MITSUBISHI HEAVY INDUSTRIES, LTD.
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TOKYO, JAPAN

January 9, 2009

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

Attention: Mr. Jeffrey A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-09010

Subject: Submittal of Revised RAI Responses due to the COL Information Update

References: 1) CP-200801264 Log # TXNB-08024 from M. L. Lucas (Luminant) to U.S. NRC,"COMBINED LICENSE APPLICATION FOR COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 3 AND 4 PROJECT NO. 0754" dated on September 19, 2008
2) Letter MHI Ref: UAP-HF-08153 from Y. Ogata (MHI) to U.S. NRC, "Submittal of US-APWR Design Control Document Revision 1 in Support of Mitsubishi Heavy Industries, Ltd.'s Application for Design Certification of the US-APWR Standard Plant Design" dated on August 29, 2008.
3) Letter MHI Ref. UAP-HF-08259 from Y. Ogata ("MHI") to U.S. NRC, "Transmittal of COL Information Update for US-APWR Design Control Document Revision 1" dated on November 7, 2008

During the acceptance review of the combined license application for Comanche Peak 3 and 4 (Reference 1, "R-COLA"), the U.S. Nuclear Regulatory Commission ("NRC") Staff raised questions about COL holder items in the R-COLA. In response, MHI performed a comprehensive review of those COL information items in the US-APWR Standard Plant Design (Reference 2, "DCD"), that were identified as COL holder items in the R-COLA. As a result of this review, MHI transmitted to the NRC Staff the results of its comprehensive examination and the proposed updates to be made to the COL information items in the DCD (Reference 3).

In reviewing Reference 3, the NRC requested MHI to perform an impact analysis on the updates of COL Information in the submitted Request for Additional Information ("RAI") responses on the DCD. MHI has performed the impact analysis and, as a result, some of the RAI responses have been revised.

With this letter, MHI submits to the NRC the Revised RAI Responses due to the COL Information Update in Reference 3. Enclosure 2 provides the results of impact analysis for the RAI Responses, which were submitted within 2008 from the first response to RAI No. 1.

As indicated in the enclosed materials, this document contains information that MHI considers proprietary, and therefore should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4) as trade secrets and commercial or financial information which is privileged or confidential. A non-proprietary version of the document is also being submitted with the information identified as proprietary redacted and replaced by the designation "[ ]".

And one version includes certain information, designated pursuant to the Commission guidance as sensitive unclassified non-safeguards information, referred to as security-related

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information ("SRI"), that is to be withheld from public disclosure under 10 CFR § 2.390. The information that is SRI is identified by braces "{ }". On the other hand, another version omits the SRI and is suitable for public disclosure. In the public version, the SRI is replaced by the designation "{Security-Related Information - Withheld Under 10 CFR § 2.390}".

This letter includes a copy of the proprietary and SRI included version (Enclosure 3), a copy of the non-proprietary and SRI excluded version (Enclosure 4), and the Affidavit of Yoshiki Ogata (Enclosure 1) which identifies the reasons MHI respectfully requests that all materials designated as "Proprietary" in Enclosure 3 be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4).

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. Affidavit of Yoshiki Ogata

2. Results of impact analysis from the updates of COL Information to the submitted Responses to Request for Additional Information on the US-APWR DCD

3. Revised RAI Responses due to the COL Information Update (proprietary and SRI included version)

4. Revised RAI Responses due to the COL Information Update (non-proprietary and SRI excluded version)

CC: J. A. Ciocco
C. K. Paulson

Contact Information
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ENCLOSURE 1

Docket No. 52-021
MHI Ref: UAP-HF-09010

MITSUBISHI HEAVY INDUSTRIES, LTD.

AFFIDAVIT

I, Yoshiki Ogata, state as follows:

1. I am General Manager, APWR Promoting Department, of Mitsubishi Heavy Industries, LTD ("MHI"), and have been delegated the function of reviewing MHI's US-APWR documentation to determine whether it contains information that should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4) as trade secrets and commercial or financial information which is privileged or confidential.

2. In accordance with my responsibilities, I have reviewed the enclosed document entitled "Revised RAI No. 39 Response due to the COL Information Update" dated January, 2009, and have determined that portions of the document contain proprietary information that should be withheld from public disclosure. Those pages containing proprietary information are identified with the label "Proprietary" on the top of the page and the proprietary information has been bracketed with an open and closed bracket as shown here "[ ]". The first page of the document indicates that all information identified as "Proprietary" should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4).

3. The information identified as proprietary in the enclosed document has in the past been, and will continue to be, held in confidence by MHI and its disclosure outside the company is limited to regulatory bodies, customers and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and is always subject to suitable measures to protect it from unauthorized use or disclosure.

4. The basis for holding the referenced information confidential is that it describes the unique design and methodology developed by MHI for performing the design of the US-APWR reactor.

5. The referenced information is being furnished to the Nuclear Regulatory Commission ("NRC") in confidence and solely for the purpose of information to the NRC staff.

6. The referenced information is not available in public sources and could not be gathered readily from other publicly available information. Other than through the provisions in paragraph 3 above, MHI knows of no way the information could be lawfully acquired by organizations or individuals outside of MHI.

7. Public disclosure of the referenced information would assist competitors of MHI in their design of new nuclear power plants without incurring the costs or risks associated with the design of the subject systems. Therefore, disclosure of the information contained in the referenced document would have the following negative impacts on the competitive position of MHI in the U.S. nuclear plant market:

    A. Loss of competitive advantage due to the costs associated with development of methodology related to the analysis.

B. Loss of competitive advantage of the US-APWR created by benefits of modeling information.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information and belief.

Executed on this 9th day of January 2009.

Y. Ogata

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

Enclosure 2

UAP-HF-09010
Docket Number 52-021

Results of impact analysis from the updates of COL Information to the submitted Responses to Request for Additional Information on the US-APWR DCD

January, 2009
(Non-Proprietary)

General description

This enclosure lists the results of impact analysis for the RAI Responses, which were submitted within 2008 from the first response to RAI No. 1. The right column named "Impact from COL Information Update" shows the results of impact analysis for each question on the submitted RAI Responses.

The Responses for which the revision is necessary by the COL Information Update are as follows;

SRP Section 6.2.5, RAI No. 62, Question No. 06.02.05-11
SRP Section 6.2.5, RAI No. 62, Question No. 06.02.05-15
SRP Section 6.2.6, RAI No. 50, Question No. 06.02.06-2
SRP Section 14.3.7, RAI No. 54, Question No. 14.03.07-3, 14.3.7.3.4-15
SRP Section 14.3.7, RAI No. 54, Question No. 14.03.07-5, 14.3.7.3.6-10
SRP Section 19, RAI No. 39, Question No. 19-58
SRP Section 19, RAI No. 39, Question No. 19-59
SRP Section 19, RAI No. 39, Question No. 19-69
SRP Section 19, RAI No. 39, Question No. 19-73
SRP Section 19, RAI No. 35, Question No. 19-83

Furthermore, although the following RAI Responses are not directly impacted by the COL Information Update, they need the revisions to be consistent with the principle of comprehensive review of COL information items in the DCD.

SRP Section 6.2.5, RAI No. 62, Question No. 06.02.05-8
SRP Section 6.4, RAI No. 49, Question No. 06.04-18

