

November 17, 2003

MEMORANDUM TO: Laura A. Dudes, Section Chief
New Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs, NRR

FROM: Joseph Colaccino, Senior Project Manager */RA/*
New Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs, NRR

SUBJECT: SEPTEMBER 30, 2003, AP1000 TELEPHONE CONFERENCE CALL
SUMMARY

On Tuesday, September 30, 2003, a telephone conference call was held with Westinghouse Electric Company (Westinghouse) representatives and Nuclear Regulatory Commission (NRC) staff and contractors to discuss AP1000 draft safety evaluation report Open Item 2.3.4-1. The call participants are listed in Attachment 1.

The NRC staff sent Westinghouse, via electronic mail, four questions concerning their August 30, 2003, response to this open item (ADAMS Accession # ML032170861). These questions are included in Attachment 2. A summary of Westinghouse actions to address the staff's questions is included in Attachment 3.

Docket No. 52-006

Attachments: As stated

cc w/atts: See next page

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| DATE | 11/10/03 | 11/14/03 | 11/14/03 |

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SEPTEMBER 30, 2003
TELEPHONE CONFERENCE CALL SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission

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B. Harvey
J. Colaccino

Westinghouse

M. Corletti
J. Grover
T. Meneely
B. Sinal (Bechtel)
Y. J. Lin (Bechtel)

AP1000 DESIGN CERTIFICATION REVIEW

DSER Open Item Number: 2.3.4-1

Additional Comments

September 26, 2003

DSER Open Item Number: 2.3.4-1

Original RAI Number(s): 451.006, 451.006 Rev. 1

NRC Additional Comments:

- (a) Draft Safety Evaluation Report Open Item Response Table 2.3.4-1-1 states that the use of wind direction and speed data from the upper tower instruments is optional in ARCON96. In fact, ARCON96 looks to use wind data listed in the upper level fields whenever the wind data in the lower level fields are missing.

If these upper level wind fields are left blank, ARCON96 reads them as "zero" values. Zero is a valid wind speed value. As such, if the lower wind speed value is identified as invalid (9999), an upper wind speed value of 0 m/s will be used. This represents calm conditions, where the wind speed will be reassigned to the default minimum wind speed value (typically 0.5 m/s) and the receptor will be assumed to be directly downwind of the release point, regardless of the wind direction value. Note that calm conditions do not produce conservative χ/Q values in that the highest χ/Q values for ARCON96 typically occur during wind speeds of 3 to 4 m/s.

If actual upper level wind data are provided as input and the lower wind speed value is identified as invalid (9999), ARCON96 utilizes wind profile factors to adjust the upper level wind speed data to the lower level (10m) elevation. This adjustment factor is a function of the upper measurement height.

Also be aware that, if the vent release mode was used to model the Plant Vent release, ARCON96 most likely used upper wind speed data to derive the χ/Q values for the elevated portion of the mixed-mode release. (Note that the staff does not concur with modeling this release pathway as a vent release).

Based on the discussion provided above, were upper wind data provided as input to ARCON96 in generating the AP600 control room χ/Q values? If not, were the upper level wind fields left blank or identified as invalid with a field of 9's? Please revise Open Item Response Table 2.3.4-1-1 to reflect the answers to these questions, including any anticipated impact on the resulting χ/Q values.

- (b) DCD Table 15A-7 identifies the AP1000 source and receptor data that the Combined License applicant can use when determining site-specific control room χ/Q values using the ARCON96 computer code. Note 2 to this table states that a horizontal distance of 183 feet can be added to the source-to-receptor distances for the main equipment hatch release, representing the distance the release would travel inside the auxiliary and annex buildings before reaching the outside environment. Likewise, Note 4 states that a horizontal distance of 101 feet can be added to the source-to-receptor distances for the

staging area hatch release to represent the distance the release would need to travel inside before reaching the outside environment.

The use of the ARCON96 code to model part of the plume's diffusion as it moves indoors is inappropriate. The ARCON96 algorithms were developed from experimental field data pertinent to ambient (outside) diffusion in building wakes. It emulates turbulent diffusion in the ambient environment due to the effects of eddies of various sizes. Diffusion conditions within buildings are significantly different.

- (c) Please verify that there are no other containment building penetrations (and, for the main equipment hatch and staging area hatch releases, there are no other auxiliary building or annex building release pathways) that would result in higher control room χ/Q values for those accidents that assume containment leakage.
- (d) Please verify that there are no other release pathways from the fuel storage and handling area (such as building ventilation vents) that would result in higher control room χ/Q values for those accidents that assume fuel damage outside containment.

OPEN ITEM 2.3.4-1
AP1000 TELEPHONE CONFERENCE CALL
SEPTEMBER 30, 2003

The NRC staff discussed with Westinghouse the four items included in Attachment 2 of this call summary. Below is a summary of those discussions.

Item A:

Westinghouse stated that they did provide upper level wind data as input to ARCON96 in generating the ARCON96 control room χ/Q values. In addition, Westinghouse stated that this table identifies bounding χ/Q values for the combined license applicant and that there is an interface requirement to perform new calculations for the AP1000. Westinghouse stated that they would clarify their open item response.

Item B:

Westinghouse agreed to review the use of ARCON96 to model indoor dispersion and evaluate this issue further.

Item C:

Westinghouse stated that the most likely release pathway for the containment building penetrations discussed in their open item response is judged to be the worst case release point. Westinghouse stated that they would revise their open item response to clarify this issue.

Item D:

Westinghouse stated that the release pathway from the fuel storage and handling area discussed in their open item response was judged to be the worst case. The NRC staff requested that Westinghouse provide justification as to why this pathway is the worst case.

AP 1000

cc:

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