UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

March 6, 2009

MEMORANDUM TO: ACRS Members

FROM: Neil Coleman, Senior Staff Scientist ***/RA/***
Reactor Safety Branch B, ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE US-APWR SUBCOMMITTEE MEETING ON NOVEMBER 4-5, 2008

The minutes for the subject meeting were certified on March 6, 2009. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached, representing the open (public) sessions. Portions of the subcommittee meeting were closed for discussion of proprietary material.

Attachment: As stated

cc w/o Attachment: E. Hackett
C. Santos
A. Dias
S. Duraiswamy

cc w/ Attachment: ACRS Members

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MEMORANDUM TO: Neil Coleman, Senior Staff Scientist
Reactor Safety Branch B - ACRS

FROM: O. Maynard, Chairman, US-APWR Subcommittee

SUBJECT: THE MINUTES OF THE MEETING OF THE US-APWR SUBCOMMITTEE ON NOVEMBER 4-5, 2008, IN ROCKVILLE, MD

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting are an accurate record of the proceedings for that meeting. These minutes are for the open sessions of this meeting.

/RA/ March 6, 2009
O. Maynard Date
US-APWR Subcommittee Chairman

Certified by:O.Maynard Issued: 03/06/09
Certified: 03/06/09

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
US-APWR SUBCOMMITTEE MEETING MINUTES
NOVEMBER 4-5, 2008
ROCKVILLE, MARYLAND
(MEETING MINUTES FOR OPEN SESSIONS)

Introduction

The ACRS Subcommittee on US-APWR design review met on November 4-5, 2008 at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, Rockville, Maryland, at 8:30 a.m., Otto L. Maynard, Chairman, presiding. The Subcommittee met with NRC staff members and representatives of Mitsubishi Heavy Industries (MHI). The purpose of this meeting was for the Subcommittee to hear briefings on MHI topical reports for the U.S. Advanced Pressurized Water Reactor (US-APWR) design. Attendees (11/4/2008)

ACRS Members/Staff	**NRC Staff**	**MHI**
Otto Maynard (Chairman)	L. Burkhart	A. Kumaki
William Shack (Member)	M. Magee	K. Mashio
Charles Brown (Member)	T. Jackson	M. Utsumi
John Sieber (Member)	M. Junge	M. Takashima
Dennis Bley (Member)	J. Ciocco	S. Kamohara
John Stetkar (Member)	M. Takacs	D. Wood
Neil Coleman (DFO)	R. Beacom	**MNES**
	S. Monarque	K. Scarola
	N. Otto	S. Kawanago
	G. Lapinsky	K. Hayashi
MEPPI	I. Jung	S. Hanada
G. Remley	E. Martinez	S. Watanabe
Oak Ridge National Lab	P. Loeser	K. Paulson
T. Wilson	S. Ng	J. Chung
M. Muhlheim	B. Dittman	**MELCO**
	D. Dube	K. Takahashi
		K. Furuno
		K. Akagi

The presentation slides used during the open portions of the meeting are attached to the transcript of this meeting at the following website: http://www.nrc.gov/reading-rm/doc-collections/acrs/tr/subcommittee/. The presentations to the Subcommittee are summarized

below. There were no requests by members of the public to make written or oral statements.

NOVEMBER 4, 2009 - OPENING REMARKS BY CHAIRMAN MAYNARD

The subcommittee came to order at 8:30 a.m. in room T2B3 of Two White Flint. Otto Maynard, Subcommitee Chairman, presiding. This was a meeting of the subcommittee for the U.S. Advanced Pressurized Water Reactor (US-APWR) to discuss selected topical reports and technical reports. The Designated Federal Official for the meeting was Neil Coleman. It was announced that portions of the meeting would be closed to the public to discuss proprietary information. There are designated times on the agenda for public comment to give the public an opportunity to provide input, if they so desire. The purpose of this meeting is to get an overview and a basic understanding of four topical reports that Mitsubishi Heavy Industries has submitted for approval by the NRC, and are currently under review by the NRC staff in support of the design certification review. These topical reports include Safety I&C System Description and Design Process, Human System Interface and Human Factors Engineering Process, Safety System Digital Platform MELTAC, and Defense-in-Depth and Diversity. These reports are still under review by the NRC staff. After the subcommittee meeting, there will be discussions at the full committee meeting about what if any additional information or actions the ACRS may want to have relative to some of these topical reports and technical reports.

Chairman Maynard then introduced Mr. Larry Burkhart of the NRC staff (Office of New Reactors) to briefly introduce the topics and then move on to the presentations.

DISCUSSION OF AGENDA ITEMS

Larry Burkhart (NRO) thanked the Chairman and the ACRS Subcommittee for hosting the meeting. Through these meetings the staff gets additional insights that are helpful in formulating requests for additional information (RAIs), and MHI and any members of the public get to hear the subcommittee perspectives on the topics presented. Mr. Burkhart then introduced Mike Magee (NRO), who is one of the chapter project managers for the topics of Instrumentation and Controls and Human Factors. The lead design project manager is Jeff Ciocco (NRO). He then introduced Mike Junge and Terry Jackson, also with the NRC staff (NRO).