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
1	Introduction and Interfaces							
2.2.3	Evaluation of Potential Accidents							
2.3.1	Regional Climatology	23	02.03.01-1	2008/7/23	Y	N	N	N
		23	02.03.01-2	2008/7/23	Y	N	N	N
		23	02.03.01-3	2008/7/23	Y	N	N	N
		23	02.03.01-4	2008/7/23	Y	N	N	N
		23	02.03.01-5	2008/7/23	Y	N	N	N
		23	02.03.01-6	2008/7/23	Y	N	N	N
		23	02.03.01-7	2008/7/23	Y	N	N	N
		23	02.03.01-8	2008/7/23	Y	N	N	N
		23	02.03.01-9	2008/7/23	Y	N	N	N
		23	02.03.01-10	2008/7/23	Y	N	N	N
		23	02.03.01-11	2008/7/23	Y	N	N	N
		23	02.03.01-12	2008/7/23	Y	N	N	N
		23	02.03.01-13	2008/7/23	N	N	N	N
		23	02.03.01-14	2008/7/23	N	N	N	N
		41	02.03.01-15	2008/9/13	Y	N	N	N
		59	02.03.01-16	2008/9/10	Y	N	N	N
2.3.2	Local Meteorology	22	02.03.02-1	2008/7/23	Y	N	N	N
		22	02.03.02-2	2008/7/23	Y	N	N	N
2.3.3	Onsite Meteorological Measurements Programs	21	02.03.03-2	2008/7/23	Y	N	N	N
2.3.4	Short-term Dispersion Estimates for Accident Releases	42	02.03.04-1	2008/9/13	Y	N	N	N
		42	02.03.04-2	2008/9/13	Y	N	N	N
		42	02.03.04-3	2008/9/13	N	N	N	N
		42	02.03.04-4	2008/9/13	Y	N	N	N
		43	02.03.04-5	2008/9/13	Y	Y	N	N
2.3.5	Long-Term Atmospheric Dispersion Estimates for Routine	44	02.03.05.-1	2008/9/13	Y	N	N	N
2.4	Hydrology	13	02.04-1	2008/7/23	Y	N	N	N
		13	02.04-2	2008/7/23	Y	N	N	N
2.4.1	Hydrologic Description	14	02.04.01-1	2008/7/23	N	N	N	N
		14	02.04.01-2	2008/7/23	N	N	N	N
2.4.2	Floods							
2.4.3	Probable Maximum Flood (PMF) on Streams and Rivers							
2.4.4	Potential Dam Failures	15	02.04.04-1	2008/7/23	Y	N	N	N
		15	02.04.04-2	2008/7/23	Y	N	N	N
2.4.5	Probable Maximum Surge and Seiche Flooding	16	02.04.05-1	2008/7/23	Y	N	N	N
2.4.6	Probable Maximum Tsunami Hazards	17	02.04.06-1	2008/7/23	N	N	N	N
		17	02.04.06-2	2008/7/23	N	N	N	N
2.4.7	Ice Effects							
2.4.8	Cooling Water Canals and Reservoirs							
2.4.9	Channel Diversions							
2.4.10	Flooding Protection							
2.4.11	Low Water Considerations	18	02.04.11-1	2008/7/23	Y	N	N	N
2.4.12	Groundwater	19	02.04.12-1	2008/7/23	Y	N	N	N
2.4.13	Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters	20	02.04.13-1	2008/7/23	Y	N	N	N
2.4.14	Technical Specifications and Emergency Operation Requirements	24	02.04.14-1	2008/7/23	Y	N	N	N
2.5.1	Basic Geologic and Seismic Information							
2.5.2	Vibratory Ground Motion	96	02.05.02-01	2008/12/3	Y	N	N	N
2.5.3	Surface Faulting							
2.5.4	Stability of Subsurface Materials and Foundations	94	02.05.04-01	2008/12/3	Y	N	N	N
		94	02.05.04-02	2008/12/3	N	N	N	N
2.5.5	Stability of Slopes	94	02.05.05-01	2008/12/3	Y	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		94	02.05.05-02	2008/12/3	N	N	N	N
3.2.1	Seismic Classification							
3.2.2	System Quality Group							
3.3.1	Wind Loadings							
3.3.2	Tornado Loadings							
3.4.1	Internal Flood Protection for Onsite Equipment Failures							
3.4.2	Analysis Procedures							
3.5.1.1	Internally Generated Missiles (Outside Containment)							
3.5.1.2	Internally-Generated Missiles (Inside Containment)							
3.5.1.3	Turbine Missiles							
3.5.1.4	Missiles Generated by Tornadoes and Extreme Winds							
3.5.1.5	Site Proximity Missiles (Except Aircraft)							
3.5.1.6	Aircraft Hazards							
3.5.2	Structures, Systems, and Components to be Protected from Externally-Generated							
3.5.3	Barrier Design Procedures							
3.6.1	Plant Design for Protection Against Postulated Piping Failures in Fluid Systems							
3.6.2	Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping	71	03.06.02-1	2008/10/7	N	N	N	N
		71	03.06.02-2	2008/10/7	Y	N	N	N
		71	03.06.02-3	2008/10/7	Y	N	N	N
		71	03.06.02-4	2008/10/7	N	N	N	N
		71	03.06.02-5	2008/10/7	Y	N	N	N
		71	03.06.02-6	2008/10/7	Y	N	N	N
		71	03.06.02-7	2008/10/7	Y	N	N	N
		71	03.06.02-8	2008/10/7	N	N	N	N
		71	03.06.02-9	2008/10/7	Y	N	N	N
		71	03.06.02-16	2008/10/7	Y	N	N	N
		71	03.06.02-17	2008/10/7	N	N	N	N
		71	03.06.02-18	2008/10/7	N	N	N	N
		71	03.06.02-19	2008/10/7	Y	N	N	N
		71	Intro for 03.06.02-10 thru 15	2008/11/7	N	N	N	N
		71	03.06.02-10	2008/11/7	N	N	N	N
		71	03.06.02-11	2008/11/7	Y	N	N	N
		71	03.06.02-12	2008/11/7	N	N	N	N
		71	03.06.02-13	2008/11/7	N	N	N	N
		71	03.06.02-14	2008/11/7	N	N	N	N
		71	03.06.02-15	2008/11/7	N	N	N	N
3.6.3	Leak-Before-Break Evaluation Procedures							
3.7.1	Seismic Design Parameters							
3.7.2	Seismic System Analysis							
3.7.3	Seismic Subsystem Analysis							
3.7.4	Seismic Instrumentation	55	03.07.04-1	2008/9/1	Y	N	N	N
		55	03.07.04-2	2008/9/1	Y	N	N	N
3.8.1	Concrete Containment							
3.8.3	Concrete and Steel Internal Structures of Steel or Concrete Containments							
3.8.4	Other Seismic Category I							
3.8.5	Foundations							
3.9.1	Special Topics for Mechanical Components							

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SRP Section		DCD RAI Response						
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	Impact from COL Information Update
3.9.2	Dynamic Testing and Analysis of Systems, Structures, and Components							
3.9.3	ASME Code Class 1, 2, and 3 Components, and Component Supports, and Core Support Structures							
3.9.4	Control Rod Drive Systems	107	1293-01	2008/12/19	Y	N	N	N
		107	1293-02	2008/12/19	Y	N	N	N
		107	1293-03	2008/12/19	Y	N	N	N
		107	1293-04	2008/12/19	N	N	N	N
		107	1293-05	2008/12/19	N	N	N	N
		107	1293-06	2008/12/19	N	N	N	N
		107	1293-07	2008/12/19	N	N	N	N
		107	1293-08	2008/12/19	Y	N	N	N
		107	1293-09	2008/12/19	N	N	N	N
		107	1293-10	2008/12/19	Y	N	N	N
3.9.5	Reactor Pressure Vessel							
3.9.6	Functional Design, Qualification, and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints							
3.10	Seismic/Dynamic Qual of Mech/Elec Eqmt							
3.11	Environmental Qualification of Mechanical and Electrical Equipment							
3.12	ASME Code Class 1, 2, and 3 Piping Systems, Piping Components and their Associated Supports							
3.13	Threaded Fasteners - ASME Code Class 1, 2, and 3							
4.2	Fuel System Design							
4.3	Nuclear Design							
4.4	Thermal and Hydraulic Design							
4.5.1	Control Rod Drive Structural Materials							
4.5.2	Reactor Internal and Core Support Structure Materials							
4.6	Functional Design of Control Rod Drive System							
5.2.1.1	Compliance with the Codes and Standards Rule, 10 CFR 50.55a							
5.2.1.2	Applicable Code Cases							
5.2.2	Overpressure Protection	103	05.02.02-1	2008/12/25	N	N	N	N
		103	05.02.02-2	2008/12/25	N	N	N	N
		103	05.02.02-3	2008/12/25	N	N	N	N
		103	05.02.02-4	2008/12/25	N	N	N	N
		103	05.02.02-5	2008/12/25	N	N	N	N
		103	05.02.02-6	2008/12/25	N	N	N	N
		103	05.02.02-7	2008/12/25	Y	N	N	N
		103	05.02.02-8	2008/12/25	N	N	N	N
5.2.3	Reactor Coolant Pressure Boundary Materials							
5.2.4	Reactor Coolant Pressure Boundary Inservice Inspection							
5.2.5	Reactor Coolant Pressure Boundary Leakage Detection							
5.3.1	Reactor Vessel Materials							
5.3.2	Pressure-Temperature Limits, Upper-Shelf Energy, and Pressurized Thermal Shock							
5.3.3	Reactor Vessel Integrity							

