Detailed Contents of US-APWR DCD Revision

June 25, 2008

Mitsubishi Heavy Industries, LTD.

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Background and Purpose

- MHI is planning to submit a revision to the US-APWR DCD (in August 2008) prior to the Reference-COLA submittal in September 2008.
- MHI believes that the revisions in the DCD are minor; therefore, the DCD revision will not impact the NRC's review schedule of the DCD.
- MHI will present additional detailed information on the contents of the DCD revision as well as on the required adjustment of the plant arrangement based on the progress of the detailed engineering design.

Scope of DCD Revision

- The revision will mainly include:
  1. Incorporation of customer preference items appropriate for the DCD
  2. Updates to the detailed engineering design
     - → closed session due to SRI
  3. Incorporation of NRC comments and responses to NRC questions
  4. Incorporation of recently submitted technical reports using references and/or summaries
  5. Change of description related COL information

Updates to Detailed Engineering Design

- Changes to the plant arrangement:
  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
  4. Relocation of Waste and SGBD (Steam Generator Blowdown) Demineralizers, addition of Mobile Waste System
- Impact on the DCD (described in detail in the later slides):

  => Revision of drawings and descriptive information

  => Minor revision of the fire hazard analysis

  => Minor revision of the internal fire and internal flooding PRA

Security-Related Information
Withhold Under 10CFR2.390

Adjustment of Plant Arrangement (1/6)

US-APWR

[SRI]

Reactor Building

EL 25'-3"

Security-Related Information
Withhold Under 10CFR2.390

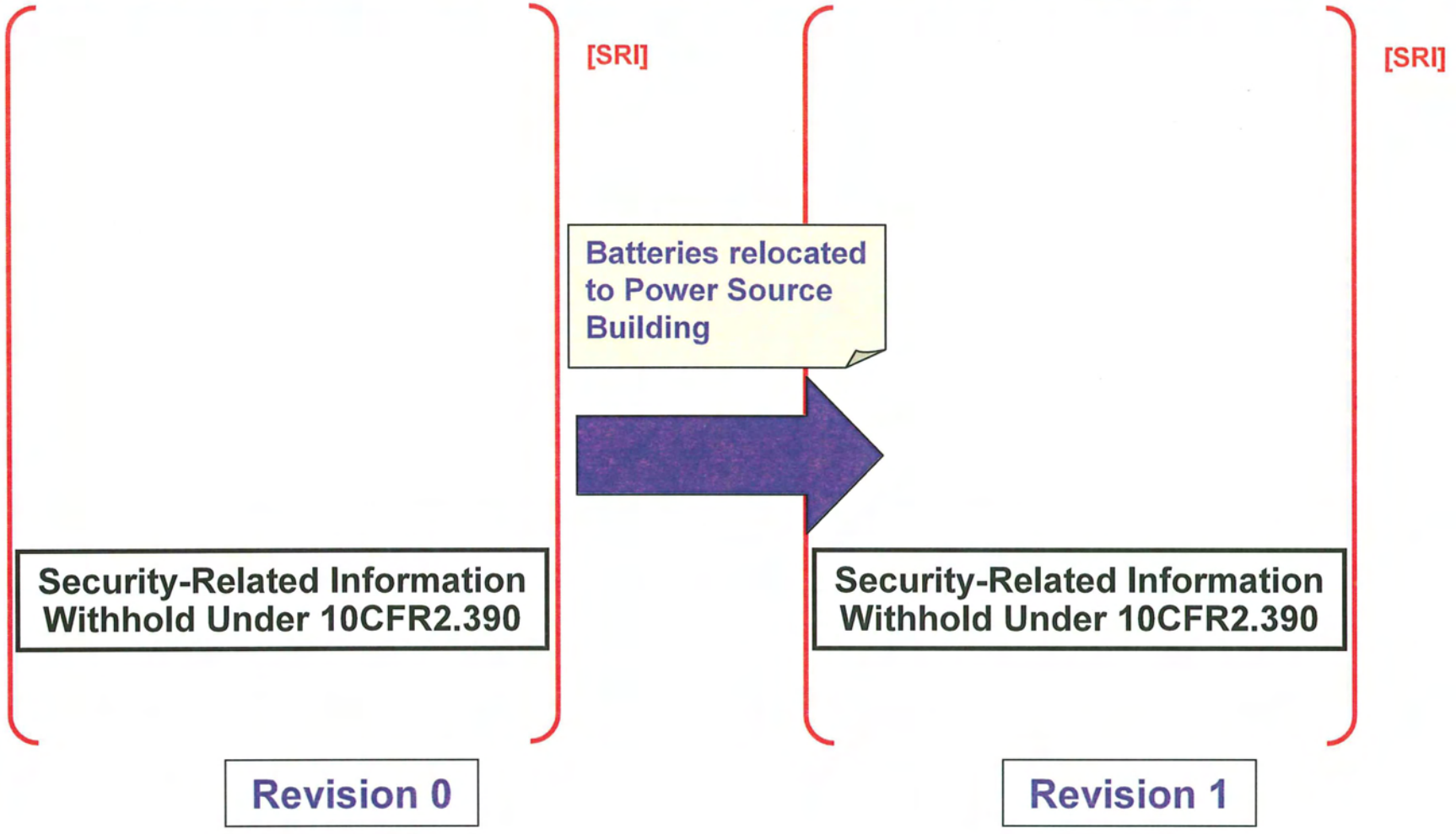
Revision 0

Batteries relocated
from Reactor Building

Revision 1

Security-Related Information
Withhold Under 10CFR2.390

Adjustment of Plant Arrangement (2/6)



Power Source Building EL -26'-4"

Security-Related Information
Withhold Under 10CFR2.390

Adjustment of Plant Arrangement (3/6)

US-APWR

Auxiliary Building

EL 25'-3"

Security-Related Information
Withhold Under 10CFR2.390

[SRI]

Revision 0

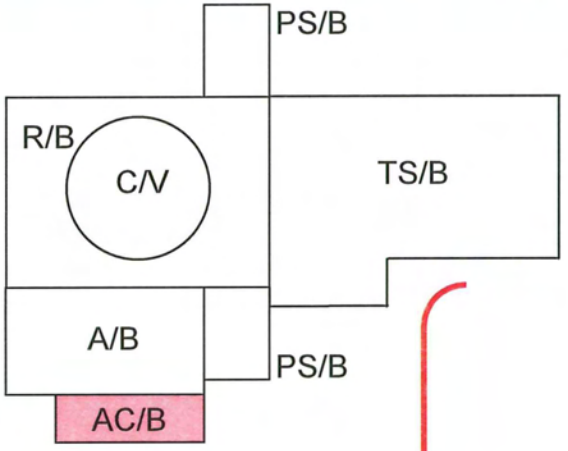
TSC relocated from Auxiliary Building.

SGBD Demineralizers relocated to EL 25'-3".

Revision 1

Security-Related Information
Withhold Under 10CFR2.390

Adjustment of Plant Arrangement (4/6)



Access Building

EL 30'-2"

Security-Related Information
Withhold Under 10CFR2.390

[SRI]

Revision 0

TSC relocated to Access Building

Revision 1

Security-Related Information
Withhold Under 10CFR2.390

Adjustment of Plant Arrangement (5/6)

US-APWR

[SRI]

Reactor Building

EL 76'-5"

Security-Related Information
Withhold Under 10CFR2.390

Revision 0

Remote Shutdown Console relocated to a more protected area in Reactor Building

Revision 1

Security-Related Information
Withhold Under 10CFR2.390

Adjustment of Plant Arrangement (6/6)

US-APWR

Auxiliary Building

EL 3'-7"

Security-Related Information
Withhold Under 10CFR2.390

[SRI]

Revision 0

Waste Mobile System added

Waste and SGBD Demineralizers relocated in relation to above.

Revision 1

DCD Chapter 1 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Figure 1.2-2 to 13, 15 to 39, 49 to 51	Replace the drawings of general arrangement		X			No significant change. Drawings are SRI to be withheld from public.
1.2.1.5.3.2	Eliminate the description of Steam Converter	X				The auxiliary boiler functions as a steam supply. No equipment is safety related.

Reason of Revision:

1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

1.2 General Plant Description

1.2.1.5.3.2 Main Steam Supply System

The main steam supply system (MSS) runs from the steam generator nozzle up to the main turbine stop valve, including the branch piping.

The main function of the MSS is to transport steam from the steam generators to the high-pressure turbine and to the moisture separator reheater over a range of flows and pressures covering the entire operating range from system warmup to valve wide open (VWO) turbine conditions.

