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April 16th, 2008

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Jeffrey A. Ciocco,

Docket No. 052-021
MHI Ref: UAP-HF-08080

Subject: Additional Information for NRC Review Schedule for US-APWR Design Certification Application

References: 1) Letter MHI Ref: UAP-HF-08066 from M. Kaneda (MHI) to U.S. NRC, "NRC Review Schedule for US-APWR Design Certification Application" dated on March 27th, 2008.
2) Letter MHI Ref: UAP-HF-08058 from M. Kaneda (MHI) to U.S. NRC, "Responses to the NRC's Questions, concerning the US-APWR Sump Strainer" Mitsubishi Heavy Industries Ltd. Application for Design Certification of the US-APWR Standard Plant Design" dated on March 20th, 2008.
3) Letter MHI Ref: UAP-HF-07170 from M. Kaneda (MHI) to U.S. NRC, "Mitsubishi Heavy Industries Ltd. Application for Design Certification of the US-APWR Standard Plant Design" dated on December 31st, 2007.

On March 25, 2008, the Nuclear Regulatory Commission ("NRC") Staff presented to Mitsubishi Heavy Industries, Ltd. ("MHI"), for feedback and comment, the NRC's draft schedule for review of the US-APWR standard design and preparation of the draft and final Safety Evaluation Reports ("SER"). This draft schedule was not able to take into account certain new technical information that MHI had provided previous to the meeting (Reference 2), and, as MHI requested at the meeting and later by letter (Reference 1), MHI believed that it would be of substantial benefit to all involved for the Staff to take advantage of this additional information in developing its review schedule. MHI also indicated a desire for further communications with the Staff to further describe and explain the additional technical information.

At the NRC public meeting on April 15, 2008, MHI presented additional information and commitments in those areas that the Staff identified as being the critical path to issue the draft SER, which are intended to facilitate and greatly accelerate the NRC review schedule of the US-APWR Design Certification Application. MHI wishes to express its appreciation to the Staff for this meeting, which MHI believes will prove to be very useful for establishing mutually beneficial and complementary schedules for MHI's submittal of technical information and the NRC's review of the US-APWR standard design.

With this letter, MHI formally transmits to the NRC Staff (in Enclosures 1-3) the additional information and commitments made by MHI at the April 15 public meeting. As stated in its presentations, MHI has structured its submittals to allow the issuance of the draft SER in fourth-quarter 2009. MHI also believes that the US-APWR's proven design features and its high quality Design Control Document ("DCD") should minimize and significantly shorten the review schedule by Advisory Committee on Reactor Safeguards ("ACRS"). It is MHI's intent

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to minimize open items in the draft SER provided to the ACRS. In addition, as also presented at the meeting, this letter transmits MHI's plan to revise the DCD in August 2008 (Enclosure 4).

Enclosure 1 provides the updated schedule for MHI's submission of technical stress analysis reports and the completion of the stress analyses for audit for the US-APWR components, piping and fuel assemblies. These stress analysis reports and information for audit, originally planned for June and September 2009 respectively (Reference 3), will now both be available in March 2009. Also, MHI will provide additional technical reports in January 2009 on inputs to be used in the stress analysis. MHI believes that this earlier provision of the stress analysis information will result in a shorter review schedule for Chapters 3 and 4 of the DCD.

Enclosure 2 describes the enhanced schedule and plan for the US-APWR sump strainer design. Previously in its March 20, 2008 letter (not accounted for in the NRC's draft review schedule), MHI committed to provide additional detail design and structural analysis results for the sump strainer by September and November 2008, respectively and to complete the confirmatory tests by June 2009 (Reference 2). Now all of the committed reports and necessary information for the NRC review will be submitted by the end of 2008. MHI will employ a robust, simple design that will both enhance safety margins and greatly shorten the NRC's review schedule for Chapters 6 and 15 of the DCD.

Enclosure 3 summarizes the contents of the remaining future technical reports to be submitted to the NRC in support of the US-APWR standard design. The contents and outline of the technical reports are presented to ensure that the NRC has the information needed to plan an expeditious review of the related DCD sections.