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
5.4	Reactor Coolant System Component and Subsystem	47	5.4.10-1	2008/9/22	N	N	N	N
5.4.1.1	Pump Flywheel Integrity (PWR)							
5.4.2.1	Steam Generator Materials							
5.4.2.2	Steam Generator Program							
5.4.7	Residual Heat Removal (RHR) System							
5.4.11	Pressurizer Relief Tank							
5.4.12	Reactor Coolant System High Point Vents	48	5.4.12-1	2008/9/22	N	N	N	N
		48	5.4.12-2	2008/9/22	N	N	N	N
		48	5.4.12-3	2008/9/22	N	N	N	N
		48	5.4.12-4	2008/9/22	N	N	N	N
		48	5.4.12-5	2008/9/22	N	N	N	N
		48	5.4.12-6	2008/9/22	N	N	N	N
6.1.1	Engineered Safety Features Materials							
6.1.2	Protective Coating Systems (Paints) - Organic Materials							
6.2.1	Containment Functional Design	110	06.02.01-1	2008/12/26	N	N	N	N
6.2.1.2	Subcompartment Analysis	6	06.02.01.02-	2008/6/27	Y	N	N	N
6.2.1.3	Mass and Energy Release Analysis for Postulated Loss-of-Coolant Accidents (LOCAs)							
6.2.1.4	Mass and Energy Release Analysis for Postulated Secondary System Pipe	112	06.02.01.04-1	2008/12/26	N	N	N	N
		114	06.02.01.04-	2008/12/26	N	N	N	N
6.2.1.5	Minimum Containment Pressure Analysis for Emergency Core Cooling System Performance Capability Studies	115	06.02.01.05-1	2008/12/25	Y	N	N	N
		116	06.02.01.05-	2008/12/25	N	N	N	N
		118	06.02.01.05-	2008/12/25	N	N	N	N
		119	06.02.01.05-	2008/12/25	N	N	N	N
		120	06.02.01.05-	2008/12/25	Y	N	N	N
		121	06.02.01.05-	2008/12/25	Y	N	N	N
		122	06.02.01.05-	2008/12/25	N	N	N	N
6.2.2	Containment Heat Removal Systems	45	06.02.02-1	2008/8/30	Y	N	N	N
		45	06.02.02-2	2008/8/30	N	N	N	N
		45	06.02.02-3	2008/8/30	N	N	N	N
		45	06.02.02-4	2008/8/30	N	N	N	N
		84	06.02.02-5	2008/11/7	Y	N	N	N
		84	06.02.02-6	2008/11/7	N	N	N	N
		84	06.02.02-7	2008/11/7	N	N	N	N
		84	06.02.02-8	2008/11/7	Y	N	N	N
		84	06.02.02-9	2008/11/7	N	N	N	N
		85	06.02.02-10	2007/11/12	Y	N	N	N
		85	06.02.02-11	2007/11/12	N	N	N	N
6.2.3	Secondary Containment Functional Design							
6.2.4	Containment Isolation System	57	06.02.04-1	2008/9/22	N	N	N	N
		57	06.02.04-2	2008/9/22	N	N	N	N
		57	06.02.04-3	2008/9/22	N	N	N	N
		57	06.02.04-4	2008/9/22	N	N	N	N
		57	06.02.04-5	2008/9/22	Y	N	N	N
		57	06.02.04-6	2008/9/22	N	N	N	Y
		57	06.02.04-7	2008/9/22	N	N	N	N
		57	06.02.04-8	2008/9/22	Y	N	N	N
		57	06.02.04-9	2008/9/22	Y	N	N	N
		57	06.02.04-10	2008/9/22	N	N	N	N
		57	06.02.04-11	2008/9/22	N	N	N	N
		57	06.02.04-12	2008/9/22	N	N	N	N
		57	06.02.04-13	2008/9/22	N	N	N	N

Design Control Document - Configuration Control Sheet (5 of 22)

SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		57	06.02.04-14	2008/9/22	N	N	N	N
		57	06.02.04-15	2008/9/22	N	N	N	N
		57	06.02.04-16	2008/9/22	Y	N	N	N
		57	06.02.04-17	2008/9/22	N	N	N	N
		57	06.02.04-18	2008/9/22	Y	N	N	N
		57	06.02.04-19	2008/9/22	Y	N	N	N
		57	06.02.04-20	2008/9/22	Y	N	N	N
		57	06.02.04-21	2008/9/22	Y	N	N	N
		57	06.02.04-22	2008/9/22	Y	N	N	N
		57	06.02.04-23	2008/9/22	Y	N	N	N
		57	06.02.04-24	2008/9/22	N	N	N	N
		57	06.02.04-25	2008/9/22	N	N	N	N
		57	06.02.04-26	2008/9/22	N	N	N	N
		57	06.02.04-27	2008/9/22	N	N	N	N
		57	06.02.04-28	2008/9/22	N	N	N	N
		57	06.02.04-29	2008/9/22	N	N	N	N
		57	06.02.04-30	2008/9/22	N	N	N	N
		57	06.02.04-31	2008/9/22	Y	N	N	N
		57	06.02.04-32	2008/9/22	N	N	N	N
		57	06.02.04-33	2008/9/22	Y	N	N	N
		57	06.02.04-34	2008/9/22	Y	N	N	N
		57	06.02.04-35	2008/9/22	Y	N	N	N
		57	06.02.04-36	2008/9/22	Y	N	N	N
6.2.5	Combustible Gas Control in Containment	62	06.02.05-1	2008/10/1	N	N	N	N
		62	06.02.05-2	2008/10/1	N	N	N	N
		62	06.02.05-3	2008/10/1	N	N	N	N
		62	06.02.05-4	2008/10/1	N	N	N	N
		62	06.02.05-5	2008/10/1	N	N	N	N
		62	06.02.05-6	2008/10/1	N	N	N	N
		62	06.02.05-7	2008/10/1	N	N	N	N
		62	06.02.05-8	2008/10/1	Y	Y	N	Y
		62	06.02.05-9	2008/10/1	N	N	N	N
		62	06.02.05-10	2008/10/1	N	N	N	N
		62	06.02.05-11	2008/10/1	N	N	N	Y
		62	06.02.05-12	2008/10/1	N	N	N	N
		62	06.02.05-13	2008/10/1	N	N	N	N
		62	06.02.05-14	2008/10/1	N	N	N	N
		62	06.02.05-15	2008/10/1	N	N	N	Y
		62	06.02.05-16	2008/10/1	N	N	N	N
		62	06.02.05-17	2008/10/1	Y	N	N	N
		62	06.02.05-18	2008/10/1	N	N	N	N
		62	06.02.05-19	2008/10/1	N	N	N	N
		62	06.02.05-20	2008/10/1	Y	N	N	N
		62	06.02.05-21	2008/10/1	Y	N	N	N
6.2.6	Containment Leakage Testing	50	06.02.06-1	2008/9/17	N	N	N	N
		50	06.02.06-2	2008/9/17	N	N	N	Y
		50	06.02.06-3	2008/9/17	Y	N	N	N
		50	06.02.06-4	2008/9/17	Y	N	N	N
		50	06.02.06-5	2008/9/17	Y	N	N	N
		50	06.02.06-6	2008/9/17	N	N	N	N
		50	06.02.06-7	2008/9/17	Y	N	N	N
		50	06.02.06-8	2008/9/17	Y	N	N	N
		50	06.02.06-9	2008/9/17	Y	N	N	N
		50	06.02.06-10	2008/9/17	Y	N	N	N
		50	06.02.06-11	2008/9/17	N	N	N	N
		50	06.02.06-12	2008/9/17	Y	N	N	N
		50	06.02.06-13	2008/9/17	Y	N	N	N
6.2.7	Fracture Prevention of Containment Pressure Boundary							
6.3	Emergency Core Cooling							
6.4	Control Room Habitability	26	06.04-1	2008/7/31	N	N	N	N
		26	06.04-2	2008/7/31	N	N	N	N
		49	06.04-1	2008/9/16	N	N	N	N
		49	06.04-2	2008/9/16	Y	N	N	N
		49	06.04-3	2008/9/16	Y	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		99	06.04-3	2008/12/8	Y	N	N	N
		49	06.04-4	2008/9/16	N	N	N	N
		49	06.04-5	2008/9/16	N	N	N	N
		49	06.04-6	2008/9/16	Y	N	N	N
		49	06.04-7	2008/9/16	Y	N	N	N
		49	06.04-8	2008/9/16	N	N	N	N
		49	06.04-9	2008/9/16	Y	N	N	N
		49	06.04-10	2008/9/16	N	N	N	N
		49	06.04-11	2008/9/16	Y	N	N	N
		49	06.04-12	2008/9/16	Y	N	N	N
		49	06.04-13	2008/9/16	N	N	N	N
		49	06.04-14	2008/9/16	N	N	N	N
		49	06.04-15	2008/9/16	Y	N	N	N
		49	06.04-16	2008/9/16	N	N	N	N
		49	06.04-17	2008/9/16	N	N	N	N
		49	06.04-18	2008/9/16	Y	Y	N	Y
		49	06.04-19	2008/9/16	Y	N	N	N
		49	06.04-20	2008/9/16	Y	N	N	N
		49	06.04-21	2008/9/16	N	N	N	N
		49	06.04-22	2008/9/16	N	N	N	N
		49	06.04-23	2008/9/16	Y	N	N	N
		49	06.04-24	2008/9/16	N	N	N	N
6.5.1	ESF Atmosphere Cleanup Systems	73	06.05.01-1, 6.5.1-1		Y	N	N	N
		73	06.05.01-1, 6.5.1-2	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-3	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-4	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-5	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-6	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-7	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-8	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-9	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-10	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-11	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-12	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-13	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-14	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-15	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-16	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-17	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-18	2008/10/24	Y	N	N	N
		73	06.05.01-1, 6.5.1-19	2008/10/24	N	N	N	N
		73	06.05.01-1, 6.5.1-20	2008/10/24	N	N	N	N
		82	06.05.01-2	2008/11/7	N	N	N	N
6.5.2	Containment Spray as a Fission Product Cleanup System							