The system also supplies steam to the main turbine gland seal system, the emergency feedwater pump turbine(s), deaerator heater and steam converter. The system also dissipates heat generated by the nuclear steam supply system (NSSS) by means of turbine bypass valves (TBV) to the condenser or to the atmosphere through air operated main steam relief valves (MSRV) or the motor operated main steam depressurization valves (MSDV), or the spring-loaded main steam safety valves (MSSV) when either the turbine-generator or condenser is unavailable.

Revision 0

Eliminate the description of Steam Converter. The auxiliary boiler functions as a steam supply.

1.2.1.5.3.2 Main Steam Supply System

The main steam supply system (MSS) runs from the steam generator nozzle up to the main turbine stop valve, including the branch piping.

The main function of the MSS is to transport steam from the steam generators to the high-pressure turbine and to the moisture separator reheater over a range of flows and pressures covering the entire operating range from system warmup to valve wide open (VWO) turbine conditions.

The system also supplies steam to the main turbine gland seal system, the emergency feedwater pump turbine(s), deaerator heater and auxiliary steam supply system (ASSS). The system also dissipates heat generated by the nuclear steam supply system (NSSS) by means of turbine bypass valves (TBV) to the condenser or to the atmosphere through air operated main steam relief valves (MSRV) or the motor operated main steam depressurization valves (MSDV), or the spring-loaded main steam safety valves (MSSV) when either the turbine-generator or condenser is unavailable.

Revision 1

DCD Chapter 2 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
2.0	Update the x/Q values for Main Control Room due to the changes of general arrangement		X			No significant change. See Chapter 15 Revision.
2.0	Use the exact values at key site parameter			X		No significant change.
2.1 to 2.5	Simplify the description of Site Parameters, incorporating the NRC comments			X		The requirements of RG 1.206 are to be summarized. No significant change.

Reason of Revision:

1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

Chapter 2 Site Characteristics (1/2)

Table 2.0-1 Key Site Parameters

Parameter Description	Parameter Value
Subsurface stability – mean minimum shear wave velocity at SSE input at ground surface	~1,000 ft/s
Subsurface stability – mean shear wave velocity for defining firm rock	≧3,500 ft/s
Subsurface stability – mean shear wave velocity for defining firm to hard rock	~6,500 ft/s
Subsurface stability – mean shear wave velocity for defining hard rock	≧8,500 ft/s

Table 2.0-1 Key Site Parameters

Parameter Description	Parameter Value
Subsurface stability –minimum shear wave velocity at SSE input at ground surface	1,000 ft/s
Subsurface stability –shear wave velocity for defining firm rock	3,500 ft/s
Subsurface stability –shear wave velocity for defining firm to hard rock	6,500 ft/s
Subsurface stability –shear wave velocity for defining hard rock	8,500 ft/s

Revision 0

Exact values for the shear wave velocity

Revision 1

Chapter 2 Site Characteristics (2/2)

Revision 0

2.4 Hydrologic Engineering

The US-APWR is designed for a groundwater elevation of 1 ft. below plant grade as well as a maximum level for flood or tsunami of 1 ft. below plant grade. The US-APWR is designed for a maximum local intense precipitation of 19.4 in./hr. The COL Applicant is to provide sufficient information as outlined in SRPs 2.4.1 through 2.4.14 (References 2.4-1 through 2.4-14) and as outlined below to verify that hydrologic related events will not affect the safety-basis for the US-APWR. Table 2.0-1 contains standard plant design input for hydrology.

An independent hydrologic engineering review of hydrologically related site characteristics, performance requirements, and bases for operation of SSCs important to safety, is to consider the following phenomena or conditions.

1. Probable maximum precipitation, on site and on the contributing drainage area
2. Runoff floods for streams, reservoirs, adjacent drainage areas, and site drainage, and flood waves resulting from dam failures induced by runoff floods
3. Surges, seiches, and wave action
4. Tsunami
5. Nonrunoff-induced flood waves attributable to dam failures or landslides, and floods attributable to failure of onsite or near-site water control structures
6. Blockage of cooling water sources by natural events
7. Ice jam flooding
8. Combinations of flood types
9. Low water and/or drought effects (including setdown resulting from surges, seiches, frazil and anchor ice, or tsunami) on safety-relatec cooling water supplies and their dependability
10. Channel diversions of safety-related cooling water sources
11. Capacity requirements for safety-related cooling water sources
12. Dilution and dispersion of severe accidental releases to the hydrosphere relating to existing and potential future users of surface water and ground water resources

2.4.1 Hydrologic Description

2.4.1.1 Site and Facilities

The site topographic map is to be provided that shows any proposed changes to natural drainage features. In addition, all safety-related elevations, structures, exterior accesses, equipment, and systems are to be described from the standpoint of hydrologic considerations, both surface and subsurface.

2.4.1.2 Hydrosphere

The location, size, shape, and other hydrologic characteristics of streams, lakes, shore regions, and ground water environments influencing plant siting are to be described, and

Description of Site Parameters was simplified. (Example of Section 2.4)

Revision 1

2.4 Hydrologic Engineering

The US-APWR is designed for a maximum ground water elevation of 1 ft. below plant grade as well as a maximum level for flood or tsunami of 1 ft. below plant grade. The US-APWR is designed for a maximum local intense precipitation of 19.4 in./hr. Table 2.0-1 contains standard plant design input for hydrology.

The COL Applicant is to provide sufficient information to verify that hydrologic related events will not affect the safety-basis for the US-APWR.

Non safety-related structures and certain safety-related structures whose flooding would not prevent safe operation of the plant need not be designed for the effects of high water or ice. Examples of safety-related structures that may not be adversely affected by flooding or icing include water intake structures and ultimate heat sink basins.

2.4.1 Hydrologic Description

Major external hydrologic considerations for safety operation of the plant include both surface and subsurface sources. The hydrologic description includes the location, size, shape, and other hydrologic characteristics of streams, lakes, shore regions, and ground water environments influencing plant siting, and includes a description of existing and proposed water control structures, both upstream and downstream, that may influence conditions at the site.

2.4.2 Floods

The site-specific design of flood protection for safety-related components and structures of the plant is based on the highest calculated flood water level elevations and flood wave effects (site-characteristic flood) resulting from analyses of several different hypothetical causes. The site-specific design for local probable maximum precipitation demonstrates the capability of site drainage facilities to prevent flooding of safety-related facilities.

2.4.3 Probable Maximum Flood

The site-specific probable maximum flood (PMF) is based on the nearby streams and rivers contribution to the design basis flooding. Any reservoir and channel routing assumptions are addressed for site-specific impact, including coefficients and their bases with appropriate discussion of initial conditions, outlet works (controlled and uncontrolled), and spillways (controlled and uncontrolled).

A site-specific flood analysis also includes the translation of the estimated peak probable maximum precipitation (PMP) discharge to elevation using applicable site profile and precipitation data.

2.4.4 Potential Dam Failures

A site-specific evaluation considers the potential hazard to the plant's safety-related facilities as a result of the seismically induced failures of upstream and downstream water control structures. The evaluation also describes the worst combination failure (domino or simultaneous) that affects the site with respect to the maximum flood.

Revision 0 of Section 2.1 through 2.5 described in detail the type of site-specific information that a COL Applicant should include to satisfy SRP requirements.

Revision 1 simply identifies site-specific information requirements without additional detail.

DCD Chapter 3 Revision (1/2)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
3.7	Incorporate the already-submitted Technical Report, "Enhanced Information for PS/B Design," (MUAP-08002)				X	Information already submitted in the Technical Report.
3.10	Eliminate the discussion and potential use of seismic experience data by a COL applicant, incorporating the NRC comments			X		No significant change.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 3 Revision (2/2)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Table 3D-2	Update the location of Battery in the Environmental Qualification Equipment List		X			Relocation of the Battery room from the Reactor Building to the Power Source Building. Both of the buildings categorized as Seismic Category I. No safety related change.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

3.7 Seismic Design

Reference 3.7-33

Seismic Design and Analysis of Power Source Buildings, MHI Technical Report, Later.

Reference 3.7-33

Enhanced Information for PS/B Design, MUAP-08002, Mitsubishi Heavy Industries, Ltd., February 2008

3.10 Seismic and Dynamic Qualification of Mechanical and Electrical Equipment

Experience-based qualification is eliminated in Rev.1.