Finally, Enclosure 4 informs the NRC of MHI's plan to revise the DCD in August 2008. The anticipated revisions are not significant and, therefore, will not impact the NRC's review schedule of the DCD.

As stated, MHI believes that the meeting was very beneficial for communicating additional information to the NRC Staff to facilitate its review of the US-APWR Design Certification Application. MHI stands ready for further communications with the Staff, as discussed at the meeting, to further describe and explain as necessary the additional information provided by MHI at the public meeting.

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of this letter. His contact information is provided below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
General Manager- APWR Promoting Department
Mitsubishi Heavy Industries, LTD.

Enclosures:

1. "Updated Schedule for Stress Analyses"
2. "Enhanced Schedule and Plan for US-APWR Sump Strainer Design"
3. "Contents of Future Technical Reports"
4. "Revision Plan of the US-APWR DCD"

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Enclosure 1

US-APWR

Updated Schedule for Stress Analyses

April 2008

1. INTRODUCTION AND BACKGROUND

Attachment 2 ("US-APWR Approach for DAC-ITAAC (including Design Completion and Technical Report Submittal Plan")) to Enclosure 3 of Mitsubishi's Heavy Industries, Ltd ("MHI") Application for Design Certification dated December 31st, 2007 [1] sets forth MHI's commitments to the Nuclear Regulatory Commission ("NRC") for the resolution of Design Acceptance Criteria (i.e. Design ITAAC) for components, piping and fuel assemblies that are scheduled to be resolved during the design certification review process by additional technical reports and/or NRC audit [1]. Those technical reports will contain analyses results and other information that supplement the information already provided in the DCD and will close DAC (Design ITAAC) for representative ASME Class CS, Class 1 and Class 2 components and piping, Fuel assemblies and RCC (Rod Control Cluster). In addition, MHI will complete and make available for NRC audit the stress analyses and the related design documents for the remaining designated components and piping which will close the DAC for these components and piping prior to the final DCD SER issuance.

MHI also outlined the schedule for the submission of these technical reports and the completion of the stress analyses for audit in [1]. In general this schedule provides for the submittal of the technical reports for the representative examples of components, piping and fuel assemblies in June 2009 and the completion of the stress analyses for the remaining designated components and piping for audit by the NRC in September 2009.

In the NRC's draft review schedule presented on March 25, 2008 the NRC indicated that the Phase 2, draft SER for Chapters 3 and 4 were preliminarily scheduled to be completed by February and January 2010, respectively. To facilitate and expedite the NRC's review, MHI is updating its schedule for the submittal of the stress analysis technical reports and the completion of stress analyses for NRC audit. The technical reports and related information for audit, originally planned for June and September 2009 respectively, will now both be available in March 2009. Also, MHI will provide additional technical reports in January 2009 on inputs to be used in the stress analysis.

2. UPDATED PLAN

The updated plan for the submittal of the stress analysis technical reports and completion of stress analyses for NRC audit is set forth in Table 1. This Table sets forth both the original schedule provided at the time of DCD submittal and the updated schedule and shows completion of both the stress analysis technical reports and the remaining designated stress analyses for NRC audit by March 2009.

In addition to the submittals of the stress analysis technical reports and the completion of the stress analysis for NRC audit, MHI will be submitting two technical reports in January 2009 which will provide inputs for the stress analysis. These reports are titled "Summary of Design Transients" and "Summary of Seismic and Accident Load Conditions for Primary Components and Piping Design." These technical reports will be provided to inform the NRC in advance of the analysis conditions to be used in the stress analyses for piping and components.

3. OUTLINE OF TECHNICAL REPORTS AND INFORMATION PROVIDED FOR AUDIT

Summary outlines for each technical report and information to be made available for audit are provided in Table 2. In addition, the related sections and/or sub-sections of the DCD are also identified in Table 2. The information is provided to ensure that the NRC has the information needed to plan an expeditious review of the related DCD sections.