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
6.5.3	Fission Product Control Systems and Structures	37	06.05.03-1	2008/9/7	Y	N	N	N
		83	06.05.03-2	2008/11/7	N	N	N	N
6.5.5	Pressure Suppression Pool as a Fission Product Cleanup System							
6.6	Inservice Inspection and Testing of Class 2 and 3 Components							
7.1	Instrumentation and Controls -- Introduction							
7.2	Reactor Trip System							
7.3	Engineered Safety Features Systems							
7.4	Safe Shutdown Systems							
7.5	Information Systems Important to Safety							
7.6	Interlock Systems Important to Safety							
7.7	Control Systems							
7.8	Diverse Instrumentation and Control Systems							
7.9	Data Communication Systems							
8.1	Electric Power - Introduction							
8.2	Offsite Power System	4	08.02-1	2008/5/30	Y	Y	N	N
		4	08.02-2	2008/5/30	N	Y	N	N
		4	08.02-3	2008/5/30	Y	Y	N	N
		4	08.02-4	2008/5/30	Y	N	N	N
		4	08.02-5	2008/5/30	N	N	N	N
		4	08.02-6	2008/5/30	Y	N	N	N
		4	08.02-7	2008/5/30	Y	Y	N	N
		4	08.02-8	2008/5/30	Y	N	N	N
		4	08.02-9	2008/5/30	N	N	N	N
8.3.1	A-C Power Systems (Onsite)	5	08.03.01-1	2008/6/6	N	N	N	N
		5	08.03.01-2	2008/6/6	N	N	N	N
		5	08.03.01-3	2008/6/6	N	N	N	N
		5	08.03.01-4	2008/6/6	N	N	N	N
		5	08.03.01-5	2008/6/6	N	N	N	N
		5	08.03.01-6	2008/6/6	N	N	N	N
		10	08.03.01-7	2008/7/18	Y	N	N	N
		10	08.03.01-8	2008/7/18	N	N	N	N
		10	08.03.01-9	2008/7/18	Y	N	N	N
		10	08.03.01-10	2008/7/18	N	N	N	N
		10	08.03.01-11	2008/7/18	N	N	N	N
		10	08.03.01-12	2008/7/18	N	N	N	N
		10	08.03.01-13	2008/7/18	N	N	N	N
		10	08.03.01-14	2008/7/18	N	N	N	N
		10	08.03.01-15	2008/7/18	Y	N	N	N
		10	08.03.01-16	2008/7/18	N	N	N	N
		10	08.03.01-17	2008/7/18	Y	N	N	N
		10	08.03.01-18	2008/7/18	N	N	N	N
		10	08.03.01-19	2008/7/18	N	N	N	N
		10	08.03.01-20	2008/7/18	N	N	N	N
		10	08.03.01-21	2008/7/18	Y	N	N	N
		10	08.03.01-22	2008/7/18	N	N	N	N
8.3.2	D-C Power Systems (Onsite)	3	01-1	2008/5/30	N	N	N	N
		8	08.03.02-2	2008/7/10	N	N	N	N
		8	08.03.02-3	2008/7/10	Y	N	N	N
		8	08.03.02-4	2008/7/10	N	N	N	N
		8	08.03.02-5	2008/7/10	N	N	N	N
		8	08.03.02-6	2008/7/10	N	N	N	N
		8	08.03.02-7	2008/7/10	Y	N	N	N
		8	08.03.02-8	2008/7/10	N	N	N	N
		8	08.03.02-9	2008/7/10	Y	N	N	N
		8	08.03.02-10	2008/7/10	N	N	N	N
		8	08.03.02-11	2008/7/10	N	N	N	N
		8	08.03.02-12	2008/7/10	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		8	08.03.02-13	2008/7/10	N	N	N	N
		8	08.03.02-14	2008/7/10	N	N	N	N
8.4	Station Blackout	11	08.04-1	2008/7/18	N	N	N	N
		11	08.04-2	2008/7/18	N	N	N	N
		11	08.04-3	2008/7/18	N	N	N	N
		11	08.04-4	2008/7/18	N	N	N	N
		11	08.04-5	2008/7/18	N	N	N	N
		11	08.04-6	2008/7/18	N	N	N	N
		11	08.04-7	2008/7/18	N	N	N	N
9.1.1	Criticality Safety of Fresh and Spent Fuel Storage and							
9.1.2	New and Spent Fuel Storage							
9.1.3	Spent Fuel Pool Cooling and Cleanup System							
9.1.4	Light Load Handling System (Related to Refueling)							
9.1.5	Overhead Heavy Load Handling Systems							
9.2.1	Station Service Water System							
9.2.2	Reactor Auxiliary Cooling Water Systems							
9.2.4	Potable and Sanitary Water Systems							
9.2.5	Ultimate Heat Sink							
9.2.6	Condensate Storage Facilities							
9.3.1	Compressed Air System	109	09.03.01-1	2008/12/25	N	N	N	N
		109	09.03.01-2	2008/12/25	Y	N	N	N
		109	09.03.01-3	2008/12/25	Y	N	N	N
		109	09.03.01-4	2008/12/25	N	N	N	N
		109	09.03.01-5	2008/12/25	Y	N	N	N
9.3.2	Process and Post-accident Sampling Systems							
9.3.3	Equipment and Floor Drainage System							
9.3.4	Chemical and Volume Control System (PWR) (Including Boron Recovery System)							
9.4.1	Control Room Area Ventilation System	63	09.04.01-1	2008/10/3	N	N	N	N
		63	09.04.01-2	2008/10/3	Y	N	N	N
		63	09.04.01-3	2008/10/3	Y	N	N	N
		63	09.04.01-4	2008/10/3	N	N	N	N
		63	09.04.01-5	2008/10/3	N	N	N	N
		63	09.04.01-6	2008/10/3	N	N	N	N
		63	09.04.01-7	2008/10/3	N	N	N	N
		63	09.04.01-8	2008/10/3	Y	N	N	N
		63	09.04.01-9	2008/10/3	N	N	N	N
		63	09.04.01-10	2008/10/3	Y	N	N	N
		63	09.04.01-11	2008/10/3	N	N	N	N
		63	09.04.01-12	2008/10/3	N	N	N	N
		63	09.04.01-13	2008/10/3	N	N	N	N
		63	09.04.01-14	2008/10/3	N	N	N	N
		63	09.04.01-15	2008/10/3	N	N	N	N
		63	09.04.01-16	2008/10/3	Y	N	N	N
		63	09.04.01-17	2008/10/3	N	N	N	N
		63	09.04.01-18	2008/10/3	N	N	N	N
		63	09.04.01-19	2008/10/3	Y	N	N	N
		63	09.04.01-20	2008/10/3	N	N	N	N
		63	09.04.01-21	2008/10/3	Y	N	N	N
		63	09.04.01-22	2008/10/3	Y	N	N	N
		63	09.04.01-23	2008/10/3	Y	N	N	N
		63	09.04.01-24	2008/10/3	Y	N	N	N
		63	09.04.01-25	2008/10/3	Y	N	N	N
		63	09.04.01-26	2008/10/3	Y	N	N	N
		63	09.04.01-27	2008/10/3	Y	Y	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		63	09.04.01-28	2008/10/3	Y	N	N	N
		63	09.04.01-29	2008/10/3	N	N	N	N
		63	09.04.01-30	2008/10/3	N	N	N	N
		63	09.04.01-31	2008/10/3	Y	N	N	N
		63	09.04.01-32	2008/10/3	N	N	N	N
9.4.2	Spent Fuel Pool Area Ventilation System	65	09.04.02-1, 9.4.2-1	2008/10/3	Y	N	N	N
		65	09.04.02-1, 9.4.2-2	2008/10/3	Y	N	N	N
		65	09.04.02-1, 9.4.2-3	2008/10/3	Y	N	N	N
		65	09.04.02-1, 9.4.2-4	2008/10/3	Y	N	N	N
		65	09.04.02-1, 9.4.2-5	2008/10/3	N	N	N	N
		65	09.04.02-1, 9.4.2-6	2008/10/3	N	N	N	N
9.4.3	Auxiliary and Radwaste Area Ventilation System	68	09.04.03-1, 9.4.3-1	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-2	2008/10/8	N	N	N	N
		68	09.04.03-1, 9.4.3-3	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-4	2008/10/8	N	N	N	N
		68	09.04.03-1, 9.4.3-5	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-6	2008/10/8	N	N	N	N
		68	09.04.03-1, 9.4.3-7	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-8	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-9	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-10	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-11	2008/10/8	N	N	N	N
		68	09.04.03-1, 9.4.3-12	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-13	2008/10/8	N	N	N	N
		68	09.04.03-1, 9.4.3-14	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-15	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-16	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-17	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-18	2008/10/8	Y	N	N	N
		68	09.04.03-1, 9.4.3-19	2008/10/8	Y	N	N	N
9.4.4	Turbine Area Ventilation System	66	09.04.04-1, 9.4.4.1	2008/9/22	N	N	N	N
		66	09.04.04-1, 9.4.4-2	2008/9/22	N	N	N	N
		66	09.04.04-1, 9.4.4-3	2008/9/22	N	N	N	N
		66	09.04.04-1, 9.4.4-4	2008/9/22	N	N	N	N
		66	09.04.04-1, 9.4.4-5	2008/9/22	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		66	09.04.04-1, 9.4.4-6	2008/9/22	N	N	N	N
		67	09.04.04-2, 9.4.4-7	2008/10/6	Y	N	N	N
		67	09.04.04-2, 9.4.4-8	2008/10/6	N	N	N	N
		67	09.04.04-2, 9.4.4-9	2008/10/6	Y	N	N	N
		67	09.04.04-2, 9.4.4-10	2008/10/6	Y	N	N	N
		67	09.04.04-2, 9.4.4-11	2008/10/6	Y	N	N	N
		67	09.04.04-2, 9.4.4-12	2008/10/6	Y	N	N	N
9.4.5	Engineered Safety Feature Ventilation System	64	09.04.05-1, 9.4.5-1	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-2	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-3	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-4	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-5	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-6	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-7	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-8	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-9	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-10	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-11	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-12	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-13	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-14	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-15	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-16	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-17	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-18	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-19	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-20	2008/10/6	Y	N	N	N
		64	09.04.05-1, 9.4.5-21	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-22	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-23	2008/10/6	N	N	N	N
		64	09.04.05-1, 9.4.5-24	2008/10/6	N	N	N	N
9.5.1	Fire Protection Program	30	09.05.01-1	2008/9/5	N	N	N	N
		30	09.05.01-2	2008/9/5	Y	N	N	N
		30	09.05.01-3	2008/9/5	N	N	N	N
		30	09.05.01-4	2008/9/5	Y	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		30	09.05.01-5	2008/9/5	Y	Y	N	N
		30	09.05.01-6	2008/9/5	Y	Y	N	N
		30	09.05.01-7	2008/9/5	Y	Y	N	N
		30	09.05.01-8	2008/9/5	Y	N	N	N
		30	09.05.01-9	2008/9/5	Y	N	N	N
		30	09.05.01-10	2008/9/5	N	N	N	N
		30	09.05.01-11	2008/9/5	Y	N	N	N
		30	09.05.01-12	2008/9/5	N	N	N	N
		30	09.05.01-13	2008/9/5	N	N	N	N
		87	09.05.01-14	2008/11/26	Y	N	N	N
		87	09.05.01-15	2008/11/26	Y	Y	N	N
		87	09.05.01-16	2008/11/26	N	N	N	N
		87	09.05.01-17	2008/11/26	Y	N	N	N
9.5.2	Communications Systems	74	09.05.02-1	2008/10/22	N	N	N	N
		74	09.05.02-2	2008/10/22	N	N	N	N
		74	09.05.02-3	2008/10/22	N	N	N	N
		74	09.05.02-4	2008/10/22	Y	N	N	N
		74	09.05.02-5	2008/10/22	Y	N	N	N
9.5.3	Lighting Systems	34	09.05.03-1	2008/9/7	N	N	N	N
		34	09.05.03-2	2008/9/7	Y	N	N	N
		34	09.05.03-3	2008/9/7	Y	N	N	N
		34	09.05.03-4	2008/9/7	Y	N	N	N
		34	09.05.03-5	2008/9/7	Y	N	N	N
		80	09.05.03-7, 9.5.3-05 S02	2008/11/5	Y	N	N	N
		80	09.05.03-7, 9.5.3-08 S02	2008/11/5	Y	N	N	N
		80	09.05.03-7, 9.5.3-10 S02	2008/11/5	Y	N	N	N
9.5.4	Emergency Diesel Engine Fuel Oil Storage and Transfer System							
9.5.5	Emergency Diesel Engine Cooling Water System							
9.5.6	Emergency Diesel Engine Starting System							
9.5.7	Emergency Diesel Engine Lubrication System							
9.5.8	Emergency Diesel Engine Combustion Air Intake and Exhaust System							
10.2	Turbine Generator							
10.2.3	Turbine Rotor Integrity							
10.3	Main Steam Supply System							
10.3.6	Steam and Feedwater System Materials							
10.4.1	Main Condensers							
10.4.2	Main Condenser Evacuation							
10.4.3	Turbine Gland Sealing System							
10.4.4	Turbine Bypass System							
10.4.5	Circulating Water System							
10.4.6	Condensate Cleanup System							
10.4.7	Condensate and Feedwater	124	10.4.7-1	2008/12/25	N	N	N	N
10.4.8	Steam Generator Blowdown System (PWR)							
10.4.9	Auxiliary Feedwater System							
11.1	Source Terms	9	11.01-1	2008/7/18	N	N	N	N
		29	11.01-2	2008/8/6	N	N	N	N
11.2	Liquid Waste Management							
11.3	Gaseous Waste Management System							
11.4	Solid Waste Management							
11.5	Process and Effluent Radiological Monitoring Instrumentation and Sampling							

