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

January 21, 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 OCTOBER 23-24, 2008

The minutes of the subject meeting were certified on January 16, 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: J. Delgado

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

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

FROM: Otto Maynard, Chairman
US-APWR Subcommittee

SUBJECT: THE MINUTES OF THE MEETING OF THE US-APWR SUBCOMMITTEE ON OCTOBER 23-24, 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 1/16/2009
Otto Maynard, Chairman Date
US-APWR Subcommittee

Certified by: Otto Maynard
Certified on: January 16, 2009

Issued on: January 21, 2009

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
USAPWR SUBCOMMITTEE MEETING MINUTES
OCTOBER 23-24, 2008
ROCKVILLE, MARYLAND
(MEETING MINUTES FOR OPEN SESSIONS)

Introduction

The ACRS Subcommittee on USAPWR design review held a meeting on October 23-24, 2008, 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 and a draft Safety Evaluation Report for MHI's "LOCA Mass and Energy Release Analysis Code Applicability Report for US-APWR."

Attendees (10/23/2008)

ACRS Members/Staff	**NRC Staff**	**MHI**
Otto Maynard (Chairman)	C. Van Wert	M. Kikuta
Said Abdel-Khalik (Member)	J. Kaizer	M. Hadid Subki
J. Sam Armijo (Member)	M. Takacs	H. Teshima
John Sieber (Member)	Y. Hsii	T. Takahashi
Dennis Bley (Member)	W. Jenson	I. Imura
William Shack (Member)	J. Donoghue	T. Suemura
John Stetkar (Member)	A. Mendiola	A. Kumaki
	J. Ciocco	T. Ogino
	N. Otto	H. Hamamoto
	L. Burkhart	T. Shiraishi
Neil Coleman (DFO)	R. Reyes	A. Ho
E. Hackett	J. Lai	M. Hoshi
M. Benson		D. Wood (consultant)
		T. Nakano
		T. Shimomura

ACRS Members/Staff	NRC Staff	MHI
		J. Akitake
		D. Seel
		R. Weiner
		MNES
		S. Watanabe
		J. Chung
		S. Hanada
		C. K. Paulson
		R. Takanashi
		S. Otani
		M. Onozaka
		V. Ishida
		F. Gillespie
		JEPIC
		T. Ishii
		AREVA
		A. Levin

The presentation slides and handouts used during the open portions of the meeting are attached to the Office Copy of these Minutes. The presentations to the Subcommittee are summarized below. There were no requests by members of the public to make written or oral statements.

OCTOBER 23, 2008 - OPENING REMARKS BY CHAIRMAN MAYNARD

The subcommittee came to order at 8:00 a.m. in room T2B3 of White Flint Two. Otto L. 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 today. The designated federal representative for the meeting was Neil Coleman. Members in attendance included Jack Sieber, Dennis Bley, Sam Armijo, Bill Shack, John Stetkar, and Said Abdel-Khalik. It was announced that portions of the meeting will be closed to the public to discuss proprietary information.

The purpose of this meeting is to get an overview and a basic understanding of 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. In most cases the topical reports are not necessarily reviewed and approved by the ACRS. In this case we have an opportunity to look at some of these topical reports before they are finalized. A number of these topical reports will be used as the basis for approval of parts of the design certification document. 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.

One of the topical reports is on the mass and energy release, and a technical presentation by Mitsubishi was not scheduled on that. It relies primarily on approved topical reports and methodologies. The staff was asked to discuss their review and regulatory basis for that report in their introduction.

DISCUSSION OF AGENDA ITEMS

1. Overview of NRC Staff Reviews of Mitsubishi Topical Reports

Mr. Larry Burkhart (NRO) reported that the staff is reviewing numerous topical reports for the US-APWR. Although Safety Evaluation Reports (SERs) have not been finalized for these topicals, the staff thought it would be good to continue dialog with ACRS on the US-APWR design to get feedback. Mitsubishi gave an initial presentation to ACRS several months ago on the general design. The staff are concurrently reviewing numerous topical reports and the Design Control Document (DCD) for the US-APWR. Mr. Burkhart then introduced Ms. Ruth Reyes, who is NRO's project manager for chapters 4 and 6 and other aspects of the DCD.

