

# US-APWR 3rd Pre-Application Review Meeting

November 28 & 29, 2006 Mitsubishi Heavy Industries, Ltd.

<u> Mitsubishi Heavy Industries, Ltd</u>

**UAP-HF-06023** 



## Introduction

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### **Meeting Objectives**



- To propose revised plan for pre-application review meeting and submittal of Topical Reports to reflect comments of NRC staff
- ➤ To provide the contents of Topical Reports and to obtain feedback from the NRC
  - ✓ November 28
    - AM: Digital I & C System, HFE Process and HSI System Design
    - PM: Quality Assurance Program Description for Design Certification of the US-APWR
  - ✓ November 29
    - Advanced Accumulator



# Revised Plan of Pre-Application Review Meeting and Topical Reports Submittal

Revised Plan of Pre-Application Review Meeting and Topical Reports Submittal 2006 2007 10 11 12 1 2 3 6 10 11 12 DC **Pre-Application Review Meeting** No.9 No.13 Application No.1 No.2 No.4 No.6 No.7 No.8 No.10 No.11 No.12 V V V Submittal of Design Description \_ [Design] **ECCS** with Advanced Other Safety Submittal of ACC Advanced **Features** Advanced Accumulator Accumulator **Topical** Plant Design **Topical** EFWS, C/V Report Safety Concepts Report pre-Safety Design Design (Jan.) submittal Bases concerning Philosophy meeting Safety Analysis Design V **Features** Submittals of I&C 1 & C 1&C HSI and HFE Topical **Topical** Electrical Reports (Feb./Mar.) Report presubmittal Core and Fuel Design Submittals of Fuel and meeting Overview Fuel and Core-Core Design Final Fuel and Core Design [Methodologies and Codes] Topical Methodology Overall Topical Report pre-Reports (May) submittal meeting Review Meeting SBLOCA LBLOCA and Non-Submittals of LOCA Methodology Methodology Topical Computer Safety Analysis Safety Analysis Topical Report pre-Report pre-submittal Methodologies Codes and Methodologies submittal meeting meeting Methodology Topical Report CV Response Used for (Jul.) Analysis Safety Methodology **Analysis** SA Analysis Methodology V **SA Mitigation** QA **Design Features** Overview Submittal program And Evaluation PRA and Topical of QA Methodology Radiation Dose Program Report **Analysis** Topical pre-Methodology Report submittal (Jan.) meeting : Submittal of Topical Report UAP-HF-06023-4 : Meeting Subjects

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Meeting Subject	Meeting Objectives	Date
<ul><li>Mitsubishi Nuclear Activities</li><li>US-APWR Overview</li></ul>	- Introduce MHI nuclear activities and US-APWR	July 2006
<ul> <li>Revised Pre-Application Review Meeting Plan</li> <li>Topical Report Submittals Plan</li> <li>Safety Design Philosophy</li> <li>US-APWR Design Features</li> <li>Computer Codes and Methodology Used for Safety Analysis</li> </ul>	<ul> <li>Propose the review meeting and topical report schedule</li> <li>Provide a more extensive technical discussion to demonstrate the design is similar to US current PWR plant</li> </ul>	September 2006
Topical Report Pre-submittal Meeting - Advanced Accumulator	<ul><li>-Identify the form and contents of the topical report</li><li>- Provide a more extensive technical discussion</li></ul>	November 2006
Topical Report Pre-submittal Meeting - Digital Platform - Safety System Design Process and Description - Defense-in Depth and Diversity - HFE Process and HSI System Design	- Identify the form and contents of the topical reports	November 2006
Topical Report Pre-submittal Meeting - Quality Assurance Program Description for Design Certification of the US-APWR	- Identify the form and contents of the topical report	November 2006