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
12.1	Assuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable	89	12.01-1	2008/11/26	Y	N	N	N
		89	12.01-2	2008/11/26	Y	Y	N	N
12.2	Radiation Sources							
12.3-12.4	Radiation Protection Design Features	90	12.03-12.04-1	2008/11/26	Y	N	N	N
12.5	Operational Radiation Protection Program							
13.1.1	Management and Technical Support Organization							
13.1.2-	Operating Organization							
13.2.1	Reactor Operator Requalification Program; Reactor Operator	60	13.02.01-1	2008/9/25	Y	Y	N	N
13.2.2	Non-Licensed Plant Staff							
13.3	Emergency Planning	46	06.02.02-1	2008/8/30	Y	N	N	N
		46	06.02.02-2	2008/8/30	N	N	N	N
		46	13.03-1/13.3-3	2008/8/29	Y	N	N	N
		108	13.03-2	2008/12/25	N	N	N	N
13.4	Operational Programs							
13.5.1.1	Administrative Procedures -							
13.5.1.2	Administrative Procedures - Initial Test Program							
13.5.2.1	Operating and Emergency Operating Procedures	61	13.05.02.01-1	2008/9/25	Y	Y	N	N
13.6	Physical Security							
14.2	Initial Plant Test Program - Design Certification and New License Applicants	7	14.02-1	2008/6/27	Y	N	N	N
		12	14.02-2	2008/7/18	Y	N	N	N
		12	14.02-3	2008/7/18	Y	N	N	N
		12	14.02-4	2008/7/18	Y	N	N	N
		12	14.02-5	2008/7/18	Y	N	N	N
		12	14.02-6	2008/7/18	N	N	N	N
		12	14.02-7	2008/7/18	Y	N	N	N
		27	14.02-8	2008/7/31	Y	Y	N	N
		27	14.02-9	2008/7/31	N	N	N	N
		28	14.02-10	2008/7/31	Y	N	N	N
		28	14.02-11	2008/7/31	N	N	N	N
		28	14.02-12	2008/7/31	Y	N	N	N
		28	14.02-13	2008/7/31	Y	N	N	N
		28	14.02-14	2008/7/31	Y	N	N	N
		28	14.02-15	2008/7/31	Y	N	N	N
		28	14.02-16	2008/7/31	N	N	N	N
		28	14.02-17	2008/7/31	Y	N	N	N
		28	14.02-18	2008/7/31	Y	N	N	N
		28	14.02-19	2008/7/31	Y	N	N	N
		28	14.02-20	2008/7/31	Y	N	N	N
		28	14.02-21	2008/7/31	N	N	N	N
		28	14.02-22	2008/7/31	Y	N	N	N
		31	14.02-23	2008/9/11	Y	Y	N	N
		31	14.02-24	2008/9/11	Y	N	N	N
		33	14.02-25	2008/9/4	Y	N	N	N
		33	14.02-26	2008/9/4	Y	N	N	N
		33	14.02-27	2008/9/4	Y	N	N	N
		33	14.02-28	2008/9/4	N	N	N	N
		33	14.02-29	2008/9/4	Y	N	N	N
		33	14.02-30	2008/9/4	N	N	N	N
		33	14.02-31	2008/9/4	Y	N	N	N
		33	14.02-32	2008/9/4	Y	N	N	N
		33	14.02-33	2008/9/4	Y	N	N	N
		33	14.02-34	2008/9/4	Y	N	N	N
		33	14.02-35	2008/9/4	Y	N	N	N
		33	14.02-36	2008/9/4	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		33	14.02-37	2008/9/4	N	N	N	N
		33	14.02-38	2008/9/4	N	N	N	N
		33	14.02-39	2008/9/4	Y	N	N	N
		33	14.02-40	2008/9/4	Y	N	N	N
		33	14.02-41	2008/9/4	N	N	N	N
		33	14.02-42	2008/9/4	Y	N	N	N
		33	14.02-43	2008/9/4	Y	N	N	N
		33	14.02-44	2008/9/4	Y	N	N	N
		33	14.02-45	2008/9/4	Y	N	N	N
		33	14.02-46	2008/9/4	Y	N	N	N
		33	14.02-47	2008/9/4	Y	N	N	N
		33	14.02-48	2008/9/4	Y	N	N	N
		33	14.02-49	2008/9/4	N	N	N	N
		33	14.02-50	2008/9/4	Y	N	N	N
		33	14.02-51	2008/9/4	Y	N	N	N
		33	14.02-52	2008/9/4	N	N	N	N
		33	14.02-53	2008/9/4	Y	N	N	N
		33	14.02-54	2008/9/4	N	N	N	N
		33	14.02-55	2008/9/4	N	N	N	N
		33	14.02-56	2008/9/4	Y	N	N	N
		33	14.02-57	2008/9/4	Y	N	N	N
		33	14.02-58	2008/9/4	Y	N	N	N
		33	14.02-59	2008/9/4	Y	N	N	N
		33	14.02-60	2008/9/4	Y	N	N	N
		33	14.02-61	2008/9/4	Y	N	N	N
		33	14.02-62	2008/9/4	Y	N	N	N
		33	14.02-63	2008/9/4	N	N	N	N
		33	14.02-64	2008/9/4	Y	N	N	N
		33	14.02-65	2008/9/4	Y	N	N	N
		33	14.02-66	2008/9/4	Y	N	N	N
		33	14.02-67	2008/9/4	Y	N	N	N
		33	14.02-68	2008/9/4	Y	N	N	N
		33	14.02-69	2008/9/4	Y	N	N	N
		33	14.02-70	2008/9/4	Y	N	N	N
		33	14.02-71	2008/9/4	Y	N	N	N
		33	14.02-72	2008/9/4	Y	N	N	N
		33	14.02-73	2008/9/4	N	N	N	N
		33	14.02-74	2008/9/4	Y	N	N	N
		33	14.02-75	2008/9/4	Y	N	N	N
		33	14.02-76	2008/9/4	Y	N	N	N
		33	14.02-77	2008/9/4	Y	N	N	N
		33	14.02-78	2008/9/4	N	N	N	N
		33	14.02-79	2008/9/4	N	N	N	N
		33	14.02-80	2008/9/4	Y	N	N	N
		33	14.02-81	2008/9/4	N	N	N	N
		33	14.02-82	2008/9/4	Y	N	N	N
		33	14.02-83	2008/9/4	Y	N	N	N
		33	14.02-84	2008/9/4	Y	N	N	N
		33	14.02-85	2008/9/4	Y	N	N	N
		58	14.02-86	2008/9/18	Y	N	N	N
		70	14.02-87	2008/9/25	Y	N	N	N
		78	14.02-88	2008/10/16	Y	N	N	N
		78	14.02-89	2008/10/16	Y	N	N	N
		93	14.02-90	2008/12/5	Y	Y	N	N
		102	14.02-91	2008/12/18	N	N	N	N
		102	14.02-92	2008/12/18	Y	N	N	N
		102	14.02-93	2008/12/18	Y	N	N	N
		102	14.02-94	2008/12/18	Y	N	N	N
		102	14.02-95	2008/12/18	N	N	N	N
		102	14.02-96	2008/12/18	Y	N	N	N
		102	14.02-97	2008/12/18	Y	N	N	N
		102	14.02-98	2008/12/18	Y	N	N	N
		102	14.02-99	2008/12/18	Y	N	N	N
		102	14.02-100	2008/12/18	Y	N	N	N
		102	14.02-101	2008/12/18	Y	N	N	N
		102	14.02-102	2008/12/18	Y	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		102	14.02-103	2008/12/18	Y	N	N	N
		102	14.02-104	2008/12/18	Y	N	N	N
		102	14.02-105	2008/12/18	N	N	N	N
		102	14.02-106	2008/12/18	Y	N	N	N
		123	14.02-107	2008/12/18	Y	N	N	N
14.3	Inspections, Tests, Analyses, and Acceptance Criteria	32	14.03-1	2008/9/4	Y	N	N	N
		32	14.03-2	2008/9/4	N	N	N	N
		32	14.03-3	2008/9/4	N	N	N	N
		32	14.03-4	2008/9/4	Y	N	N	N
		32	14.03-5	2008/9/4	N	N	N	N
14.3.2	Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance							
14.3.3	Piping Systems and Components - Inspections, Tests, Analyses, and							
14.3.4	Reactor Systems - Inspections, Tests, Analyses, and Acceptance Criteria							
14.3.5	Instrumentation and Controls - Inspections, Tests, Analyses, and Acceptance Criteria							
14.3.6	Electrical Systems - Inspections, Tests, Analyses, and Acceptance Criteria							
14.3.7	Plant Systems - Inspections, Tests, Analyses, and	54	14.03.07-1, 14.3.7.3.1-1	2008/9/19	N	N	N	N
		54	14.03.07-1, 14.3.7.3.1-2	2008/9/19	N	N	N	N
		54	14.03.07-1, 14.3.7.3.1-3	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-1	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-2	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-3	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-4	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-5	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-6	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-7	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-8	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-9	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-10	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-11	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-12	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-13	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-14	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-15	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-16	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-17	2008/9/19	Y	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		54	14.03.07-2, 14.3.7.3.2-18	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-19	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-20	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-21	2008/9/19	Y	N	N	N