4. SUMMARY

Stress analysis technical reports and related information for audit to close out DAC, originally planned for June and September 2009 respectively, will now both be available in March 2009. This updated schedule will facilitate and shorten the NRC's review schedule for Chapters 3 and 4.

5. REFERENCE

[1] Letter MHI Ref: UAP-HF-07170 from M. Kaneda (MHI) to U.S. NRC, "Mitsubishi Heavy Industries Ltd. Application for Design Certification of the US-APWR Standard Plant Design" dated on December 31st, 2007.

Table 1 Submittal Plan for Stress Analysis Technical Reports and Stress Analysis Completion

Areas	Contents			Original Schedule	Updated Schedule*
Components and pipng	ASME Class CS	Reactor Internals	Stress Analyses	T/R 6/2009	T/R 3/2009
	ASME Class 1	Reactor Vessel		T/R 6/2009	T/R 3/2009
		Steam Generator		Audit 9/2009	T/R 3/2009
		Pressurizer		Audit 9/2009	T/R 3/2009
		Reactor Coolant Pump		Audit 9/2009	T/R 3/2009
		CRDM		Audit 9/2009	T/R 3/2009
		Reactor Coolant Loop Piping		Audit 9/2009	T/R 3/2009
		RCL Branch Piping		Audit 9/2009	T/R 3/2009
		Pressurizer Surge Line Piping		T/R 6/2009	T/R 3/2009
	ASME Class 2	Accumulator		Audit 9/2009	T/R 3/2009
		MS Piping		T/R 6/2009	T/R 3/2009
Fuel system	Fuel assemblies and RCC		structure response analysis under seismic and LOCA	T/R 6/2009	T/R 3/2009
Note) T/R: Technical Report					
* In addition to the T/R submittal, design information will be available for NRC audit					

Table 2 Outline of Technical Reports

Report	Summary Outline	Related DCD Section/Sub-Section
Summary of Design Transient (01/2009)		
	• Design transients considered in the design of ASME Class 1 components for the US-APWR. • Assumption of design transient analysis, such as fluid system pressure, temperature, flow transients, and frequency for Class 1 component fatigue analysis and stress analysis. • Conservative estimates of the magnitude and frequency of the temperature and pressure variation resulting from various events assumed in plant operation	3.9
Summary of Seismic and Accident Load Conditions for Primary Components and Piping Design (01/2009)		
	• Seismic and accident load conditions (Service Level C and D) used in the stress analysis for the primary component and piping design for the US-APWR	3.9
RV, CRDM, SG, Pzr, RCP (Class 1), RI (Class CS) and Acc (Class 2): Summary of Stress Analysis Results (03/2009)		
	• ASME Code stress analysis results for the RV, CRDM, SG, Pzr, RCP (Class 1), RI (Class CS), and Acc (Class 2) of the US-APWR • Structural, thermal and fatigue analyses results for components	3.9
RCL Line and M/S Line: Summary of Stress Analysis Results (03/2009)		
	• Reactor Coolant Loops line (including Prz surge line): ASME Code Class 1 stress analysis results, with environmental fatigue effect and thermal stratification effect, and Leak-Before-Break (LBB) evaluation • Main Steam line: ASME Code Class 2 stress analysis results with steam hammer effect and Leak-Before-Break (LBB) evaluation	3.12
Evaluation Results of Structural Response Analysis of US-APWR Fuel System under Seismic and LOCA Conditions (03/2009)		
	• This technical report will evaluate the structural response of the US-APWR fuel system under seismic and LOCA conditions. • The report will: - demonstrate that the grid spacer deformation is insignificant; - verify that the stresses for the RCC guide thimbles, nozzles, and fuel cladding are less than the allowable limit (ASME Sec. III, S.R.P.); - and examine and demonstrate no buckling of RCC guide thimbles against axial load.	4.2

RV: Reactor Vessel
CRDM: Control Rod Drive Mechanism
SG: Steam Generator
Pzr: Pressurizer
RCP: Reactor Coolant Pump
RI: Reactor Internal
ACC: Accumulator

Enclosure 2

US-APWR

Enhanced Schedule and Plan for US-APWR Sump Strainer Design

April 2008

1. INTRODUCTION

This enclosure describes the updated schedule for additional information relative to the US-APWR sump strainer design.