Descriptions in Revision 0	Descriptions in Revision 1
3.10.1.1 Qualification Standards This method of qualification of safety-related seismic category I equipment using experience data is not used in the DCD. This is an optional method that can be used after the DCD by the COL Applicant. If used by the COL Applicant, it is to be documented in the equipment qualification file (and EQSDS) and readily available for review. This methodology is also discussed in Subsection 3.10.4.2.	Experience-based qualification is not used for any equipment.
3.10.2 Methods and Procedures for Qualifying Mechanical and Electrical Equipment and Instrumentation • Qualify the equipment through the use of experience data (optional) *(This item is one of the methods for seismic qualification of equipment.)*	(This item is deleted)
3.10.4 Test and Analyses Results and Experience Database • Qualification by an experience-based approach, identification of the type of experience and the source of experience database, if applicable. *(This item is one of the items should be included in EQSDSs)*	(This item is deleted)
3.10.4.2 Experience Based Qualification ***The whole of paragraph***	Experience-based qualification is not used for any equipment.

APPENDIX 3D US-APWR
EQUIPMENT QUALIFICATION LIST

Table 3D-2 Environmental Qualification List (Example)

Equipment Tag	Description	Location	Purpose
BCP-A	A-Class 1E Battery Charger	R/B	RT, ESF
DCC-A	A-Class 1E DC Switchboard	R/B	RT, ESF
DCC-A1	A1-Class 1E DC Switchboard	R/B	RT, ESF

Revision 0

Relocate the Battery Room from R/B to PS/B

Equipment Tag	Description	Location	Purpose
BCP-A	A-Class 1E Battery Charger	PS/B	RT, ESF
DCC-A	A-Class 1E DC Switchboard	PS/B	RT, ESF
DCC-A1	A1-Class 1E DC Switchboard	PS/B	RT, ESF

Revision 1

DCD Chapter 5 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
5.2.3.2.3	Add the description of metallic insulation, incorporating a future submittal Technical Report related to "Sump Strainer"				X	The assumption of the debris generation to decrease the debris head loss (as described in the letter dated April 16, 2008 UAP-HF-08080).

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

5.2.3 Reactor Coolant Pressure Boundary Materials

Added the description of metallic insulation to Subsection 5.2.3.2.3, incorporating a Technical Report related to "Sump Strainer."

(Revision 0) No information about metallic insulation.

(Revision 1) Added the following description in the first sentence of Subsection 5.2.3.2.3.

The US-APWR design utilizes the reflective metal insulation (RMI), to the great extent practical, for the pipe lines and components subject to jet impingement from a high-energy line break, in order to mitigate the generation of insulation debris. RMI is made of stainless steel and applied to most part of the RCS components and piping.

DCD Chapter 6 Revision

Section/ Table/Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
6.2.2.2	Incorporate the already-submitted Technical Report, "Sump Strainer Performance," MUAP-080001				X	Information already submitted in the Technical Report.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

6.2.2 Containment Heat Removal Systems (1/5)

Added new information about the technical report of the US-APWR Sump Strainer Performance and revised the description about sump strainer in Section 6.2

(Revision 0) No subsection 6.2.2.2.6 ECC/CS Strainers

(Revision 1) Added following subsection :

6.2.2.2.6 ECC/CS Strainers

These components are included in the ECCS. Figures 6.2.2-8 and 6.2.2-9 show four independent sets of ECC/CS strainers located in the RWSP. The strainer design includes redundancy, a large surface area to account for potential debris blockage and maintain safety performance, corrosion resistance, and a strainer hole size to minimize downstream effects. Additional design attributes are described in the US-APWR Sump Strainer Performance document (Ref 6.2-34).

As described in Chapter 3, the ECC/CS strainers are Equipment Class 2, Seismic Category I.

6.2.2 Containment Heat Removal Systems (2/5)

(Revision 0) Including the excessive information duplicated with the Sump Strainer Performance Evaluation document in Subsection 6.2.2.2.5 "Refueling Water Storage Pit"

(Revision 1) Deleted following sentence in Subsection 6.2.2.2.5 "Refueling Water Storage Pit"

The ECC/CS strainers are a passive disc, fin, or cassette-type design with a large "footprint" that presents a surface area of approximately 2,150 ft^2, sufficient to preclude debris clogging. The ECC/CS strainers are made of stainless steel, and use perforated plates in a layered disc design to limit the maximum "pass through" debris size to 0.071 in. Important design features of the US-APWR and CS/RHR and SI suction piping ECC/CS strainers include the following:

- **Active portion of strainer above the RWSP floor**
- **Strainer support base acts as a curb against potential debris**
- **Fully submerged with recirculation sufficient to preclude flow vortexing**
- **Maximum debris size "pass through" is 0.071 in.**

6.2.2 Containment Heat Removal Systems (3/5)

(Revision 0) Including excessive information and COL Item duplicated with the Sump Strainer Performance Evaluation document in Subsection 6.2.2.3 "Design Evaluation" and table 6.2.2-2

(Revision 1) Referred and summarized "the Sump Strainer Performance Evaluation document" in subsection 6.2.2.3 "Design Evaluation"

The Sump Strainer Performance Evaluation document (Ref. 6.2-34) evaluates parameters described in NEI 04-07 (Ref. 6.2-24). Additional detailed evaluation of these parameters are provided in reference 6.2-34 and are summarized below:

- **Identification of insulation types and coating systems used and restricted in the US-APWR and associated potential for debris generation and differential pressure across the strainer**
- **Break selection criteria and bounding break locations**
- **Debis generation, characterization and transport assumptions associated with affected insulation, coatings, and latent debris**

6.2.2 Containment Heat Removal Systems (4/5)

(Cont.)

- Total strainer head loss associated with fibrous and particulate debris, "chemical effect“
- Net Positive Suction Head associated with total strainer head loss, hydraulic head loss of the equipment and piping, including uncertainty margins
- Upstream effects including hold up volumes conservative drainage flow path and capacity assumptions
- Downtream effects potentially impacting the safety functions associated with pumps, valves, heat exchangers, instrumentation (sensing lines and flow measuring devices), spray nozzles, reactor vessel flow paths

6.2.2 Containment Heat Removal Systems (5/5)

(Revision 0)
Including COL Item 6.2(1) about the sump strainer performance in Subsection 6.2.8
No Reference document about US-APWR Sump Strainer Performance in Subsection 6.2.9

(Revision 1) Deleted COL Item 6.2(10)

"Performance characteristics and effectiveness of the ECCS/CS strainer is evaluated by the COL applicant. The evaluation includes the effects of debris, hydraulic resistance, debris transport and vendor test data. "

(Revision 1) Added following document as Reference

US-APWR Sump Strainer Performance, MUAP-080001-P, Rev. 1(Proprietary), and MUAP-080001-NP, Rev. 1(Non-Proprietary), September 2008.

DCD Chapter 7 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
7.5.1.6.1 Figure 7.5-3	Update the description and layout of the Technical Support Center (TSC)		X			No significant change of the facilities of the TSC and the distance from Main Control Room. The drawing is SRI to be withheld from public.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 8 Revision (1/2)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
8.2.1 8.2.2	Add and update the description of Off Site Power System.			X		No significant change.
8.2.3	Add description of grid stability associated with the offsite power in Chapter 15, incorporating the NRC comments			X		Clarification of the assumption.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 8 Revision (2/2)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Table 8.3.1-9	Update the location of Electrical Equipment in Electrical Equipment Location List		X			Relocation of the Battery room from the Reactor Building to the Power Source Building. Both of the buildings categorized as Seismic Category I. No safety related change.
Figure 8.3.1-4	Update the Class 1E Electrical Equipment layout		X			Ditto The drawings are SRI to be withheld from public.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

8.2 Off Site Power System (1/5)

8.2.1.2 Offsite Power System

XXXXXXX. For all these MV buses, if power is lost from one source, it is automatically transferred to the other source. XXXXX

Revision 0

Added bus transfer scheme of onsite power system to Section 8.2 according to RAI response.

8.2.1.2 Offsite Power System

XXXXXXX. For all these MV buses, if power is lost from one source, the buses are automatically transferred to the other source by fast or slow transfer scheme. At that time, if bus voltage is adequate, fast transfer is initiated. If this is not the case, slow transfer is initiated. Detail explanation of bus transfer scheme is described in Subsection 8.3.1.1.2.4.XXXXX

Revision 1

8.2 Off Site Power System (2/5)

8.2.1.2 Offsite Power System

The UATs and RATs are provided with differential and over-current protection schemes. The MT is provided with a differential current protection scheme.

Revision 0

Changed description of transformer protection according to RAI response.

8.2.1.2 Offsite Power System

The MTs, UATs and RATs have differential, over-current, sudden pressure and ground over-current protection schemes per IEEE Std 666

Revision 1

8.2 Off Site Power System (3/5)

8.2.2 Analysis

●XXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
●XXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Revision 0

Added conformance with SRP8.2 App A according to RAI response.