		54	14.03.07-2, 14.3.7.3.2-22	2008/9/19	N	N	N	N
		54	14.03.07-2, 14.3.7.3.2-23	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-1	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-2	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-3	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-4	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-5	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-6	2008/9/19	Y	N	N	N
		54	14.03.07-3, 14.3.7.3.4-7	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-8	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-9	2008/9/19	Y	N	N	N
		54	14.03.07-3, 14.3.7.3.4-10	2008/9/19	Y	N	N	N
		54	14.03.07-3, 14.3.7.3.4-11	2008/9/19	Y	N	N	N
		54	14.03.07-3, 14.3.7.3.4-12	2008/9/19	Y	N	N	N
		54	14.03.07-3, 14.3.7.3.4-13	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-14	2008/9/19	N	N	N	N
		54	14.03.07-3, 14.3.7.3.4-15	2008/9/19	N	N	N	Y
		54	14.03.07-4, 14.3.7.3.5-1	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-1	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-2	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-3	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-4	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-5	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-6	2008/9/19	Y	Y	N	N
		54	14.03.07-5, 14.3.7.3.6-7	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-8	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-9	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-10	2008/9/19	N	N	N	Y
		54	14.03.07-5, 14.3.7.3.6-11	2008/9/19	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		54	14.03.07-5, 14.3.7.3.6-12	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-13	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-14	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-15	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-16	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-17	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-18	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-19	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-20	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-21	2008/9/19	N	N	N	N
		54	14.03.07-5, 14.3.7.3.6-22	2008/9/19	Y	N	N	N
		54	14.03.07-5, 14.3.7.3.6-23	2008/9/19	Y	N	N	N
		54	14.03.07-6, 14.3.7.3.7-1	2008/9/19	N	N	N	N
		54	14.03.07-6, 14.3.7.3.7-2	2008/9/19	N	N	N	N
		54	14.03.07-6, 14.3.7.3.7-3	2008/9/19	N	N	N	N
		54	14.03.07-6, 14.3.7.3.7-4	2008/9/19	N	N	N	N
14.3.8	Radiation Protection - Inspections, Tests, Analyses, and Acceptance Criteria							
14.3.9	Human Factors Engineering - Inspections, Tests, Analyses, and Acceptance Criteria							
14.3.10	Emergency Planning - Inspections, Tests, Analyses, and Acceptance Criteria							
14.3.11	Containment Systems - Inspections, Tests, Analyses, and Acceptance Criteria	51	14.03.11-1	2008/9/18	Y	N	N	N
		51	14.03.11-2	2008/9/18	Y	N	N	N
		51	14.03.11-3	2008/9/18	Y	N	N	N
		51	14.03.11-4	2008/9/18	N	N	N	N
		51	14.03.11-5	2008/9/18	Y	N	N	N
		51	14.03.11-6	2008/9/18	Y	N	N	N
		51	14.03.11-7	2008/9/18	N	N	N	Y
		51	14.03.11-8	2008/9/18	Y	N	N	N
		51	14.03.11-9	2008/9/18	N	N	N	N
		51	14.03.11-10	2008/9/18	N	N	N	N
		51	14.03.11-11	2008/9/18	Y	N	N	N
		51	14.03.11-12	2008/9/18	Y	N	N	N
		51	14.03.11-13	2008/9/18	N	N	N	N
		51	14.03.11-14	2008/9/18	Y	N	N	N
		51	14.03.11-15	2008/9/18	N	N	N	N
		51	14.03.11-16	2008/9/18	Y	N	N	N
		51	14.03.11-17	2008/9/18	Y	N	N	N
14.3.12	Physical Security Hardware - Inspections, Tests, Analyses, and Acceptance Criteria	52	14.03.12-1	2008/9/18	N	N	N	N
		52	14.03.12-2	2008/9/18	N	N	N	N
		52	14.03.12-3	2008/9/18	N	N	N	N
		52	14.03.12-4	2008/9/18	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		52	14.03.12-5	2008/9/18	N	N	N	N
		52	14.03.12-6	2008/9/18	N	N	N	N
		52	14.03.12-7	2008/9/18	Y	N	N	N
		52	14.03.12-8	2008/9/18	N	N	N	N
		52	14.03.12-9	2008/9/18	N	N	N	N
		52	14.03.12-10	2008/9/18	N	N	N	N
		52	14.03.12-11	2008/9/18	Y	N	N	N
15	Introduction - Transient and Accident Analyses							
15.0.2	Review of Transient and Accident Analysis Method							
15.0.3	Design Basis Accident Radiological Consequences of Analyses for Advanced Light	38	15.00.03-1	2008/8/22	N	N	N	N
		38	15.00.03-2	2008/8/22	N	N	N	N
		38	15.00.03-3	2008/8/22	N	N	N	N
		38	15.00.03-4	2008/8/22	N	N	N	N
		38	15.00.03-5	2008/8/22	N	N	N	N
		38	15.00.03-6	2008/8/22	N	N	N	N
		38	15.00.03-7	2008/8/22	N	N	N	N
		38	15.00.03-8	2008/8/22	N	N	N	N
		38	15.00.03-9	2008/8/22	Y	N	N	N
		38	15.00.03-10	2008/8/22	N	N	N	N
		38	15.00.03-11	2008/8/22	Y	N	N	N
		38	15.00.03-12	2008/8/22	N	N	N	N
		38	15.00.03-13	2008/8/22	Y	N	N	N
		38	15.00.03-14	2008/8/22	Y	N	N	N
		38	15.00.03-15	2008/8/22	N	N	N	N
		38	15.00.03-16	2008/8/22	Y	N	N	N
		38	15.00.03-17	2008/8/22	N	N	N	N
		38	15.00.03-18	2008/8/22	N	N	N	N
		38	15.00.03-19	2008/8/22	N	N	N	N
		38	15.00.03-20	2008/8/22	N	N	N	N
		38	15.00.03-21	2008/8/22	N	N	N	N
		38	15.00.03-22	2008/8/22	Y	N	N	N
		38	15.00.03-23	2008/8/22	N	N	N	N
15.1.1-15.1.4	Decrease in Feedwater Temperature, Increase in Feedwater Flow, Increase in Steam Flow, and Inadvertent Opening of a Steam Generator							
15.1.5.	Steam System Piping Failures Inside and Outside of Containment (PWR)							
15.2.1-15.2.5	Loss of External Load; Turbine Trip; Loss of Condenser Vacuum; Closure of Main Steam Isolation Valve (BWR); and Steam Pressure Regulator							
15.2.6	Loss of Nonemergency AC Power to the Station Auxiliaries							
15.2.7	Loss of Normal Feedwater Flow							
15.2.8	Feedwater System Pipe Breaks Inside and Outside Containment (PWR)							
15.3.1-15.3.2	Loss of Forced Reactor Coolant Flow Including Trip of Pump Motor and Flow Controller							
15.3.3-15.3.4	Reactor Coolant Pump Rotor Seizure and Reactor Coolant Pump Shaft Break							
15.4.1	Uncontrolled Control Rod Assembly Withdrawal from a Subcritical or Low Power Startup							