2. BACKGROUND

The MHI letter dated March 20, 2008 [1], has committed that additional detail design and stress analysis were scheduled to be provided to the NRC by September and November, 2008 respectively, and the results of confirmatory tests for chemical effects and debris head loss were to be provided by June, 2009. However, these commitments were not able to be incorporated into the NRC draft review schedule presented March 25, 2008, which indicated that the draft SER for Chapter 6 and 15 would be completed by August and July, 2010, respectively.

Although NRC's current draft schedule does not account for MHI's previous commitments, MHI believes that the commitments should take the sump strainer off the critical path. However, MHI will take additional actions to enhance the safety margin and to further shorten the NRC's review schedule for the sump strainer.

In order to shorten the NRC's review schedule, MHI will improve the current robust strainer design further and will provide additional detail information consistent with NRC expectations by the end of 2008.

3. UPDATED PLAN

The US-APWR sump strainer design will be a robust, conservative design that will incorporate recent lessons learned in operating plants. These conservatisms include extremely low debris sources such as minimal use of fibrous insulation, exclusion of Cal-Sil, and the application of protective coatings in containment. In addition, the US-APWR avoids using problematic chemicals and substances in order to mitigate chemical effects on the plant safety.

The US-APWR sump strainer arrangement is also robust in its ability to control of debris. The strainer system consists of four redundant safety trains and sufficient space inside the huge in-containment refueling water storage pits (RWSP) to enlarge each strainer surface area without the space limitation constraints in operating plants.

Despite these robust designs, MHI intends to make additional adjustments, including further design improvements, in order to shorten the NRC's strainer review schedule.

First, MHI will improve the current strainer design by:

- Reducing further the use of fibrous insulation
- Enlarging the strainer surface area

These improvements will be implemented to ensure a significantly reduced fibrous debris bed on the strainer surfaces of less than 1/8 inches. The expected head loss of the strainer will also be significantly reduced and will be bounded by existing test data. Therefore, no further head loss testing will be needed.

This design change will shorten the required activities to complete and confirm the sump strainer

design and all of the additional information will be provided to the NRC in 2008. A detailed submittal plan for additional information is provided in Table 1.

As a supplement, additional information will also be developed and provided regarding two key technical issues, chemical effects tests and downstream effects evaluations, as follows:

Chemical Effects Tests

While the presence of potential harmful chemicals inside containment will be minimized, confirmatory chemical effects tests and evaluations will be performed. The purpose of the tests is to examine the characteristics and quantify the chemical precipitants expected during post-LOCA conditions of the US-APWR and to confirm their minimal impact on head loss and long term cooling. The test plan will be available in June, 2008 and the results will be available in November, 2008.

Downstream Effects Evaluations

Downstream evaluations have already been included in the initial sump strainer technical report, "MUAP-090001 (R0) US-APWR Sump Strainer Performance." However, additional details and evaluation to show the system design capability to adequately address downstream effects will be provided by December, 2008. MHI will also continue to carefully follow the resolution of this issue and evaluate new information in a timely manner.

4. SUMMARY

MHI will take further actions regarding the sump strainer both to shorten the NRC's review schedule and to enhance the safety margin. MHI will improve the current robust strainer design further and will provide additional detail information consistent with NRC expectations by the end of 2008. This updated schedule will facilitate and shorten the NRC's review schedules for Chapters 6 and 15.

5. REFERENCE

[1] Letter MHI Ref: UAP-HF-08058 from M. Kaneda (MHI) to U.S. NRC, "Responses to the NRC's Questions, concerning the US-APWR Sump Strainer" Mitsubishi Heavy Industries Ltd. Application for Design Certification of the US-APWR Standard Plant Design" dated on March 20th, 2008.