8.2.2 Analysis

●XXXX
XXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

●Standard Review Plan (SRP) Section 8.2 Appendix A
The US-APWR has GLBS which is designed and tested in accordance with Appendix A of SRP Section 8.2. In addition, the Class 1E MV buses are normally supplied from RAT as normal PPS. Therefore, immediate access circuit is assured without isolating the main generator from MT and UAT in case of electrical fault in the power supply circuit affecting the UATs.

Revision 1

8.2 Off Site Power System (4/5)

8.2.2.1 Applicable Criteria

- GDC 2

XXXXX. The effects of natural phenomena are considered in designing the offsite power system, but it not specifically designed to withstand earthquakes, tornadoes or floods.
XXXXXXX.

Revision 0

Changed description of conformance with GDC 2 according to RAI response.

8.2.2.1 Applicable Criteria

- GDC 2

XXXXX. The effects of natural phenomena are considered in designing the offsite power system to withstand without loss of capability to perform their intended functions within the conditions as provided in Chapter 2 such as high and low atmospheric temperatures, high wind, rain, ice and snow, but it not specifically designed to withstand earthquakes, tornadoes or floods. Lightning protection of the offsite power system is described in conformance with RG 1.204.
XXXXX

Revision 1

8.2 Off Site Power System (5/5)

8.2.3 Design Bases Requirement

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Revision 0

Added requirement of power supply to RCPs assumed by Chapter 15 according to RAI response.

Revision 1

8.2.3 Design Bases Requirement

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Transmission system stability is consistent with the transient and accident analysis in Chapter 15. It is assumed that the power supply to RCPs following a unit trip is maintained at least 3 seconds by the main generator (turbine generator coast down) or the offsite power in Chapter 15. Following a unit trip, stability of the offsite power is expected to be maintained, including the power supply to the RCPs. In addition, when the offsite power is lost concurrent with a unit trip, the turbine-generator is still connected to the UATs and RCPs are powered by turbine-generator. The large inertia of the turbine-generator will maintain voltage and frequency more than 3 seconds. In case of a unit trip due to an electrical fault, the main transformer circuit breaker opens and the non-Class 1E buses are powered continuously via RAT. The COL applicant is to perform grid stability analysis to conform the assumption in Chapter 15. In addition, frequency decay which is contributory to the flow of reactor coolant system is also to be provided by the COL applicant.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

8.3.1 AC Power System

Name	Bldg/F	Elevation	Room
A-Class 1E Battery	R/B 2F	EL 25'-3"	A-Class 1E Battery Room
A-Class 1E Battery Charger	R/B 2F	EL 25'-3"	A-Class 1E Battery Charger and UPS Room
A-Class 1E DC Switchboard	R/B 2F	EL 25'-3"	A-Class 1E Battery Charger and UPS Room

Revision 0

DC power equipment relocated from Reactor Building to Power Source Building.

Name	Bldg/F	Elevation	Room
A-Class 1E Battery	PS/B B1F	EL -26'-4"	A-Class 1E Battery Room
A-Class 1E Battery Charger	PS/B B1MF	EL -14'-2"	A-Class 1E Battery Charger Room
A-Class 1E DC Switchboard	PS/B B1MF	EL -14'-2"	A-Class 1E Battery Charger Room

Revision 1

Table 8.3.1-9 Electrical Equipment Location List

DCD Chapter 9 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
9A	Update the description and results of Fire Hazard Analysis in entire Appendix		X			No change of the fire scenarios in the risk evaluation. Minor updates of the analysis results.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

Appendix 9A Fire Hazard Analysis (1/9)

- The Appendix 9A (FHA) revision will mainly include:

1. Technical Revision

- Reflect the changes of plant general arrangement.

  e.g. Relocation of Battery Room, Remote Shutdown Console.

- Reflect the other engineering progress.

  e.g. Progress of Cable Raceway Route

2. Editorial Revision

- Unification and correction of description in FHA.

Appendix 9A Fire Hazard Analysis (2/9)

- Fire Hazard Analysis of each fire area includes:
  1. The explanation of fire area
  2. Fire Detection and Suppression Features
  3. Smoke Control Features
  4. Fire Protection Adequacy Evaluation
  5. Fire Protection System Integrity
  6. Safe Shutdown Evaluation
  7. Radioactive Release to Environment Evaluation

Note ; Red character sections may be revised to reflect technical and editorial revision.

Green character sections may be revised to reflect editorial revision.

Appendix 9A Fire Hazard Analysis (3/9)

Sample of Fire Hazard Analysis Result (only the technical revision section)
FA2-302 A-Class 1E UPS Room

This room is changed from "battery charger room" to "UPS room", because of the relocation of battery room.

➢ 9A.3.38 FA2-302 A-Class 1E UPS Room

The FA2-302 train A Class 1E UPS room fire area is located on the 2F floor level on the east side of the non-radiologically controlled access portion of the reactor building as depicted in Figures 9A-5 and 9A-6. The room, which is designated as a single fire zone, FA2−302-01, contains the train A Inverter Unit, UPS for MOV, Solenoid Distribution Panel, and Safety AC120V Switch Board and so forth. The fire loading due to this combustible content is not expected to exceed 3.9E+04 Btu/ft2.

Revision 1

Appendix 9A Fire Hazard Analysis (4/9)

Change the description of adjacent area to refer Table 9A-3.
Add the description of associated train for each fire area.

(continued)

The borders of this fire area are constructed using construction techniques and material which results in fire resistance that provides at least a 3-hour ASTM E-119 fire rating. The adjacent fire zone for each fire zone is presented in Table 9A-3. Openings and penetrations into this fire area are protected with fire protection features provide at least 3-hour fire resistance.

Revision 1

The area is identified as being associated with safety train A.

Appendix 9A Fire Hazard Analysis (5/9)

Modify the description of reactor transients to reflect the technical revision.
- Change of GA
- Progress of design

(continued)

Safe Shutdown Evaluation

A fire in this area could initiate reactor transients as follows.

- XXXXXXXXXXXXXXXX
- Rod Cluster Control Assembly Misalignment (System Malfunction or Operator Error)
- Complete Loss of Forced Reactor Coolant Flow / (Loss of Non Emergency AC Power to the Station Auxiliaries / Partial Loss of Forced Reactor Coolant Flow)
- Loss of Normal Feedwater Flow
- Inadvertent Operating of a Pressurizer safety or Relief Valve
- XXXXXXXXXXXXXXXX

Revision 1

Appendix 9A Fire Hazard Analysis (6/9)

Change description to reflect the design progress.
Add the description of the potential to damage the systems for mitigation functions and safe shutdown functions.

(continued)

A fire in this fire area has the potential to damage the following typical systems of mitigation functions and safe shutdown functions associated with safety train A.

- A-Safety Inverter Unit
- A-Class 1E I&C Power Transformer
- A-MOV Inverter
- XXXXXXXXXXXXXXXXXX
- XXXXXXXXXXXXXXXXXX

Revision 1

Since this fire area is separated from the Train B, C, and D areas by 3-hour fire rated barriers, two safety trains of equipment in other fire areas can achieve and maintain safe shutdown from full power, and the fire in this fire area, therefore, will not adversely impact the ability of achieving safe shutdown.

Appendix 9A Fire Hazard Analysis (7/9)

Change the description, if the building of fire area is changed .

(continued)

Radioactive Release to Environment Evaluation

This area is located in the south reactor building portion of the plant which is within the non-radiologically controlled access area of the reactor building. Radiological material is not allowed within this building area by administrative controls. There are no piping systems in the area that could contain fluids with radiological content. As such, a fire in this area is not deemed credible of causing a radioactive release to the environment.

Revision 1

Appendix 9A Fire Hazard Analysis (8/9)

Table 9A-2 is modified to reflect technical and editorial revision.

Table 9A-2 Fire Hazard Analysis Summary (Sheet 137 of 277)

Fire Zone: **FA2-302-01**

Building:	Reactor
Floor(s):	2F, 2MF
Fig:	9A-5, 9A-6
Sect:	3.38

Area Designation:	A-Class 1E UPS Room
Zone Designation:	A-Class 1E UPS Room
Associated Safety Division(s)	A

Applicable Regulatory and Code Ref(s):
IBC, RG 1.189; NFPA 10, 14, 72 and 804

Adjacent Fire Zones: (Primary Inter face Listed See Table 9A-3 For Complete Listing)	Wall	Floor	Ceiling
	FA2-201-02 FA2-301-01 FA2-303-01 FA2-304-01	FA2-202-01 See Table 9A-3	FA2-402-01

Fire Barrier Description:
Walls of reinforced concrete or other material providing a minimum 3-hour fire resistance rating form the boundaries of this room. The door to the room is 3-hour fire rated and all openings and penetrations into the room are rated to provide 3-hour fire resistance.