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Meeting Subject	Meeting Objectives	Date
<ul> <li>Core and Fuel Design Overview</li> <li>Topical Report Pre-submittal Meeting</li> <li>Fuel System Design Criteria and Methodology</li> <li>Thermal Design Methodology</li> </ul>	-Clarify necessary actions before the DC application  -Identify the form and contents of the topical reports	January 2007
Topical Report Pre-submittal Meeting - Large Break LOCA Analysis Methodology - Non-LOCA Analysis Methodology	- Identify the form and contents of the topical reports -Explain codes used in analysis for Large Break LOCA and Non- LOCA	January 2007
<ul> <li>Severe Accident Analysis         Methodology Overview         Probabilistic Risk Assessment         Methodology         Radiation Dose Analysis         Methodology     </li> </ul>	-Explain codes used in analysis for Severe Accident -Explain codes, database and key assumption of the PRA -Explain codes and key assumption of the Radiation dose analysis methodology	February 2007

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Meeting Subject	Meeting Objectives	Date
<ul> <li>Safety Related Features         (ECCS, EFWS, Containment         Vessel)</li> <li>Including safety Design Bases         concerning Safety Analysis</li> <li>Advanced Accumulator Topical         Report</li> </ul>	<ul> <li>Provide a more specific discussion on safety related features</li> <li>Discuss the NRC comments after the NRC staff has read the advanced accumulator topical report</li> </ul>	March 2007
<ul> <li>Small Break LOCA Analysis         Methodology Topical Report Presubmittal Meeting</li> <li>CV Response Analysis Methodology</li> </ul>	<ul> <li>-Explain codes used in analysis for Small Break LOCA</li> <li>-Identify the form and contents of the topical report</li> <li>- Explain codes and key assumption of the Containment Response Analysis methodology</li> </ul>	March 2007

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Meeting Subject	Meeting Objectives	Date
<ul><li>Electrical and I &amp; C System</li><li>Design Criteria</li><li>Overall I &amp; C and Safety System</li></ul>	-Provide plant-wide architecture and system level design and function of safety related I & C	April
<ul> <li>Digital Platform Topical Report</li> <li>Safety I&amp;C System Design Process and Description Topical Report</li> </ul>	-Discuss the NRC comments after the NRC staff has read the Digital Platform and Safety I & C System topical reports	2007
<ul> <li>Human System Interface</li> <li>Other Important I &amp; C Systems</li> <li>Safety Grade 1E Electrical Power System</li> </ul>	- Provide HSI concept and system level design of other important I & C and safety electrical system	May 2007
- Defense-in-Depth and Diversity (D3) Topical Report -HFE Process and HSI System Design Topical Report	- Discuss the NRC comments after the NRC staff has read the HFE and D3 topical reports	
- Severe accident mitigation design features and evaluation methodology	- Explain schematic system description and their effectiveness evaluation method	June 2007

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Meeting Subject	Meeting Objectives	Date
<ul> <li>Fuel System Design Criteria and Methodology Topical Report</li> <li>Thermal Design Methodology Topical Report</li> </ul>	- Discuss the NRC comments after the NRC staff has read the topical reports	July 2007
<ul> <li>Other Safety Features         (Safety shutdown system, SBO mitigation system etc.)</li> <li>Plant Design Concepts         (Plant Layout, Separation Criteria, Steel &amp; Concrete Structure)</li> </ul>	- Provide a more specific discussion on other safety features and plant design concepts	August 2007
- Safety Analysis Methodologies Topical Report	- Discuss the NRC comments after the NRC staff has read the topical report	September 2007
- Final Overall Review Meeting	- Summarize the NRC comments and discussion	November 2007

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#### **Revised Topical Reports Submittal Plan**



January 2007 January 2007
January 2007
February 2007
February 2007
March 2007
March 2007
May 2007
May 2007
July 2007
July 2007

#### **Next Steps**



- ➤ Submittal of Topical Reports in January 2007
  - ✓ Quality Assurance Program Description for Design Certification of the US-APWR
  - ✓ Advanced Accumulator
- ➤ Meetings in January 2007
  - ✓ Core and Fuel Design Overview
  - √ Topical Report Pre-submittal Meeting
    - Fuel System Design Criteria and Methodology
    - Thermal Design Methodology
    - Large Break LOCA Analysis Methodology
    - Non-LOCA Analysis Methodology