Table 1 Updated Plan for the US-APWR Sump Strainer Design

Evaluation Area	Technical Information Submittal Plan (via Technical Reports and Audits)	
	Technical Report submitted MUAP-08001 (Feb 27, '08)	Additional Design Information
1. Description of Strainer - Design features - Specifications	Design information included	Sept-2008: Additional detail design information for the disk layer type strainer including drawings
2. Break Selection - Break Size and location - Break Selection Criteria	Design information included	No new assessment
3. Debris Generation - Zone of influence - Quantity of debris	Design information included	Sept-2008: The amount of fibrous debris will be reduced further. Re-evaluation will be performed.
4. Debris Characteristics - Insulation, coating, latent debris - Size, physical properties - Debris transport	Design information included	Sept-2008: The amount of fibrous debris will be reduced further. Re-evaluation will be performed.
5. Debris Head Loss - Debris head loss evaluation - Thin bed effect	Design information included	Sept-2008: Bounding evaluation using existing tests data of debris head loss will be performed.
6. Net Positive Suction Head - Submerged level water head - Specifications of Safety-related Pumps - Head loss of piping and valves - NPSH margin	Design information included	Sept-2008: Re-evaluation will be performed using as per the results of debris head loss evaluation.
7. Downstream Effects - Description of downstream components	Design information included	Dec-2008: Supplemented with additional details in ex-vessel and in-vessel issues.
8. Upstream Effects - Flow paths upstream of the Strainer - Effective Water Volume - Submerged water level	Design information included	Sept-2008: Additional detail information to improve NRC understanding.
9. Chemical Effects - Identify chemical precipitates - Influence debris head loss	Design information included Plan for the confirmatory testing which takes into account the chemical effects	Jun-2008: Technical Report of the confirmatory test plan and procedure for the chemical effects Sept-2008: Audit/Observation of the test available Nov-2008: Technical Report of the confirmatory test results for the chemical effects, including the assessment of debris characteristics.
10. Structural Analysis - Structural analysis results	Structural assessment not included	Nov-2008: Technical Report of the structural analysis results (including stress results) and detail drawings

Enclosure 3

US-APWR

Contents of Future Technical Reports

April 2008

1. INTRODUCTION

Enclosure 2 ("Report Submittal Plan") of Mitsubishi's Heavy Industries, Ltd ("MHI") Application for Design Certification dated December 31st, 2007 [1] sets forth MHI's commitment for submitting technical reports to the Nuclear Regulatory Commission ("NRC"). All of the technical reports planned to be filed to date have been sent as scheduled to the NRC for review. To ensure that the NRC has the information needed to develop its review schedule, the contents and summary outline of future technical reports to be submitted to the NRC are summarized in this enclosure.

2. REPORTS SUBMITTED SINCE THE DCD SUBMITTAL

As committed in [1], MHI has submitted a series of technical reports since the DCD submittal. Table 1 identifies those reports already submitted to the NRC.

3. REPORTS TO BE SUMITTED IN THE FUTURE

During the NRC review phase, MHI will be submitting several other technical reports to supplement the DCD and provide additional information to support and facilitate the NRC's review. Table 2 identifies these other reports and their schedule for submittal to the NRC.

4. OUTLINE OF TECHNICAL REPORTS

The table of contents and summary outline for each future technical report are summarized in table 3. In addition, the related sections and/or sub-sections of the DCD are also identified in table 3.

5. SUMMARY

The table of contents and summary outline of the future technical reports is intended to ensure that the NRC has the information needed to plan for an expeditious review of the related DCD sections.

6. REFERENCE

[1] Letter MHI Ref: UAP-HF-07170 from M. Kaneda (MHI) to U.S. NRC, "Mitsubishi Heavy Industries Ltd. Application for Design Certification of the US-APWR Standard Plant Design" dated on December 31st, 2007.