Ms. Reyes gave an overview of the staff's review of five topical reports. These topical reports are the LOCA mass and energy release; the advanced accumulators; fuel design criteria and methodology; fuel assembly; seismic analysis code; and the thermal design methodology.

The LOCA mass and energy topical report requests approval of the methodology for calculating the steam, the water, and the nitrogen releases to the containment building from a postulated reactor coolant piping break. That methodology uses previously approved methodologies or computer codes like SATAN and GOTHIC. So the review of this topical report has focused on the applicability of these previously-approved methodologies to the US-APWR.

Member Armijo asked if these were previously approved and Mitsubishi has acquired access to or rights to use. Walton Jensen of the NRC staff responded that the SATAN and WREFLOOD codes have previously been approved, but there were modifications made to the methodology and the codes for the US-APWR. The primary modifications to the code would be the advanced accumulator model that was put in and required some modification. And the heavy reflector and the reactor core were added to the methodology. Ms. Reyes noted some examples of special features that the US-APWR design has that would impact potential releases to the containment building are the advanced accumulators, the heavy reflector, and the in-containment refueling water storage. The staff have issued four sets of requests for additional information (RAIs), which were answered. And based on the RAI responses, MHI submitted revision one and two of this

topical report. The staff has finished the review, and prepared a draft tech evaluation report which was submitted to the ACRS.

Member Abdel-Khalik asked whether the NRC staff done any independent confirmatory analyses after the codes have been modified? Mr. Walt Johnson replied that the staff did not actually run a complete confirmatory analysis, but compared the mass and energy release that Mitsubishi calculated to what was calculated for similar plants, thinking that the advanced accumulator would have very little effect on the containment mass and energy release. Their results were compared with hand calculations of boil-off in the reactor core to test the methodology against standard review plan recommendations.

Ms. Reyes then discussed the Mitsubishi US-APWR Advanced Accumulator. The topical report requests approval of the advanced accumulator design and the characteristic equations for large and small flow rates for safety analyses. The staff review was primarily focused on the applicability of the scaled test data to the full scale advanced accumulator. Some RAIs have been issued by the staff, and the responses have been received. MHI provided Revisions 1 and 2 of the topical report in response to the RAIs. The staff is reviewing RAI responses, and the safety evaluation report is expected in June 2009.

Ms. Reyes gave a brief summary of the topical report on Fuel Design Criteria and Methodology. This report requests approval for the Mitsubishi fuel design criteria and methodology, and the FINE fuel rod design code. The staff review was primarily focused on the applicability of the empirical database to the proposed fuel criteria, and also on the ability of the FINE code to model standard test cases. The staff is writing RAIs and drafting the Safety Evaluation Report, which is expected in July, 2009.

Ms. Reyes then discussed FINDS, which is the Mitsubishi fuel assembly seismic analysis code. This report requests approval for the Mitsubishi seismic analysis code, FINDS, for use in the DCD and also in the Fuel Design Criteria and Methodology topical report. The review is focused on the applicability of the empirical database to the APWR fuel design and on obtaining additional test data to support the design. Staff is in the process of developing requested evaluation information, preparing RAIs, and the Safety Evaluation Report is expected in July 2009.

The last topical report discussed by Ms. Reyes is the Thermal Design Methodology. This report requests approval of VIPRE-01M, a Mitsubishi version of the already approved VIPRE-01 code. Some modifications include addition of the DNB (departure from nucleate boiling) correlation and some other minor changes. The staff's review is focused on the applicability of this code, VIPRE-01M, to the PWR cores with MHI or US-APWR fuel. Some RAIs have been issued and right now the technical staff is reviewing the RAI responses. The Safety Evaluation Report is expected in April, 2009.