Potential Combustibles	
Item	Heat Release (Btu)
Panels	3.8E+06
High Voltage Cables	2.1E+06
Low Voltage Cables	1.6E+06
Control Cables	2.8E+06
Instrumentation Cables	2.5E+06

Fire Detection - Primary	Fire Detection - Backup
Automatic smoke	Manual Fire Alarm Pull Station
Fire Suppression - Primary	**Fire Suppression - Backup**
Fire Hose Station	Portable Fire Extinguisher

Revision 1

Fire Zone Combustible Summary	BTU/ft^2
Anticipated Combustible Loading:	3.2E+04
Maximum Anticipated Combustible Loading:	3.9E+04

Floor Area (ft^2)
400

Fire Impact to Zone	
Suppression System Operates	Suppression System Fails to Op.
A quickly detected and suppressed fire in this room will minimize fire damage to the safety related equipment consistent with GDC-3.	A fire in this fire zone could initiate reactor transients, and it has the potential to damage train A mitigation functions. Train B, C, and D of mitigation functions remains free from fire damage. A fire zone has the potential to cause functional damage of safe shutdown functions associated with safety train A. Train B, C and D remain free from the damage.

Appendix 9A Fire Hazard Analysis (9/9)

- The Appendix 9A will be revised, however each fire area that contains safe shutdown equipment is separated from fire area of other train.
- There is no impact on the plant in terms of safe shutdown capability.

DCD Chapter 10 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
10.4.10	Change the pH controller of secondary side coolant from ammonia to morpholine, and add the components related chemical controller.	X				No safety related equipment
10.4.11	Eliminate the description and figures related to Steam Converter from "Auxiliary Steam Supply System" Section	X				The auxiliary boiler functions as a steam supply. No safety related equipment

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

10.4.10 Chemical Injection System

- Change of pH controller from ammonia to morpholine and DMA

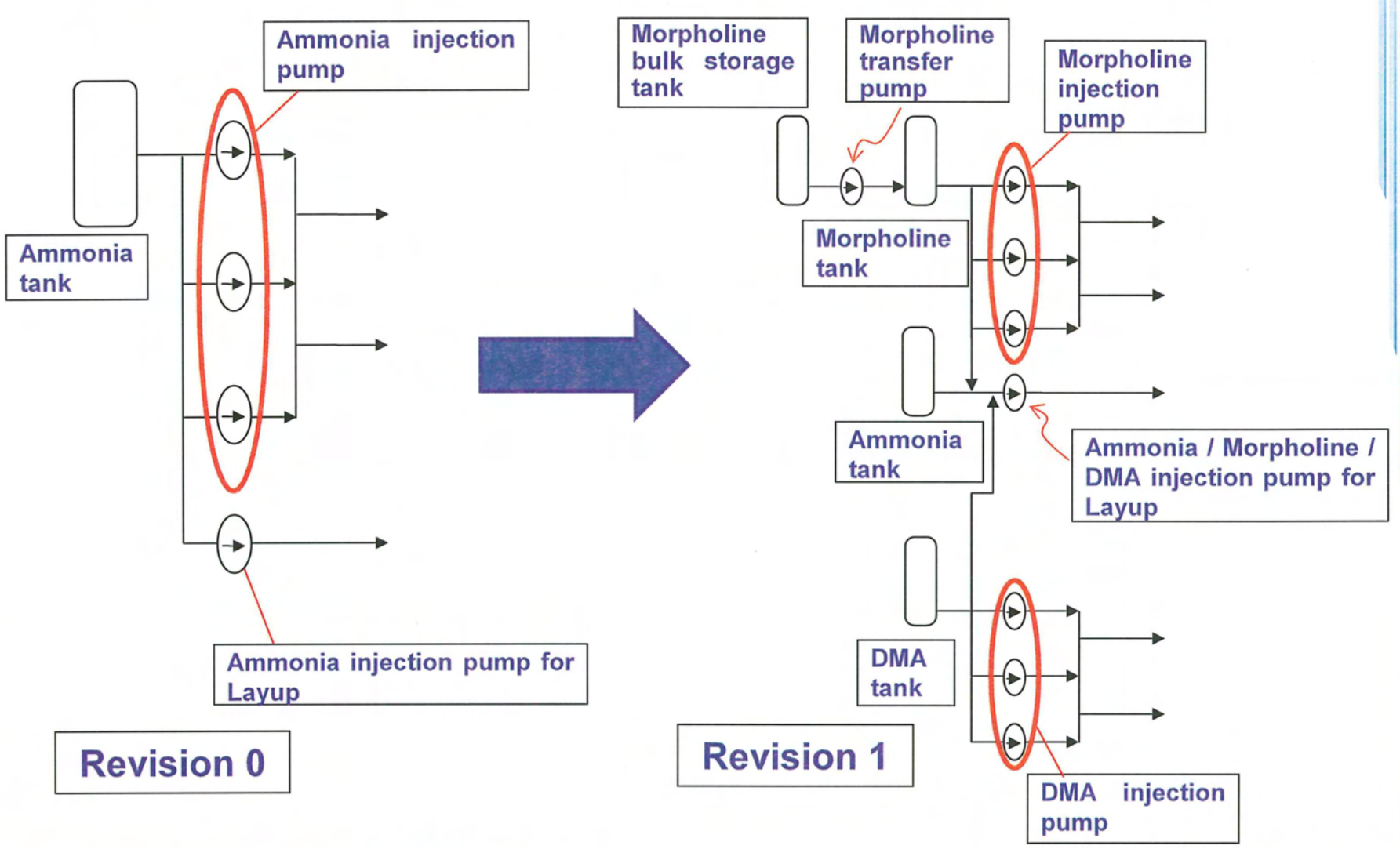
  Addition of components relating morpholine and DMA (chemical tank, injection pump, etc)

- Incorporated bulk chemical system from COL item into standard design

  Addition of components relating bulk chemical system (bulk storage tank, transfer pump, etc)