Table 1 Reports Submitted Since the DCD Submittal

Title	Submittal date
US-APWR Fuel System Design Evaluation	February/2008
Sub-compartment Analysis for US-APWR Design Confirmation	February/2008
Criticality Analysis for US-APWR New and Spent Fuel Racks	February/2008
Enhanced Information for PS/B Design	February/2008
US-APWR Sump Strainer Performance	February/2008
Probabilistic Risk Assessment (Level 3)	March/2008
FINDS: Mitsubishi Fuel Assemblies Seismic Analysis Code	March/2008

Table 2 Reports to be Submitted in the Future

Title	Submittal date
Sump Strainer Related Technical Reports	See Enclosure 2
Stress Analysis Related Technical Reports	See Enclosure 1
Dynamic Analysis of the Coupled RCL-R/B-PCCV-CIS Lumped Mass Stick Model	April/2008
US-APWR Reactor Vessel Lower Plenum 1/7 Scale Model Flow Test Report	June/2008
Security Assessment Reports	TBD (Originally July/2008)
Environmental Qualification Program	December/2008
US Operator Static V&V Results	December/2008
Mechanical Analyses for US-APWR New and Spent Fuel Racks	March/2009
HSI Design	June/2009

Table 3 Outline of Technical Reports (1/3)

Report	Table of Contents	Summary Outline	Related DCD Section/Sub-Section
Dynamic Analysis of the Coupled RCL-R/B-PCCV-CIS Lumped Mass Stick Model (04/2008)			
	Structural design verification	• Verification of the building-RCL coupled-model analysis results to be within the seismic design load assumed in the DCD. • In the DCD, the seismic design load is conservatively established based on the results of a non-coupled building model.	3.7
US-APWR Reactor Vessel Lower Plenum 1/7 Scale Model Flow Test Report (06/2008)			
	Objective	• Confirmation of hydraulic characteristics, flow induced vibration and the core inlet temperature distribution related to the lower plenum design configuration of the reactor vessel	1.5.2.1.2
	Hydraulic characteristics	• Description of core inlet flow distribution test results	1.5.2.1.2
	Flow-induced vibration	• Description of flow-induced vibration responses of the low plenum structures	1.5.2.1.2 3.9.2.3
	Core inlet temperature distribution	• Core inlet temperature distribution in events with non-uniform coolant temperature condition between primary loops	
Security Assessment Reports (To be further discussed with NRC) (TBD, Originally planned on 07/2008)			
	High Assurance Evaluation	• Development and identification of target sets • Development of DBT scenarios • Assessments for each scenario and evaluation of interactions of the security design features with plant safety	13.6
	Mitigative Measures Evaluation	• Consideration and development of mitigative strategies for the US-APWR • Description of the cost-effectiveness and benefits of different mitigative strategies • Strategies and measures to mitigate fuel damage and to minimize releases	13.6
	Cyber Assurance Evaluation	• Description of the US-APWR network architecture and connectivity of the plant digital systems • Description of a defensive model, methods and approach • Description of the initial assessment of the cyber security program	13.6

Table 3 Outline of Technical Reports (2/3)

Report	Table of Contents	Summary Outline	Related DCD Section/Sub-Section
Environmental Qualification Program (12/2008)			
	Codes Standards and Regulatory Guidance	• Identification of the applicable CFRs, NRC Regulatory Guides, Branch Technical Positions, NUREG-Series	3.11
	Design Basis	• Definition of applicable environmental conditions and equipment operating times	3.11
	Program Basis	• Description of the general design features and seismic environmental qualification	3.11
	Design programmatic aspects	• Description of the industry standard practices for group reviews/audits and the EPRI programs	3.11
	Procurement of qualified equipment	• Description of QA procedures • Description of procurement procedures	3.11
	Final controlling authority of the EQ program post combined license	• Utility customer assumptions • Construction phase • Startup phase	3.11
US Operator Static V&V Results (including HFE Analysis Results) (12/2008)			
	HFE analysis	• Results from the latest Operator experience review • Additional analysis based on Japanese experience	18.2 18.3 18.4
	V&V evaluation strategy	• Strategy using full scope simulator Japanese standard PWR plant and HSI design • Strategy with U.S. plant operating crews • Operation scenarios include normal/ abnormal/accidental operation with normal/ degraded HSI condition	18.10
	V&V Results	• Evaluation of the HEDs identified by U.S. operators and identification of those HEDs that will result in changes for the USAPWR	18.10