2. Introduction - Four US-APWR Topical Reports (K. Paulson, MNES)

Mr. Keith Paulson (MNES) provided a more detailed overview of the four Mitsubishi topical reports. He noted that Mitsubishi spent the better part of a year supplying topical reports to the NRC, beginning early in 2007.

3. Fuel Design Criteria and Methodology

This topical report addresses MHI fuel, and provides a description of the fuel rod and fuel assembly design criterion to be applied to the US-APWR fuel design. The report also describes the models and verification of the FINE code. Mr. Paulson noted that the fuel assembly will be 14-feet long with a 17 by 17 array. The pellet density is a bit higher than what ACRS has probably seen in previous designs. The grids are Zircaloy for neutron economy. An 11-grid structure reduces the span of the fuel assemblies, providing additional support. A corrosion resistant material called ZIRLO will be used. An important feature of the design is the low kilowatts per foot for this fuel assembly. Although much of the design activity goes on in Japan, Mitsubishi has been sensitive to the design requirements in the United States, and started to follow them as the regulations went through a significant process of upgrading over the course of the last few years. The design considers the general design criteria in 10 CFR Part 50. Mitsubishi has used the standard review plans as the basis for evaluations of fuel damage, fuel failure, and fuel coolability.

Mr. Paulson stated the topical report addresses cladding stress, cladding strain, stress and loading limits, fatigue, fretting wear, oxidation, dimensional changes, assembly rod growth, and rod internal pressures. The potential fuel rod failure modes that MHI looked at include hydriding, cladding collapse, overheating of cladding, overheating of fuel pellets, excessive enthalpy, fuel pellet-cladding interaction, and mechanisms for fuel rod fracturing. In terms of coolability MHI looked at embrittlement, violent expulsion of fuel, generalized cladding, melting, fuel rod ballooning, and structural deformation.

Chairman Maynard wondered what experience Mitsubishi may have with longer fuel cycles? He believes most Japanese plants use a 12-month cycle, while most U.S. plants run 18- or 24-month cycles. Mr. Paulson replied that MHI will be dealing with extended burnup calculations. MHI has data available for longer fuel cycles in the United States, and they have used that as the basis for their evaluation.

Mr. Paulson said that the FINE code was developed by Mitsubishi in the 1980s, and modifications for high burnup have been made through 2001. Additional changes include thermal conductivity degradation, the rim microstructure variations, and models for Zircaloy and ZERLO have been built into the FINE code. Mitsubishi developed proprietary models using post-irradiation exams and other tests. MHI has applied the FINE code to the high burnup fuel that exists in Japan. The fuel pellet type focused on U02, with gadolinium up to 10 percent. MHI is looking for the US-APWR fuel to go to 62 gigawatt days per ton. Finally the coolant temperatures for the US-APWR are bounded by the information that exists today. Information from other reactors can be used to validate the models in the FINE code. Japanese data, Spanish data, and U.S. data are part of the database used to validate the performance of the FINE code.

In conclusion, Mr. Paulson said that MHI believes they have a very robust code with a very robust database that the results are based on. MHI has tried to ensure that the information the subcommittee and the NRC is looking for is completed in an acceptable way based on the guidelines from U.S. NRC guidance documents.

4. FINDS: Mitsubishi PWR Fuel Assemblies Seismic Analysis Code

Mr. Paulson described the FINDS code as a computer code that looks at seismic performance. The FINDS code is used to analyze fuel assembly response characteristics for seismicity under difficult seismic conditions. The topical report contains analysis models associated with the development and tests and verification of the FINDS code. It's to be used to perform analysis with US-APWR in compliance with Appendix A of Section 4.2 of the standard review plan. The US-APWR evaluation technical report to be submitted to NRC in March, 2009 is focused on the US-APWR as opposed to previous fuel designs. The topical report was submitted to NRC in March of this year and docketed in May. RAIs were issued in July and so far MHI has responded to the RAIs that were submitted in July and some additional RAIs that were submitted in August. The NRC asked MHI to provide them with the code and some input information.