10.4.10 Chemical Injection System

- SCIS flow diagram

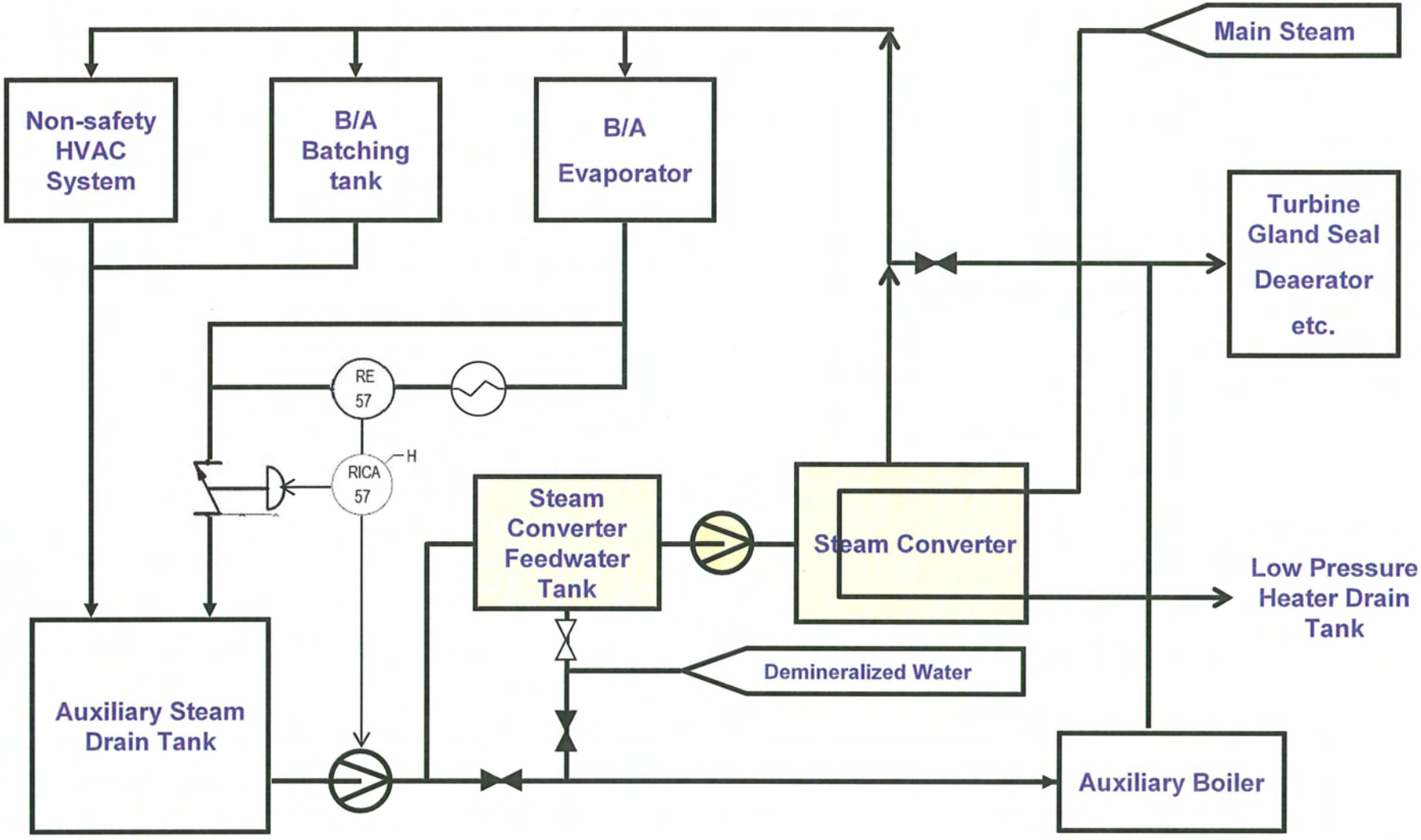


10.4.11 Auxiliary Steam Supply System

- Elimination of the steam converter
- Elimination of components relating the steam converter elimination (pump, piping, valves, instruments)
- Auxiliary steam source change to the main steam or turbine extracting steam

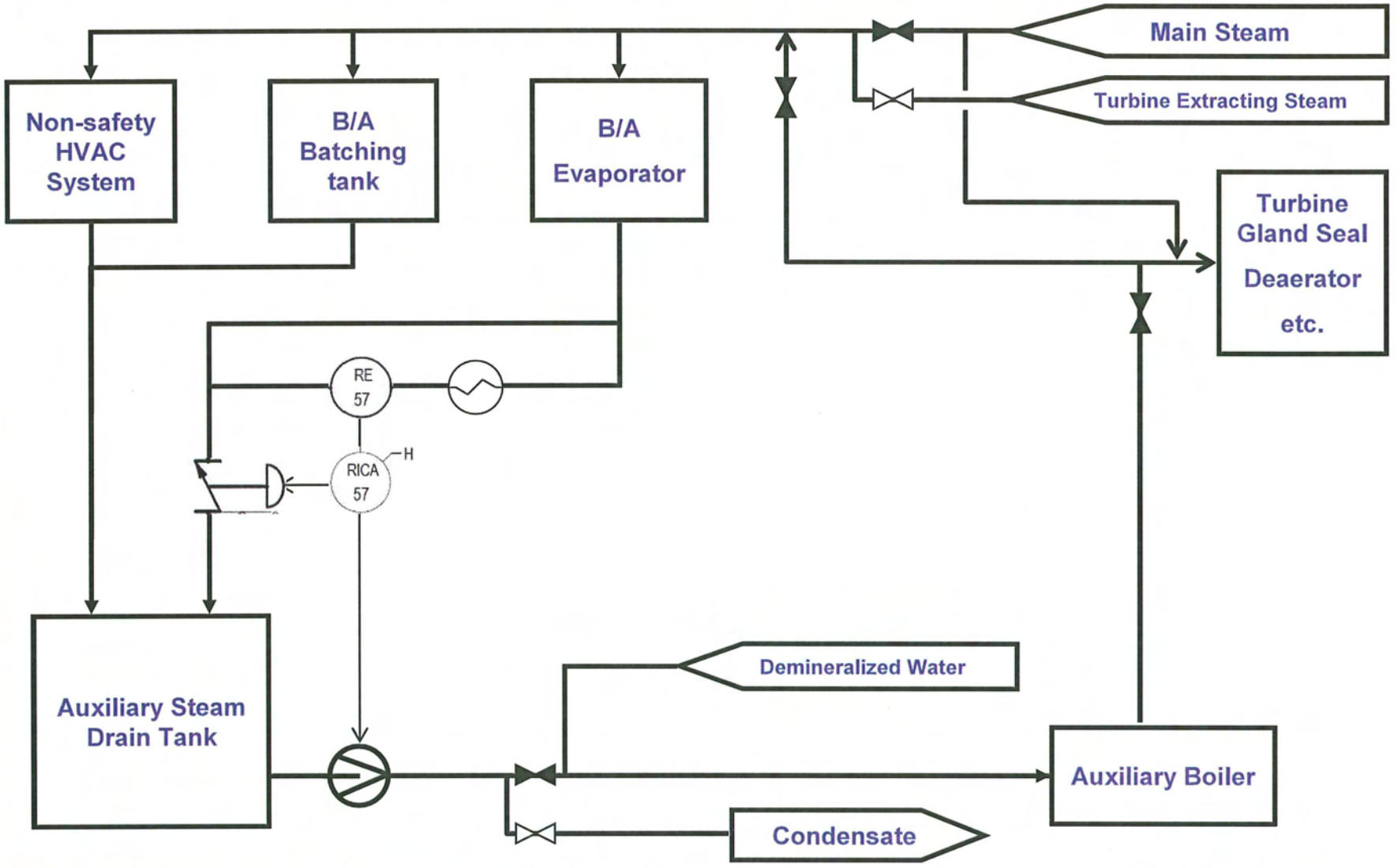
10.4.11 Auxiliary Steam Supply System

- ASSS flow diagram in DCD rev.0



10.4.11 Auxiliary Steam Supply System

- ASSS flow diagram in DCD rev.1



DCD Chapter 11 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Figure 11.5-2a to 2j	Update the drawings of plant arrangement. Location of Radiation Monitors is not changed.		X			No change for Radiation Monitors. The drawings are SRI to be withheld from public.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 12 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Figure 12.3-1 to 6	Update the drawings of plant arrangement. Radiation Zone is not changed on the Map.		X			No change for Radiation Zone. The drawings are SRI to be withheld from public.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 13 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Technical Report	Update the drawings of general arrangement in "Physical Security Element Review"		X			No significant change. The drawings are SRI to be withheld from public.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 15 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Table 15.6.5-16	Update the MCR dose values due to the changes of general arrangement		X			No significant change.
Table 15A-18, 20 to 23	Update the x/Q values due to the changes of general arrangement		X			No significant change.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

Chapter 15 MCR dose values

Table 15.6.5-16 Radiological Consequences of the LOCA

Dose Location	TEDE Dose (rem)
EAB (0.5 to 2.5 hours)	13
LPZ outer boundary	13
MCR dose	
Airborne activity entering the MCR	4.5
Direct radiation from the containment	8.2×10^{-3}
Direct radiation from the radioactive plume	2.1×10^{-4}
Direct radiation from the recirculation filters	9.2×10^{-3}
Total	4.5

Dose Location	TEDE Dose (rem)
EAB (0.5 to 2.5 hours)	13
LPZ outer boundary	13
MCR dose	
Airborne activity entering the MCR	4.4
Direct radiation from the containment	8.2×10^{-3}
Direct radiation from the radioactive plume	2.1×10^{-4}
Direct radiation from the recirculation filters	9.2×10^{-3}
Total	4.5

Chapter 15

Revision 0

MCR dose values are updated due to the change of general arrangement

Revision 1

Chapter 15 χ/Q values

Table 15A-22 Main Control Room χ/Q for LOCA Analysis

Accidents		LOCA			
Sources		Plant vent		Ground Level containment release point	
Receptors		Intake	Inleak	Intake	Inleak
		MCR HVAC Intake	Reactor building Door	MCR HVAC intake	Class 1E electrical room HVAC intake
Horizontal Distance (m)		56	37	32	27
Vertical Distance (m)		52	60	32	33
χ/Q (s/m³)	0-8 hr	1.1×10^{-3}	1.3×10^{-3}	2.2×10^{-3}	2.4×10^{-3}
	8-24 hr	6.6×10^{-4}	7.8×10^{-4}	1.3×10^{-3}	1.4×10^{-3}
	24-96 hr	4.2×10^{-4}	4.9×10^{-4}	8.3×10^{-4}	9.1×10^{-4}
	96-720 hr	1.9×10^{-4}	2.2×10^{-4}	3.6×10^{-4}	4.0×10^{-4}

Accidents		LOCA			
Sources		Plant vent		Ground level containment release point	
Receptors		Intake	Inleak	Intake	Inleak
		MCR HVAC intake	Reactor building door	MCR HVAC intake	Class 1E electrical room HVAC intake
Horizontal Distance (m)		56	37	32	27
Vertical Distance (m)		52	60	32	33
χ/Q (s/m³)	0-8 hr	1.1×10^{-3}	1.3×10^{-3}	2.2×10^{-3}	2.4×10^{-3}
	8-24 hr	6.6×10^{-4}	7.7×10^{-4}	1.3×10^{-3}	1.4×10^{-3}
	24-96 hr	4.2×10^{-4}	4.9×10^{-4}	8.3×10^{-4}	9.1×10^{-4}
	96-720 hr	1.9×10^{-4}	2.2×10^{-4}	3.6×10^{-4}	4.0×10^{-4}

Chapter 15

Revision 0

MCR χ/Qs are updated due to the change of general arrangement

Revision 1

Note: These χ/Qs are input for MCR dose evaluation

Tables 15A-18, 15A-20, 15A-21 and 15A-23 are also updated by the same token.