V&V: Verification and Validation
HED: Human Engineering Deficiencies

Table 3 Outline of Technical Reports (3/3)

Report	Table of Contents	Summary Outline	Related DCD Section/Sub-Section
Mechanical Analyses for US-APWR New and Spent Fuel Racks (03/2009)			
	Description of Fuel Racks	• Description of structural features of new and spent fuel racks	9.1.1 9.1.2
	Load Definition	• Definition of load in accordance with SRP 3.8.4 Appendix-D: Accidental Load: Fuel Drop, Uplift Seismic Load: Sliding, Overturning	9.1.2
	Design and Analysis Procedures	• Description of the design and the analysis procedure in accordance with ASME Code Section III, Division 1, Article NF3000	9.1.2
	Analysis Results	• Description of the analysis results	9.1.2
HSI Design (06/2009)			
	Background	• HSI design for US-APWR is based on the standard Japanese HSI design • V&V results identified by U.S. operators is reflected in the standard Japanese HSI design	18.7 (18.10)
	HSI design description	• HSI description addition to the HSI topical report • HSI description includes considerations from HEDs	18.7
	Results	• Solutions to those HEDs and USAPWR HSI basic design.	18.7

HSI: Human System Interface

Enclosure 4

US-APWR

Revision Plan of the US-APWR DCD

April 2008

1. INTRODUCTION

Mitsubishi Heavy Industries, Ltd ("MHI") submitted to the U.S. Nuclear Regulatory Commission ("NRC") the US-APWR Design Control Document ("DCD") on December 31, 2007 [1]. MHI is planning to submit a revision to the US-APWR DCD in August 2008 prior to the submittal of the Reference COLA in September 2008.

2. US-APWR REVISION PLAN

The revision of the DCD will mainly include the following aspects:

a) Incorporation of customer preference items appropriate for the DCD, such as Technical Specifications
b) Progress of the detailed engineering design
c) Incorporation of NRC comments and responses to NRC questions (including editorial and typographic changes)
d) Incorporation of recently submitted technical reports by references and/or summaries (see Enclosure 3)

3. SCOPE OF REVISION

3.1 Incorporation of customer preference items

Based on customer preference, MHI has decided to revise the DCD. The main revisions are:

1) Based on customer preference, MHI has decided to include Risk-Informed Technical Specification (RITS) Initiative 4b/5b in Chapter 16 of the DCD. Related to Initiative 4b, the number of the components to which Initiative 4b will be applied will be increased (currently, 9 Limiting Condition for Operations included). Initiative 5b will also be incorporated in Chapter16 of the DCD. However, the Probabilistic Risk Assessment (PRA) model required for the RITS will be developed separately.
2) The description of the steam converter will be eliminated from Chapter 10 of the DCD. The steam converter is an optional non-safety component that a COL applicant will determine whether to utilize.

3.2 Progress of the detailed design

The progress on the detailed engineering design has identified some adjustments to the plant arrangement. The main adjustments include:

1) Relocation of the battery room from the Reactor Building to the Power Source Building due to re-evaluation of the battery capacity necessary for the required electrical loads

2) Relocation of the TSC (Technical Support Center) from the Auxiliary Building to the Access Building
3) Relocation of the remote shutdown console to a more protected area

These adjustments will result in the following changes to the US-APWR DCD:

a) Drawings and layout descriptions will be revised. Those affected DCD sections include Tier 1 for the building architectural arrangement, Section 1.2 for the general arrangement, Section 7.5 for the layout of the TSC, Section 8.3 for the Class 1E Electrical Equipment layout, Section 11.5 for the location of the radiation monitors, Section 12.3 for the Radiation Zone Map, Section 13 for the safeguards Physical Security Assessment.
b) The fire hazard analysis in the Appendix A of Chapter 9 will be revised.
c) Fire and flooding scenarios in the risk evaluation in Chapter 19 will not change; however there will be moderate updates to the analysis results for the new arrangement.