The FINDS code takes into effect nonlinear effects, as opposed to just doing bounding calculations. The FINDS code is also used to analyze fuel assembly response due to pressure propagation during LOCA. The input for FINDS is information that's necessary with respect to the overall design of the vessel area. Primarily MHI uses the upper core support plate and the lower core support plate as input to FINDS; acceleration during earthquake, LOCA and so forth. FINDS does a dynamic fuel assembly response during earthquakes and LOCA, and the output of FINDS is the fuel assembly amplitude grid space or impact force, and then ultimately stress analysis using an analysis model that is also familiar for evaluation of the fuel assembly. FINDS is an efficient and stable calculational methodology using multi-fuel assembly interactions associated with impact. There is a strong nonlinear behavior of the fuel assembly that is taken into account for the vibration analysis, and an inelastic impact model to calculate grid space or permanent deformation that occurs after initial grid space or buckling.

Mr. Paulson noted that the following verifications are described in the topical report. The confirmation with a general purpose ANYSYS code, verification of the grid impact model by lateral impact test of the fuel assembly, and impact tests of single span fuel assembly; verification of multiple fuel assemblies; and interaction analyses by shaker table tests of large scale PWR cores internals, with up to 15 by 3 full-scale mockup of the fuel assemblies as part of that testing. Mr. Paulson gave several conclusions regarding the FINDS code. It was developed by MHI to determine fuel assembly response and seismic and LOCA conditions, and accounts for the nonlinear effects that can be experienced especially in high seismic areas. The FINDS code is for multiple assembly fuel vibration and interactions, and can do that type of analysis, and has been validated based on some of the test results that have gone on, verified by fuel assembly lateral vibration tests, single span grid spacer impact tests, and the comprehensive large scale seismic excitation tests. Shaker table tests and vibration tests have been used to validate this model, which is one of the more sophisticated models in the industry with respect to evaluation of fuel assemblies. The FINDS code is applicable to the US-APWR fuel assembly for many reasons, not just because of the work that has gone on, but also because MHI thinks that environments for most locations in the U.S. are less severe than what has to be evaluated for.

5. Thermal Design Methodology

Mr. Paulson stated that MHI submitted this topical report last May, and it was docketed in December of 2007. Mitsubishi's thermal design methodology is based on NRC-approved computer programs and methodology. It uses the revised thermal design procedure. It uses VIPRE and WRB-1 and WRB-2, all of which are familiar to the NRC and used as part of the VIPRE code. VIPRE is an extension of the code that was approved by the NRC, which is VIPRE-01 for

subchannel analysis. The use of WRB-1 and WRB-2 has been validated on VIPRE. Those analysis results, and their applicability to the Mitsubishi fuel design, have been demonstrated as part of the topical report. VIPRE-01M and WRB-1 and 2 have been verified for thermal hydraulic design, and on LOCA safety analysis requiring DNB (departure from nucleate boiling) evaluation, so DNB evaluations can be performed and used in comparison with the limiting DNB values, and that is used as a basis for the approval of MHI's transient analyses.

Mr. Allen Ho (MHI) noted that for the spacer grid distance there is a given range, because MHI is using the well known WRB-1 and WRB-2 correlations. As long as the grid spacing is within that range, it is all applicable. It has been tested. Member Abdel-Khalik asked whether the prediction depends on the detailed design of the grid spaces? Mr. Ho replied that MHI did some sensitivity studies. They adjusted the distance of the grid spacing, and it can show that how much DNBR changes.

Mr. Paulson said that the Mitsubishi version of the VIPRE code was developed by EPRI and has been reviewed by NRC, which is the VIPRE-01 code. The solution methods and constitutive models that were used in VIPRE-01 were not changed, so that the basis for the evaluations was not changed. There were some additional options that were included in the design. Those options are primarily focused on enhancements for the evaluation as opposed to changing any of the methodologies used. The VIPRE version that is used by Mitsubishi provides distributions of mass, axial and later flow rate, enthalpy and DNBR in the core, and limiting subchannel. And the transient and thermal behaviors of the fuel rods are analyzed simultaneously. The application code complies with the NRC. Their SER conditions went into this reference document, and address those specifically as part of the topical report.

