September 7, 2004

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

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

SUBJECT: AP1000 AEROSOL REMOVAL COEFFICIENTS TELEPHONE CONFERENCE CALL SUMMARY (MULTIPLE DATES)

Telephone conference calls were held with Westinghouse Electric Company (Westinghouse) representatives and Nuclear Regulatory Commission (NRC) staff on the following dates:

March 10, 15, 16, 22, 30, 31 2004
April 7, 8, 15, 2004
June 17, 2004

The purpose of these calls were to discuss AP1000 issues related to draft safety evaluation report (DSER) open item (OI) 15.3-1, Aerosol Removal Coefficients. A list of participants for each meeting is included in Attachment 1. A list of the Westinghouse letters responding to the AP1000 draft safety evaluation report aerosol removal coefficients open items is included in Attachment 2. NRC staff comments provided to Westinghouse are included in Attachment 3.

Docket No. 52-006

Attachments: As stated

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New, Research and Test Reactors Program
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Docket No. 52-006

Attachments: As stated
Distribution:
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JColaccino	LQuinones
SBloom	

ACCESSION NUMBER: ML042450651

OFFICE	RNRP:PM	RNRP:SC
NAME	JSegala	LDudes
DATE	09/2/04	09/7/04

MARCH 10, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
S. Bloom	J. Grover
M. Hart	
A. Drozd	

Attachment 1

MARCH 15, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
S. Bloom	J. Grover
M. Hart	J. Scobel
A. Drozd	J. Li
L. Dudes	E. Cummins

MARCH 16, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
S. Bloom	J. Grover
M. Hart	R. Wright
A. Drozd	J. Li
J. Colaccino	L. Bencini

MARCH 22, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
J. Colaccino	R. Wright
M. Hart	J. Scobel
A. Drozd	
L. Quinones	

MARCH 30, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
A. Drozd	J. Grover
M. Hart	J. Scobel
	J. Li
	R. Wright

MARCH 31, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
L. Quinones	J. Grover
M. Hart	J. Scobel
A. Drozd	J. Li
L. Dudes	R. Wright
J. Lee	R. Sher

APRIL 7, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
L. Quinones	J. Grover
M. Hart	E. Cummins

APRIL 8, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
M. Hart	
A. Drozd	

APRIL 15, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
A. Drozd	R. Wright
M. Hart	J. Scobel
	J. Li

JUNE 17, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
LIST OF PARTICIPANTS

Nuclear Regulatory Commission	Westinghouse
J. Segala	R. Vijuk
A. Drozd	R. Wright
M. Hart	
L. Quinones	

WESTINGHOUSE LETTERS RESPONDING TO THE
AP1000 DRAFT SAFETY EVALUATION REPORT AEROSOL REMOVAL OPEN ITEM

DSER Open Item	Westinghouse Response Letter	
	Date	**Accession Number**
15.3-1	07/01/03	ML031950553
	11/13/03	ML033210561
	04/02/04	ML040970382
	04/21/04	ML041140364
	06/21/04	ML041750291

MARCH 10, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

Attachment 3

MARCH 15, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

MARCH 16, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

MARCH 22, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

MARCH 30, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

The following NRC staff comments (regarding Westinghouse's response to DSER Open Item 15.3-1) were provided to Westinghouse via e-mail on March 24, 2004:

Regarding one of the parameters that affects thermophoretic removal, i.e., a thermal boundary layer over which the mass/heat transfer take place, the staff identified the following from the textbook of Kreith/Bohm, "Principles of Heat Transfer", 4th edition:

1. for fluids of Pr <= 1, the thermal boundary layer is greater than hydrodynamic one. Both air and steam are such fluids.

2. hydrodynamic boundary layer can be estimated as:
   delta= 5xL/sqrt(Re), where Re is based on L.

Assuming conservatively characteristic dimension of containment wall, L, as 1 ft, we have:
delta = 0.1' for fully developed turbulent flow (Re-10000), and
delta = 0.05' for laminar/turbulent transition (Re = 2300)

This would be the range of deltas that the staff would expect to see.

MARCH 31, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

APRIL 7, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

APRIL 8, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

APRIL 15, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

No comments provided.

JUNE 17, 2004
TELEPHONE CONFERENCE CALLS SUMMARY
COMMENTS

The following NRC staff comments (regarding Westinghouse's response to DSER Open Item 15.3-1) were provided to Westinghouse via e-mail on June 15, 2004:

1) On page 3, the first sentence says that the analysis in Rev 11 was found to have an incorrect input, but did not explain further. Please explain exactly what the incorrect input was and how you corrected it.

2) Please clarify why on page 16, the "new value" column under the "ground level containment release points" does not have the same values as are indicated on page 21 (Table 5.0-1), page 24 (Table 2-1) and page 33 (Table 15A-6).

3) Please explain why your calculated removal coefficient (lambda) at the time of the beginning of the release from the core (t=0) is relatively high - around 1 per hour. The staff would expect (and our calculations indicate) that the lambda would be low because the amount of aerosols in containment is low at that time.

We would also like to discuss our organic iodine production audit results.

AP 1000

cc:

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