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
15.4.2	Uncontrolled Control Rod Assembly Withdrawal at Power							
15.4.3	Control Rod Misoperation (System Malfunction or Operator							
15.4.4-15.4.5	Startup of an Inactive Loop or Recirculation Loop at an Incorrect Temperature, and Flow Controller Malfunction Causing an Increase in BWR Core Flow							
15.4.6	Inadvertent Decrease in Boron Concentration in the Reactor Coolant System (PWR)							
15.4.7	Inadvertent Loading and Operation of a Fuel Assembly in an Improper Position							
15.4.8	Spectrum of Rod Ejection Accidents (PWR)							
15.5.1-15.5.2	Inadvertent Operation of ECCS and Chemical and Volume Control System Malfunction that Increases Reactor Coolant							
15.5.7	Radioactive Releases from a Subsystem or Component							
15.6.1	Inadvertent Opening of a PWR Pressurizer Pressure Relief Valve or a BWR Pressure Relief							
15.6.3	Radiological Consequences of Steam Generator Tube Failure							
15.6.5	Loss-of-Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure							
15.8	Anticipated Transients Without Scram							
16.1	General, Plant Sys, Refueling, & Adm Ctrls: Technical							
16.2	SLs, Reactivity, Core Op Limits, & Special Ops: Technical Specifications							
16.3	Instrumentation: Technical Specifications	36	01-1	2008/8/22	Y	N	N	N
		72	16-1	2008/10/24	N	N	N	N
		72	16-2	2008/10/24	N	N	N	N
		72	16-3	2008/10/24	N	N	N	N
		72	16-4	2008/10/24	N	N	N	N
		72	16-5	2008/10/24	N	N	N	N
		72	16-6	2008/10/24	N	N	N	N
		72	16-7	2008/10/24	N	N	N	N
		72	16-8	2008/10/24	N	N	N	N
		72	16-9	2008/10/24	Y	Y	N	N
		72	16-10	2008/10/24	N	N	N	N
		72	16-11	2008/10/24	N	N	N	N
16.4	RCS & ECCS: Technical Specifications							
16.5	Containment Systems: Technical Specifications							
16.6	Electrical Power Sys: Technical Specifications							
17.1	Quality Assurance During the Design and Construction Phases							
17.4	Reliability Assurance Program (RAP)	101	17.04-1	2008/12/12	Y	N	N	N
		101	17.04-2	2008/12/12	Y	N	N	N
		101	17.04-3	2008/12/12	Y	N	N	N
		101	17.04-4	2008/12/12	Y	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		101	17.04-5	2008/12/12	Y	N	N	N
		101	17.04-6	2008/12/12	Y	N	N	N
		101	17.04-7	2008/12/12	Y	N	N	N
		101	17.04-8	2008/12/12	Y	N	N	N
		101	17.04-9	2008/12/12	Y	N	N	N
		101	17.04-10	2008/12/12	Y	N	N	N
		101	17.04-11	2008/12/12	Y	N	N	N
		101	17.04-12	2008/12/12	Y	N	N	N
		101	17.04-13	2008/12/12	Y	N	N	N
		101	17.04-14	2008/12/12	Y	N	N	N
		101	17.04-15	2008/12/12	Y	N	N	N
		101	17.04-16	2008/12/12	N	N	N	N
		101	17.04-17	2008/12/12	N	N	N	N
		101	17.04-18	2008/12/12	Y	N	N	N
17.5	Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants							
17.6	Maintenance Rule							
18.1	HFE Program Management							
18.2	Operating Experience Review	77	18.3	2008/11/4	N	N	N	N
18.3	Functional Requirements Analysis and Function Allocation							
18.4	Task Analysis							
18.5	Staffing and Qualifications	75	18.1	2008/11/4	N	N	N	N
		76	18.2	2008/11/4	N	N	N	N
		79	18-4	2008/11/4	N	N	N	N
		79	18.5	2008/11/4	N	N	N	N
18.6	Human Reliability Analysis							
18.7	Human-System Interface Design							
18.8	Procedure Development							
18.9	Training Program Development							
18.1	Human Factors Verification and Validation							
18.11	Design Implementation							
18.12	Human Performance Monitoring							
18.13	Minimum Inventory							
19	Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors	1	19-1	2008/5/16	N	N	N	N
		1	19-2	2008/5/16	N	N	N	N
		1	19-3	2008/5/16	N	N	N	N
		1	19-4	2008/5/16	N	N	N	N
		1	19-5	2008/5/16	N	N	N	N
		1	19-6	2008/5/16	N	N	N	N
		1	19-7	2008/5/16	Y	Y	N	N
		1	19-8	2008/5/16	N	N	N	N
		1	19-9	2008/5/16	N	N	N	N
		1	19-10	2008/5/16	N	N	N	N
		1	19-11	2008/5/16	N	N	N	N
		1	19-12	2008/5/16	N	N	N	N
		1	19-13	2008/5/16	N	N	N	N
		1	19-14	2008/5/16	N	N	N	N
		1	19-15	2008/5/16	N	N	N	N
		1	19-16	2008/5/16	N	N	N	N
		1	19-17	2008/5/16	N	N	N	N
		1	19-18	2008/5/16	N	N	N	N
		1	19-19	2008/5/16	N	N	N	N
		1	19-20	2008/5/16	N	N	N	N
		1	19-21	2008/5/16	N	N	N	N
		1	19-22	2008/5/16	N	N	N	N
		1	19-23	2008/5/16	N	N	N	N
		1	19-24	2008/5/16	N	N	N	N
		1	19-25	2008/5/16	N	N	N	N
		1	19-26	2008/5/16	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		1	19-27	2008/5/16	N	N	N	N
		25	19-28	2008/7/25	N	N	Y	N
		25	19-29	2008/7/25	N	N	Y	N
		25	19-30	2008/7/25	N	N	Y	N
		25	19-31	2008/7/25	N	N	Y	N
		25	19-32	2008/7/25	N	N	N	N
		25	19-33	2008/7/25	N	N	N	N
		25	19-34	2008/7/25	N	N	N	N
		25	19-35	2008/7/25	N	N	N	N
		25	19-36	2008/7/25	N	N	Y	N
		25	19-37	2008/7/25	N	N	N	N
		25	19-38	2008/7/25	N	N	Y	N
		25	19-39	2008/7/25	N	N	Y	N
		25	19-40	2008/7/25	N	N	N	N
		25	19-41	2008/7/25	N	N	N	N
		25	19-42	2008/7/25	N	N	Y	N
		25	19-43	2008/7/25	Y	N	N	N
		39	19-44	2008/9/27	N	N	N	N
		39	19-45	2008/9/27	N	N	Y	N
		39	19-46	2008/9/27	N	N	N	N
		39	19-47	2008/9/27	N	N	N	N
		39	19-48	2008/9/27	Y	Y	N	N
		39	19-49	2008/9/27	N	N	N	N
		39	19-50	2008/9/27	Y	Y	N	N
		39	19-51	2008/9/27	N	N	N	N
		39	19-52	2008/9/27	Y	Y	Y	N
		39	19-53	2008/9/27	Y	Y	N	N
		39	19-54	2008/9/27	N	N	N	N
		39	19-55	2008/9/27	N	N	N	N
		39	19-56	2008/9/27	N	N	N	N
		39	19-57	2008/9/27	N	N	N	N
		39	19-58	2008/9/27	Y	Y	N	Y
		39	19-59	2008/9/27	Y	Y	N	Y
		39	19-60	2008/9/27	N	N	N	N
		39	19-61	2008/9/27	Y	Y	N	N
		39	19-62	2008/9/27	N	N	N	N
		39	19-63	2008/9/27	Y	Y	N	N
		39	19-64	2008/9/27	N	N	N	N
		39	19-65	2008/9/27	N	N	N	N
		39	19-66	2008/9/27	Y	Y	N	N
		39	19-67	2008/9/27	N	N	N	N
		39	19-68	2008/9/27	Y	Y	Y	N
		39	19-69	2008/9/27	N	N	N	Y
		39	19-70	2008/9/27	N	N	N	N
		39	19-71	2008/9/27	N	N	N	N
		39	19-72	2008/9/27	Y	Y	N	N
		39	19-73	2008/9/27	Y	N	N	Y
		39	19-74	2008/9/27	N	N	N	N
		39	19-75	2008/9/27	N	N	N	N
		39	19-76	2008/9/27	N	N	N	N
		39	19-77	2008/9/27	Y	N	N	N
		39	19-78	2008/9/27	N	N	N	N
		35	19-79	2008/8/22	N	N	Y	N
		35	19-80	2008/8/22	N	N	Y	N
		35	19-81	2008/8/22	N	N	Y	N
		35	19-82	2008/8/22	N	N	Y	N
		35	19-83	2008/8/22	N	N	N	Y
		35	19-84	2008/8/22	N	N	N	N
		35	19-85	2008/8/22	N	N	N	N
		40	19-86	2008/8/28	Y	Y	N	N
		40	19-87	2008/8/28	Y	Y	N	N
		40	19-88	2008/8/28	N	N	N	N
		40	19-89	2008/8/28	Y	Y	N	N
		40	19-90	2008/8/28	Y	Y	N	N
		40	19-91	2008/8/28	N	N	N	N
		40	19-92	2008/8/28	N	N	N	N