3.3 Incorporation of the NRC's comments

The revision to the DCD will incorporate NRC comments and responses to NRC questions raised in MHI's interactions with the NRC since the submittal of the DCD in December 2007. These include:

1) Chapter 2: Revise to identify, without additional description, the limiting site-specific parameters and site-specific information required to be included in the COLA. In addition, the site parameter values will be specified as exact, bounding values, not approximate or mean values.
2) Chapter 3: Eliminate the discussion and potential use of seismic experience data by a COL applicant.
3) Chapter 8: Add a description of grid stability to safety analyses.

3.4 Incorporation of recently submitted technical reports

The revision to the DCD will also incorporate technical reports filed with the NRC since the submittal of the DCD on December 31, 2007. Two technical reports identified for future inclusion in the DCD in Enclosure 2 ("Report Submittal Plan") to MHI's December 31, 2007 letter transmitting the Design Certification Application [1] were submitted in February 2008. These were "Enhanced Information for PS/B design" (MUAP-08002) and "Sub-compartment analyses for US-APWR Design Confirmation" (MUAP-07031-P). Certain elements of these reports will be incorporated in Chapters 3 and 6, respectively. In addition, more description for the sump strainer design will be included in Chapter 6 (see Enclosure 2). Additionally, references in the DCD to the other technical reports filed with the NRC since the submittal to

the DCD will be updated as appropriate.

4. SUMMARY OF THE DCD SECTIONS TO BE MAINLY REVISED

Table-1 summarizes the sections of the DCD to be mainly revised.

5. NO IMPACT ON THE NRC REVIEW SCHEDULE

The above DCD revisions do not involve any changes to the safety analysis or assumptions and are considered to be insignificant. In addition, the DCD revision will be submitted in August, 2008 relatively early in the NRC's review phase 1. Therefore, the DCD revision is not expected to have any impact on the NRC review schedule for the DCD. Furthermore, in the revision, MHI will clearly identify the revised portions of the DCD so that the NRC can easily recognize the revisions.

6. SUMMARY

MHI plans to revise the DCD in August 2008. The revision will be used for the Reference-COL Application to be submitted in September 2008. Because the scope of the revisions is insignificant, the revisions should not impact the anticipated improvements of the NRC review schedule associated with the other proposed submittals presented in other Enclosures.

7. REFERENCE

[1] Letter MHI Ref: UAP-HF-07170 from M. Kaneda (MHI) to U.S. NRC, "Mitsubishi Heavy Industries Ltd. Application for Design Certification of the US-APWR Standard Plant Design" dated on December 31st, 2007.

Table 1 Summary of the DCD sections to be mainly revised

Section	Items	Reasons
Tier 1	Building Architectural Layout	Plant Arrangement Change
1.2	General Arrangement	Plant Arrangement Change
2	Expression of Site Parameter	NRC Comments
3.8	Description for PS/B Structure	Incorporating Technical Report
3.10	Description for Seismic Experience Data	NRC Comments
6.3	Description for Sump Strainer, Sub-compartment Analyses	Incorporating Technical Report
7.5	Layout of TSC	Plant Arrangement Change
8.2	Description of grid stability	NRC Comments
8.3	Class 1E Electrical Equipment Layout	Plant Arrangement Change
Appendix 9A	Fire Hazard Analysis	Plant Arrangement Change
10.4	Elimination of Steam Converter	Customer's Preference
11.5	Location of Radiation Monitors	Plant Arrangement Change
12.3	Radiation Zone Map	Plant Arrangement Change
13, Technical Report	Physical Security Assessment	Plant Arrangement Change
Appendix 15A	x/Q	Plant Arrangement Change
16	RITS Initiative 4b/5b	Customer's Preference
19.1.5.2, 19.1.5.3	Internal Fires / Flooding Risk Evaluation	Plant Arrangement Change