Mr. Burkhart stated that the topical reports that address Instrumentation and Controls and Human Factors - Human System Interface are probably two of the most challenging areas with respect to level of detail. Mitsubishi has asked that most of their topical reports be applicable to operating reactors as well as new reactors. In general, there should be no difference in the requirements, but as the staff has gotten more into the review, they are seeing a different perspective on that due to some unique aspects of these topical reports. Mr. Burkhart then turned the meeting over to Mike Magee (NRO) for a brief presentation about the progress of the staff reviews.

Introduction - Four US-APWR Topical Reports (Mike Magee, NRC staff)

Mr. Mike Magee introduced himself as NRC project manager for Chapters 7 and 18 of the Design Control Document. He presented the purpose of his briefing, which was to provide the status of the NRC review on four topical reports: Safety I&C Description and Design Process, the HSI System Description and HFE Process, the Safety System Digital Platform (MELTAC), and the Defense-in-Depth and Diversity. The briefing will also address questions from the subcommittee.

Mr. Magee's presentation was focused on the review status and the not on the technical material. Mr. Ken Scarola will give an in-depth presentation on each topical report.

Topical Report: Defense-in-Depth and Diversity (D3)

This topical report requests approval of the D3 approach for the US-APWR. The staff's review focused primarily on MHI's design basis approach to D3, including the Diverse Actuation System for I&C systems applied to its US-APWR nuclear power plant design. The staff is currently reviewing revision two of the topical report, which was submitted in response to RAIs. RAIs have been reviewed and the staff is preparing a Safety Evaluation Report, which is expected by late November.

In response to a question, Mr. Terry Jackson discussed what is meant by D3. D3 refers to how MHI addresses Defense-in-Depth and Diversity, including architecture for their Diverse Actuation System and how they plan to use automatic and manual means to address software common cause failures.

MELTAC – Safety Systems Digital Platform

Mr. Magee proceeded to discuss MELTAC. This topical report requests NRC approval of this digital platform for an application to the safety systems of the US-APWR and for replacement of current safety systems in operating plants. The NRC staff is focused on the design of the Mitsubishi Electric Total Advance Controller MELTAC Platform and its conformance to safety requirements. Revision two of the topical report has been received. RAI responses are under review by both NRC offices for new reactors and operating reactors. A Safety Evaluation Report on this topical report is in preparation and is expected in June of 2009.

HSI (Human System Interface) Description and HFE (Human Factors Engineering) Process

This MHI topical report requests approval of HSI System design and its design process for application to the HSI System of the US-APWR and replacement of current HSI systems in operating plants. The staff review was conducted using elements of NUREG-0711, "Human Factors Engineering Program Review Model." Review emphasis was placed on the six planning and analysis elements, as these elements are used as the basis for the HSI design of the control room. Revision 2 has been received from MHI, and RAI responses are being reviewed. A due date for the staff's Safety Evaluation Report is under evaluation.

Safety I&C (Instrumentation & Control) System Description and Design Process

This Topical Report requests the staff's approval of MHI's Design and Design Process for application to the safety systems of the US-APWR and for replacement of current safety systems in operating plants. The staff review is focused on design of the MHI Digital Safety Systems and the Design Process used to apply these systems to specific nuclear power plants. Revision 1 of the topical report has been issued, and RAI responses have been received and are under review by both NRO and NRR. This topical report and the MELTAC Platform topical report are closely linked, and Safety Evaluation Reports for both are expected at the same time in June of 2009.

Key Issues Discussed

During the public session a number of issues were discussed. These included software-based pull-to-lock systems for equipment, processing speed for alarm systems, the number of required control room personnel (reactor operators), the general reliability of digital technology, common-cause system failure, operating experience reviews, principles and analysis methods for defense-in-depth, diverse actuation systems, remote shutdown panels, and the responses of operators to the new digital display systems. An invitation for the subcommittee to visit the MEPPI simulator in Cranberry Township, PA was also discussed. The meeting transcripts contain more details on these various topics.

Chairman Maynard then provided one additional opportunity for public comment and then took a break in the proceedings. He announced that after the break the subcommittee would go into closed session. Chairman Maynard stated that the next open session for the public will be on the following day (Nov. 5th) at approximately 12:00 noon. (The above-entitled matter went off the record at 11:34 a.m. for a closed session, adjourning the open session to continue on Wednesday November 5, 2008.)

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Wednesday, November 5, 2008

After a closed session in the morning to discuss proprietary topics, the subcommittee came to order in open session at 11:55 a.m. in room T2B3 of White Flint Two, Otto Maynard, Chairman, presiding. Neil Coleman was the Designated Federal Official.

Chairman Maynard asked if anyone from the public was present or outside. DFO Coleman reported that none were outside. Chairman Maynard went around the table to see if the members had any final comments, but there were none. An opportunity was given to the NRC staff for any additional comments. Mr. Larry Burkhart and Mr. Mike Junge spoke to answer several questions posed the previous day by Member Stetkar about the human factors engineering topical report, focusing on the human system interface design. Chairman Maynard expressed his appreciation to both the staff and to MHI for the presentations and the interaction. This was an informational briefing. He left the record open for an additional minute in case there were any final comments from any party. (Whereupon, the above-entitled matter concluded at approximately 12:00 p.m.)