September 8, 2009

MEMORANDUM TO: Eileen M. McKenna, Chief
AP1000 Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

FROM: William C. Gleaves, Sr. Project Manager
AP1000 Projects Branch 2 ***/RA/***
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SUMMARY OF A CATEGORY 1 PUBLIC MEETING HELD WITH WESTINGHOUSE ELECTRIC COMPANY REGARDING THE PROPOSED AP1000 SHIELD BUILDING DESIGN METHODOLOGY, HELD IN ROCKVILLE, MARYLAND ON JULY 14, 2009

The U.S. Nuclear Regulatory Commission (NRC) held a public meeting on July 14, 2009, at the NRC Headquarters in Rockville, Maryland. The NRC's Office of New Reactors (NRO) staff met with Westinghouse Electric Company (Westinghouse) staff and representatives to discuss issues with the proposed AP1000 design submitted as part of their design certification amendment (DCA). Specifically, the participants discussed the technical issues related to the AP1000 proposed shield building design. The foundation for the meeting was the NRC's requests for additional information on the proposed AP1000 shield building design methodology.

The purpose of this meeting summary is to briefly describe the meeting, its participants, and to delineate the results. There were 33 participants in attendance at the meeting location of which three participated by conference call and two participants were from the general public. The meeting started promptly at 8:30 a.m. EST and ended at 4:00 p.m.

Enclosed with this memorandum are the summary, as well as the meeting attendance list and the materials relevant to this meeting. The enclosures are as follows:
1) meeting attendee list, 2) non-proprietary technical presentation slides, and 3) proprietary technical presentation slides.

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Discussion

This meeting was a follow-on meeting to the Category I public meeting held on June 15-16, 2009. The purpose of the meeting was to discuss progress on the action items identified to Westinghouse at the June meeting. This meeting began with comments by the Deputy Director of the NRO's Division of Engineering, Laura Dudes and a review of the current status of the NRC's review by DE Structural Engineering Branch Chief, Brian Thomas.

Ed Cummins opened the meeting by discussing the design methodology and the sensitivity of Westinghouse staff to NRC potentially expanding the scope of the test program. Mr. Cummins stated that Westinghouse believes they have a test program responsive to staff needs and adequate to establish "reasonable assurance" of safety.

John Ma opened his presentation by showing the text of American Concrete Institute ACI 318 "R 19.4.1." John reviewed the ACI design philosophy and discussed the success criteria for the SC wall tests. John mentioned the previously-identified issue of the SC to RC interface and how it was modeled in the finite element analysis. Richard Orr stated that the Westinghouse model is complete and that it includes the full nuclear island including auxiliary building and containment internal structures.

Lee Tunon-Sanjur made a presentation on the "Table of Contents for the draft APP-1200-S3R-003." The report is designed to capture the design methodology. There were no U.S. codes that applied to the proposed design so Westinghouse applied the ACI 349 with Japanese tests and checked against the JEAG code. Westinghouse stated that if there are gaps in the tests, we should identify them and they will accommodate our concerns. Westinghouse agreed that they are doing a seismic margin assessment of the shield building. During that presentation, John Ma noted that similitude should be addressed in the test program.

Keith Coogler made a presentation titled "Shield Building Experimental Program." With regard to the test #3 for in-plane shear, Westinghouse concluded that the test design is not necessarily final and that they may modify the proposed test as a result of this meeting and may change the acceptance criteria.

Conclusion

At the conclusion of the meeting, NRC staff reviewed and commented on the presentation. Brian Thomas stated that the Westinghouse report must be comprehensive and contain the design methodology and address design, analysis, construction, and inspection. The Westinghouse report must be a stand-alone document. Alternatives to ACI 349 must be identified and explained. He also noted that over the last weeks, much progress has been made on the report. Pravin Patel summarized our comments on the Westinghouse design methodology report, including comments such as to have a roadmap for the use of codes and standards, a conclusion as to whether proposed tests are confirmatory or not, a statement and description as to the use of thin/thick shells in the shield building design and analysis, and the need for additional description of the PCCS tank in the report. John Ma summarized the tests as

out-of-plane shear, anchorage, a two-interface test (where Westinghouse says the stress is negligible in the circumferential direction), and a shear + membrane tension test. John also stated that boundary conditions are important and that the torsions created by the irregularities in the cylindrical wall is still a review question. In response, Lee Tunon-Sanjur stated that Westinghouse will do a case study to answer that question. Scott Altmayer reviewed actions and stated that Westinghouse would provide acceptance criteria for large deflections for the anchorages. Ed Cummins stated that the testing could have a significant impact on schedule. He expects that the tests will be confirmatory. NRC noted that this is a significant project risk.

Following these conclusionary statements, Westinghouse and NRC staff agreed to have a conference call on July 22, 2009 to discuss the report table of contents and the test summary changes. Westinghouse and NRC also agreed that shortly after the July 22, 2009 conference call, an NRC audit of this topic will be needed in the Westinghouse, Pittsburgh, Pennsylvania office.

The staff opened the floor to the general public in attendance in order to receive their comments; hearing none, the meeting was closed at 4:00 p.m.

Docket No. 52-006

Enclosures:
As stated

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OFFICE	LA:NWE2:DNRL:NRO	PM:NWE2:DNRL:NRO	BC:NWE2: DNRL:NRO
NAME	RButler	BGleaves	EMcKenna
DATE	08/28/2009	08/08/2009	08/08/2009

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Meeting Attendance List

Name	Organization
-Francis Akstulewicz	NRC
-Laura Dudes	NRC
-Brian Thomas	NRC
-Pravin Patel	NRC
-John Ma	NRC
-Eileen McKenna	NRC
-Billy Gleaves	NRC
-Jerry Chuang	NRC
-Jose Peres	NRC
-Chandu Patel	NRC
-Narendra Prasad	Westinghouse
-Ed Cummins	Westinghouse
-Rob Sisk	Westinghouse
-Scott Altmayer	Westinghouse
-Jill Watson	Westinghouse
-Penny Toniolo	Westinghouse
-Richard Orr	Westinghouse/consultant
-Keith Coogler	Westinghouse
-Leonardo Tunon-Sanjur	Westinghouse
-William LaPay	Westinghouse/consultant
-Bob Kennedy	Westinghouse/consultant (SAAC)
Mostafa A. Ahmed	Westinghouse
Sanj Malushte	Westinghouse/consultant (Bechtel)
-John McConaghy	Duke Energy
-Richard Grumbir	NuStart
-Eddie R Grant	NuStart
-Bob Whorton	SCE&G/SCANA
-William Kane	Southern Nuclear/consultant
-Don Moore	Southern Nuclear
-Chuck Pierce	Southern Nuclear
-Alan Levin	AREVA
Bruce Ebbeson	Shaw
Tim Durkin	Energetics Inc.

Teleconference Attendees

Name	Organization
Amit Varma	Purdue University
Ari Danay	Westinghouse
Tim Durkin	Energetics Inc.

Westinghouse's Non-Proprietary Technical Presentation Slides

Adams Accession Number	**Presentation Title**
ML092180710	Design Report for AP1000 Enhanced Shield Building APP-1200-S3R-003, Revision D

Enclosure 2

Westinghouse's Proprietary Technical Presentation Slides

Adams Accession Number	Presentation Title
ML092180956	Proprietary Design Report for AP1000 Enhanced Shield Building APP-1200-S3R-003, Rev. D
ML092190277	Proprietary Shield Building Experimental Program, Keith Coogler, July 14, 2009

Enclosure 3