainment case however, de-entrainment plays a more important role in maintaining a level in the upper plenum. The Gap flows to the hot legs consist mainly of entrained drops. The continuous liquid flow is small with several “spikes.” At least periodically, liquid now falls back into Channel 47 as entrained drops. (With the scale in Figure 440.173-18e, it is difficult to determine if the flow rate is zero or a small negative value for $t > 130$ seconds.)

Is the sensitivity to entrainment small because the net effect is negated by additional de-entrainment? If not, please provide justification that the de-entrainment fractions observed in these sensitivities is adequate. In addition, please provide information on flow from the core to the upper plenum. The flow has considerable oscillation, and conditions in the upper plenum may depend more on the process of continuous liquid flow at the top of Channel 10 rather than on the upper plenum region calculations. Include a figure of the collapsed liquid level in the core, in your response.

AP 1000

cc:

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