Mr. Paulson said that the core is modeled using industry-accepted assumptions. Some of the things that are also taken into account in the core, in the calculations, are normalization, mixing, turbulent mixing, hydraulic resistance, two-phase flow, engineering factors, core inlet, flow distribution, boundary conditions, and calculation control parameters are available.
Mr. Paulson noted that the transient fuel model for the fuel rods is modeled in VIPRE and used for the transient analysis. The key parameters for the fuel rod model are described in the topical report. General application of VIPRE-01 was demonstrated by EPRI. The qualification of the version that Mitsubishi has updated focused on validation of the application, and the newly incorporated features that we mentioned, representative calculations for typical steady state transient analysis were compared with NRC-approved codes, so that there is a validation process which goes on in the topical report, and it's available for you to examine if you are so interested.

6. The Advanced Accumulator

Mr. Paulson discussed this topical report. US-APWR has adopted an advanced accumulator that incorporates passive flow switching from a large flow rate at refill to a small flow rate for reflood activities during a LOCA. Performance of the advanced accumulators was evaluated using various tests. Each test had a specific focus to examine how the advanced accumulator will perform during the various stages of performance as the accumulator drains. Scalability was examined to confirm the application to the US-APWR.

Empirical formulas were developed for the test results and are applied to the LOCA analysis of the US-APWR. Contents of the advanced accumulator report include an introduction, characteristics,

design details, confirmatory testing, concept of the safety analysis model, how that was developed, and conclusions. The advanced accumulator was incorporated into the safety design of the US-APWR to provide the low pressure injection function of the conventional emergency core cooling system. The emergency core cooling system in typical four-loop plants has both low-head and high-head pumps. There are several good reasons for adding the advanced accumulator. One is to reduce the number of active components in the primary system by eliminating the low-head pumps, the function of which is replaced by the performance of the advanced accumulator.

The advanced accumulator functions as a passive system, but looks like an active system because of the two flow rates. Another advantage was the desire to use emergency gas turbine generators for power. These are highly reliable gas turbines. They don't start up quickly as the emergency diesel generators do. But MHI believes the diesel generators are much less efficient than the gas turbine generators. That provides a second benefit for using the advanced accumulator because MHI can justify using gas turbines even though it takes a little longer for them to get up to full power and be operable as part of initiation and operation of the ECCS system.

Member Sieber stated that, for auxiliary power start, the largest break LOCA is the most important break. He asked whether MHI has analyzed smaller break LOCA sizes to see what the response will be and make sure everything matches. Mr. Paulson responded that a spectrum of breaks was analyzed.

Mr. Paulson described the action of the advanced accumulator. Initially flow enters a vortex chamber through a large standpipe and through a smaller flow pipe. So long as both flows occur, they collide in a way that prevents a vortex from forming in the vortex chamber. When the level in the accumulator falls below the top of the standpipe, then only the flow from the smaller flow pipe enters the chamber. A strong vortex forms, which limits subsequent injection flow to a small but consistent flow rate. Flow from the accumulators goes directly into the cold legs of the inner loop. During a LOCA, direct vessel injection can occur from the high-head safety injection pumps. Discussion ensued about how much time it takes for the flow to switch from the high flow rate to the lower flow rate, whether there was a need to seismically qualify the standpipe, and how the water in the accumulator is borated. Member Sieber asked what is the operating pressure in the accumulator during normal operations? Mr. Paulson responded that the pressure is about 640 psi, and that the accumulator is pressurized with nitrogen gas. Member Abdel-Khalik asked how boron concentration within the accumulator would be maintained within tech specs? Mr. Paulson said the answer is feed and bleed.

Chairman Maynard asked whether there were any other questions for the open session here. With that, according to our designated federal representative here, we are going to end up with a longer break. We will come back at 10:30, which is what the schedule calls for, to see if there is any public comment. And then right after that we will go into the closed session.