DCD Chapter 16 Revision

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Entire	Increase the number of the components applied for Initiative 4b (currently, 9 LCOs included)	X				Additional information.
Entire	Incorporate Initiative 5b	X				Additional information.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

Risk-Informed Tech. Specs.: Revision 0

- DCD Rev.0 applied Risk-Informed Tech. Specs. Initiative 4b (Risk Managed Tech. Specs.: RMTS) to 9 LCOs*.
  - The program which allows Completion Time to be flexibly determined on site by a licensee using PRA result based on the real time plant configuration.
- Other Initiatives such as 5b (Surveillance Frequency Control Program), 1 (Modified End States) and 7 (inoperable barriers) may be implemented in the future.

*LCO: Limiting Condition for Operation

Risk-Informed Tech. Specs.: Revision 1

- **Initiative 4b**
  - Increase the LCOs (SSCs*) to which initiative 4b is applied.
- **Initiative 5b (Surveillance Frequency Control Program: SFCP)**
  - Incorporate initiative 5b into the Technical Specifications to the extent allowed by regulation.
  - This program relocates Surveillance Frequencies (SFs) to licensee control.

* SSCs: Structures, Systems, and Components

Revision 0 to Revision 1

- Based on the Customer's Preference
- Extension of Initiative 4b
  - SSCs modeled by PRA
  - As many as possible unless justified to be excluded by other reasons
- Incorporation of Initiative 5b
  - Time based SF, NOT Event based
  - Exclude SFs that reference other programs (ex. IST)
  - Followed TSTF-425 Rev.2

Initiative 4b applied SSCs

Rev.0	Rev.1
Safety Injection System	RTS Instrumentation
Containment Spray System	ESFAS Instrumentation
CCW System	PAM Instrumentation
ESW System	SDVs
Main Control Room HVAC System	Accumulators
AC Sources	Safety Injection System
DC Sources (Operating and Shutdown)	RWSP
Inverters	Containment Air Locks
	Containment Isolation Valves
	Containment Spray System
	MSIVs
	MSDVs
	EFW Pit
	CCW System
	ESW System
	AC Sources
	DC Sources (Operating)
	Inverters
	Distribution Systems

Incorporation of Initiative 5b

- Time based Surveillance Frequency for each surveillance Requirement is described as follows (example):
  - ex. [xx hours OR In accordance with Surveillance Frequency Control Program]
- Definition of SFCP is provided in Administrative Control Section
- Followed TSTF-425 Rev.2

DCD Chapter 19 Revision (1/3)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
19.1.5.2.2	Update the description for "Results from the Internal Fire Risk Evaluation" due to the changes of general arrangement		X			No significant changes of the fire risk. Minor updates of the analysis results.
19.1.5.3.2	Update the description for "Results from the Internal Flooding Risk Evaluation" due to the changes of general arrangement		X			No significant changes of the flooding risk. Minor updates of the analysis results.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 19 Revision (2/3)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Table 19.1-55 to 75	Update the values of results from the Internal Fire/Flooding Risk Evaluation due to the changes of general arrangement		X			No significant changes of the fire and flooding risk. Minor updates of the analysis results.
19.1.6	Add description of low power and shutdown PRA			X		Additional information

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

DCD Chapter 19 Revision (3/3)

Section /Table /Figure	Detailed Contents of Revision	Reason of revision				Notes
		1	2	3	4	
Table 19.2-9	Update the values of results from the Internal Fire/Flooding Risk Evaluation regarding SAMDA due to the changes of general arrangement		X			No effects to the conclusion. Minor updates of the analysis results.

Reason of Revision:
1. Incorporation of customer preference items appropriate for the DCD
2. Update of the detailed engineering design
3. Incorporation of NRC comments and responses to NRC questions
4. Incorporation of recently submitted technical reports by references and/or summaries

Chapter 19 PRA and SA (1/6)

Internal Fire and Internal Flood PRA(1/4)

- **Reflect plant arrangement & design changes on Internal Fire PRA and Internal Flood PRA (Subsection 19.1.5.2 and 19.1.5.3)**
  - Fire: Fire Compartment Areas & Equipment, Fire Barriers, Cable Routings
  - Flood: Flood Compartment Area & Equipment, Watertight Barriers, Piping lengths, and Water inventories
- **Primary impact comes from design changes in the reactor building**
- **No changes in the methodologies**
- **No changes in the event trees and fault trees**

Chapter 19 PRA and SA (2/6)

Internal Fire and Internal Flood PRA(2/4)

- **Effects the results of internal fire PRA**
  - **Total risk of internal fire**
    - **No significant changes in the total CDF & LRF**
  - **Dominant scenarios of internal fire**
    - **Major fire scenarios in the yards are unchanged**
      1. Yard (Switchyard) fire (70% of CDF)
      2. FA6-101-04 (Yard adjacent to T/B) fire (10% of CDF)
    - **Changes in the ranking of other scenarios**
      - Individual scenario frequencies are very low (<~10^{-7}/RY)
        - » Fire impact is limited in local areas in the reactor building
        - » Only simultaneous random failures of intact trains lead to core damage

Internal Fire and Internal Flood PRA(3/4)

- **Effects the results of internal flood PRA**
  - ✧**Total risk of internal flood**
    - **No significant changes in the total CDF & LRF**
  - ✧**Dominant scenarios of internal flood**
    - **No particular major scenarios**
      - No significant change in the risk profile
    - **Changes in the scenario rankings in the reactor building**
      - Individual scenario frequencies are very low (<~10^{-7}/RY)
        - » Flooding impact is limited in East / West side in the reactor building
        - » Only simultaneous random failures of intact areas lead to core damage

Chapter 19 PRA and SA (4/6)

Internal Fire and Internal Flood PRA(4/4)

- **Insignificant changes in the DCD**
  - 19.1.5.2 Internal Fires Risk Evaluation
  - 19.1.5.2.1 Description of the Internal Fires Risk Evaluation
    - **19.1.5.2.2 Results from the Internal Fires Risk Evaluation**
  - 19.1.5.3 Internal Flooding Risk Evaluation
    - 19.1.5.3.1 Description of the Internal Flooding Risk Evaluation
    - **19.1.5.3.2 Results from the Internal Flooding Risk Evaluation**
- **Insignificant changes in the Technical Report**
  - **US-APWR Probabilistic Risk Assessment, MUAP-07030**
    - **Chapter 22 and Chapter 23**

Chapter 19 PRA and SA (5/6)

Response to RAI

- The following are incorporated in the low power and shutdown PRA, subsection 19.1.6, reflecting RAI No.1 question 7
  - Description of initiating events, failures, and core-damage sequences for each POS (12 pages)
  - Revised tables of important human actions and SSCs for each POS (18 tables)
  - Description of the methodology used to evaluate other POSs than mid-loop operation (1 page)
- Additional descriptions are based on information provided in Technical Report, MUAP-07030

Chapter 19 PRA and SA (6/6)

SAMDA

- **Update of SAMDA Analysis (Subsection 19.2.6)**
  - **SAMDA analysis will be updated reflecting the internal fire/flood risk re-evaluation.**
  - **Insignificant impact on cost evaluation and conclusion.**
  - **Environmental Report will be revised accordingly.**
- **Resolution of Open Item (Subsection 19.3.1)**
  - **Open item of chapter 19 for DCD Rev.0,** *"The Level 3 PRA in Section 19.1, and Subsection 19.2.6 and subsections will be completed within March 2008. There will be no open items associated with this Chapter on March 2008."* **has been resolved so that issuance of the Level 3 PRA technical report, MUAP-08004, was completed in March 2008.**

Revision of COL Information Items

1. Updated (revised and/or added)
   - ✓ Mainly adjusted with COLA FSAR (i.e., minimize unidentified supplemental information)
2. Eliminated
   - ✓ Replacement with Standard Information from COLA FSAR
   - ✓ Duplicated COL items (e.g. same as ITAAC, technical specification etc.)
   - ✓ Consolidation with the COL item