(Whereupon at 9:53 a.m. the proceeding in the above-entitled matter went off the record and resumed at 10:30 a.m.)

PUBLIC COMMENT

Chairman Maynard called the meeting back to order to receive public comments. None were forthcoming and no one was on the phone. Before moving into closed session, the designated

federal official and Mitsubishi were asked to identify anyone who should not be present for the closed session.

(Whereupon at 10:31 a.m. the public proceeding concluded.)

Day 2 Attendees (10/24/2008)

ACRS Members/Staff	**NRC Staff**	**MHI**
Otto Maynard (Chairman)	J. Ciocco	M. Kikuta
Said Abdel-Khalik (Member)	J. Kaizer	M. Hadid Subki
J. Sam Armijo (Member)	L. Burkhart	T. Shiraishi
John Sieber (Member)	Y. Hsii	T. Takahashi
Dennis Bley (Member)	K. Armstrong	A. Ho
William Shack (Member)	R. Landry	T. Suemura
John Stetkar (Member)	W. Ward	A. Kumaki
	J. Barr	T. Ogino
Neil Coleman (DFO)	F. B. Cheung	H. Hamamoto
		M. Kauchi
		R. Weiner
E. Hackett		M. Hoshi
M. Benson		D. Wood (consultant)
		T. Nakano
		MNES
		T. Imamura
		J. Chung
		S. Hanada
		R. Takanashi
		S. Otani
		M. Onozaka
		V. Ishida

ACRS Members/Staff	NRC Staff	MHI
		F. Gillespie
		M. Kambara

The presentation slides and handouts used during the open portions of the meeting are attached to the Office Copy of these Minutes. The presentations to the Subcommittee are summarized below. There were no requests by members of the public to make written or oral statements.

OCTOBER 24, 2008 - OPENING REMARKS BY CHAIRMAN MAYNARD

The subcommittee came to order at 8:01 a.m. in room T2B3 of White Flint Two. Otto L. Maynard, Chairman, presiding. He called the meeting to order and provided another opportunity for public comments. With none forthcoming, he announced that after the closed session this morning the Subcommittee would come back into open session to end the meeting. That was scheduled for 11:15.

(Whereupon, the foregoing matter went off the record at 8:02 a.m. and went back on the record at 11:15 a.m.)

Subcommittee Chairman Maynard reconvened the meeting in public session. Member Abdel-Khalik said that he has no additional comments beyond what were captured at the end of each presentation for each individual topical report. Members Stetkar and Shack had no additional comments. Member Armijo commented that the advanced accumulator is an ingenious device and a lot of good testing has been done. He would like to see something like a failure modes and effects analysis to see if there is any mechanism by which this important safety system could be defeated. But he considers it a very novel and workable device. Scaling is very important. Member Bley said it has been an informative couple of days for him. Member Sieber had no additional specific comments, but was eager to see the staff's Safety Evaluation Report. When that is available the Committee will be in a position to provide our final remarks to the topical reports. He thanked the presenters for the excellent job. Mr. Shiraishi responded “Thank you very much.” Chairman Maynard added his thanks, and that he was impressed with the amount of information Mitsubishi provided. The subcommittee will meet again in November on several other reports.

Mr. Yoshinari Kumaki from Mitsubishi Heavy Industries made a closing statement. He is a DCD manager on the MHI, and a representative of MHI’s general manager, Mr. Ogata, who will come to the November meeting. MHI has already submitted and already presented our topical report and technical report with the core and the fuel and also today the accumulator and the safety features. Safety evaluation reports will be prepared by NRC and, at that time, MHI would ask the Subcommittee to review again our topical report as a safety evaluation report review. In November, MHI will present I & C (instrumentation and control) reports. And next year, early spring, MHI will present the safety analysis code. He asked that the subcommittee review the topical reports and also include the DCD for the US-APWR in future.
Chairman Maynard then adjourned the meeting.

(Whereupon, the above-entitled open session of the ACRS meeting was concluded at 11:23 a.m.)