Revision Example of COL Information Item (1/6)

1.9 Conformance with Regulatory Criteria

In keeping with the requirements of Sections C.I.1.9.1 through C.I.1.9.5 of RG 1.206, and section 1.9 of the NUREG 0800, Standard Review Plan, this section will provide the following information:

- Section 1.9.1 - Conformance with Regulatory Guides
- Section 1.9.2 - Conformance with Standard Review Plan (SRP)
- Section 1.9.3 - Generic Issues
- Section 1.9.4 - Operational Experience (Generic Communications)
- Section 1.9.5 - Advanced and Evolutionary Light-Water Reactor Design Issues

1.9.1 Conformance with Regulatory Guides

Added

1.9 Conformance with Regulatory Criteria

In keeping with the requirements of Sections C.I.1.9.1 through C.I.1.9.5 of RG 1.206, and section 1.9 of the NUREG 0800, Standard Review Plan, this section will provide the following information:

- Section 1.9.1 - Conformance with Regulatory Guides
- Section 1.9.2 - Conformance with Standard Review Plan (SRP)
- Section 1.9.3 - Generic Issues
- Section 1.9.4 - Operational Experience (Generic Communications)
- Section 1.9.5 - Advanced and Evolutionary Light-Water Reactor Design Issues

The COL Applicant is to address an evaluation of the applicable RG, SRP, Generic Issues including Three Mile Island (TMI) requirements, and operational experience for the site-specific portion and operational aspect of the facility.

1.9.1 Conformance with Regulatory Guides

Revision 0

New COL item added to clearly identify COL activities.

Revision 1

Revision Example of COL Information Item (2/6)

15.0.4 Combined License Information

No additional information is required to be provided by a COL applicant in connection with this section. In the COLA, the site-specific χ/Q values are used in determining the radiological consequences of postulated accidents.

Revision 0

Replaced with appropriate sentences.

COL item clearly defined.

15.0.4 Combined License Information

COL 15.0 (1) In the COLA, if the site-specific χ/Q values exceed DCD χ/Q values, then the COL Applicant is to demonstrate how the dose reference values in 10 CFR 50.34 and the control room dose limits in 10 CFR 50, Appendix A, General Design Criteria 19 are met for affected events using site-specific χ/Q values.

Revision 1

Revision Example of COL Information Item (3/6)

5.4.2.2.2 Elements of Steam Generator Program

The SG program will be established based on the latest version of NEI 97-06 SG program guidelines (Ref. 5.4-17). Detail is provided in the COL application.

Replaced with the actual SG program description.

5.4.2.2.2 Elements of Steam Generator Program

The steam generator tube integrity program will be established based on the latest version of NEI 97-06 SG program guidelines (Ref. 5.4-17). A program for periodic monitoring of degradation of SG internals will be also implemented in accordance with NEI 97-06. Applicable EPRI SG management program guidelines are followed as described in NEI 97-06. The SG program is in compliance with applicable sections of ASME Code Section XI.

The major elements of the SG program in accordance with NEI 97-06 are outlined below:

1. Assessment of degradation, with includes choosing techniques to test for degradation based on the probability of detection and sizing capability, establishing the number of tubes to be inspected, establishing the structural limits and establishing the flaw growth rate or a plan to establish the flow growth rate.

2. Steam generator tube inspections which include sampling as supported by the degradation and integrity assessment; obtaining the information necessary to develop degradation, condition monitoring and operational assessments; and qualifying the inspection program by determining the accuracy and defining the elements for enhancing NDE system performance, including technique, analysis, field analysis feedback, human performance and process controls.

3. Integrity assessment which includes condition monitoring (a backward-looking assessment which confirms that adequate steam generator tube integrity has been

Revision 0

COL item deleted by describing standard information in DCD.

Revision 1

Revision Example of COL Information Item (4/6)

Low power and power ascension testing verifies integrated core physics plant operation that is limited to specified power plateaus. The results of all tests associated with each power plateau are reviewed and approved prior to moving to the next, higher power plateau. A full test of ESFs is performed from cold conditions and a reduced flow test is performed from hot conditions prior to fuel load, in accordance with the guidance provided by RG 1.79 (Ref. 6.3-5). The testing under maximum startup loading conditions is performed to verify the adequacy of the electric power supply. Maximum startup loading conditions testing is described in Chapter 14, subsection 14.2.12.1

The COL Applicant provides the based for ECCS surveillance requirements for ECCS performance such as motor operated valve and pump performance testing.

The COL Applicant prepares a suitable initial test program consistent with DCD Chapter 14 in accordance with RG 1.68 (Ref. 6.3.-7) to ensure operational readiness.

Replaced with appropriate sentences.

Low power and power ascension testing verifies integrated core physics plant operation that is limited to specified power plateaus. The results of all tests associated with each power plateau are reviewed and approved prior to moving to the next, higher power plateau. A full test of ESFs is performed from cold conditions and a reduced flow test is performed from hot conditions prior to fuel load, in accordance with the guidance provided by RG 1.79 (Ref. 6.3-5). The testing under maximum startup loading conditions is performed to verify the adequacy of the electric power supply. Maximum startup loading conditions testing is described in Chapter 14, subsection 14.2.12.1

LCOs, surveillances, and surveillance bases for the ECCS pumps and valves are provided in Subsections 3.5, B 3.5 and 16.1.1.2 of the Technical Specifications

Revision 0

Duplicated COL items (tech. spec. & operational program) eliminated

Revision 1

Reference Subsection 6.3.4.1

Revision Example of COL Information Item (5/6)

The plant is designed with a public address system. The fuel handling machine, the new fuel elevator, the FTS including up enders, and the refueling machine is to have the capability to be interlinked with the public address system in the fuel handling area and the PCCV at a minimum. Additionally, the COL Applicant is to provide communication devices not susceptible to a loss of power, offsite, or onsite, such as sound powered telephones or two-way radios. These are to be used to provide communication between operators at the fuel handling machine, the new fuel elevator, the FTS including upenders, and the refueling machine. These devices operate on channels or frequencies unique to the light load handling system within the plant, to minimize or preclude interference from operations other than fuel handling.

Revision 0

Replaced with appropriate sentences.

Duplicated COL item (same COL item as section 13.5) eliminated.

The plant is designed with a public address system. The fuel handling machine, the new fuel elevator, the FTS including up enders, and the refueling machine is to have the capability to be interlinked with the public address system in the fuel handling area and the PCCV at a minimum. Additionally administrative procedure defined in Subsection 13.5.1 provides communication devices not susceptible to a loss of power, offsite, or onsite, such as sound powered telephones or two-way radios. These are to be used to provide communication between operators at the fuel handling machine, the new fuel elevator, the FTS including upenders, and the refueling machine. These devices operate on channels or frequencies unique to the light load handling system within the plant, to minimize or preclude interference from operations other than fuel handling.

Revision 1

Reference Subsection 9.1.4.5

Revision Example of COL Information Item (6/6)

18.11.4 Combined License Information

COL 18.11 (1) *The COL Applicant is to be responsible for establishing an HFE design control program that maintains the US-APWR HFE design in the site-specific as-built plant.*

COL 18.11 (2) *The COL Applicant is to be responsible for comparing the final (as-built in the plant) HSIs, procedures, and training with the detailed design description to verity that they conform to the design that resulted from the HFE design process and V&V activities. Any identified discrepancies are to be corrected or justified.*

Revision 0

Duplicated COL item eliminated

18.11.4 Combined License Information

No additional information is required to be provided by a COL Applicant in connection with this section

COL 18.11 (1) *Deleted*

COL 18.11 (2) *Deleted*

COL items were eliminated.

Revision 1

9. The design that is implemented (i.e., the "as-built" design) accurately reflects the verified and validated design.	9. An inspection of the as-built HFE design implementation process will be performed.	9. A HFE design implementation process is performed and documented as described below. The as-built design implementation methodology includes the following criteria: Aspects of the design that were not addressed in the design V&V are evaluated using an appropriate V&V method. Aspects of the design addressed by this criterion may include design characteristics

New ITAAC added in Tier 1 revision 1

Summary

- MHI plans to revise the DCD in August 2008. Certain Tier 2 revision will be incorporated to Tier 1. In addition to DCD Rev.1, Environmental Report including SAMDA will be revised.
- The revision will be used for the Reference-COL Application to be submitted in September 2008.
- The presented detail information on the DCD revision will facilitate the NRC's understanding of the DCD revision plan.
- Because the scope of the revisions is minor, these revisions should not impact the NRC's review schedule.
- These revisions will be clearly identified in the revised DCD.