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		40	19-93	2008/8/28	Y	Y	N	N
		40	19-94	2008/8/28	Y	Y	N	N
		40	19-95	2008/8/28	N	N	N	N
		40	19-96	2008/8/28	N	N	N	N
		40	19-97	2008/8/28	Y	Y	N	N
		40	19-98	2008/8/28	Y	Y	N	N
		40	19-99	2008/8/28	N	N	N	N
		40	19-100	2008/8/28	N	N	N	N
		53	19-101	2008/9/18	Y	N	Y	N
		53	19-102	2008/9/18	N	N	N	N
		53	19-103	2008/9/18	N	N	Y	N
		53	19-104	2008/9/18	N	N	Y	N
		53	19-105	2008/9/18	N	N	Y	N
		56	19-106	2008/9/18	N	N	N	N
		56	19-107	2008/9/18	N	N	N	N
		56	19-108	2008/9/18	N	N	N	N
		56	19-109	2008/9/18	N	N	N	N
		56	19-110	2008/9/18	N	N	Y	N
		69	19-111	2008/10/7	N	N	N	N
		69	19-112	2008/10/7	N	N	N	N
		69	19-113	2008/10/7	N	N	N	N
		69	19-114	2008/10/7	N	N	N	N
		69	19-115	2008/10/7	Y	N	N	N
		81	19-116	2008/11/5	N	N	N	N
		81	19-117	2008/11/5	N	N	N	N
		81	19-118	2008/11/5	N	N	Y	N
		81	19-119	2008/11/5	N	N	Y	N
		81	19-120	2008/11/5	N	N	Y	N
		81	19-121	2008/11/5	N	N	N	N
		81	19-122	2008/11/5	N	N	Y	N
		81	19-123	2008/11/5	N	N	Y	N
		81	19-124	2008/11/5	N	N	Y	N
		81	19-125	2008/11/5	N	N	Y	N
		81	19-126	2008/11/5	N	N	Y	N
		81	19-127	2008/11/5	N	N	Y	N
		86	19-128	2008/11/19	N	N	N	N
		86	19-129	2008/11/19	N	N	Y	N
		86	19-130	2008/11/19	N	N	Y	N
		86	19-131	2008/11/19	N	N	Y	N
		86	19-132	2008/11/19	N	N	Y	N
		86	19-133	2008/11/19	N	N	Y	N
		86	19-134	2008/11/19	N	N	Y	N
		86	19-135	2008/11/19	Y	N	Y	N
		88	19-136	2008/11/27	N	N	N	N
		88	19-137	2008/11/27	Y	N	N	N
		88	19-138	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-139	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-140	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-141	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-142	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-143	2008/11/27	N	N	N	N
		88	19-144	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-145	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-146	2008/11/27	N	N	N	N
		88	19-147	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-148	2008/11/27	N	N	N	N
		88	19-149	2008/11/27	(LATER)	(LATER)	(LATER)	-
		88	19-150	2008/11/27	Y	N	N	N
		92	19-151	2008/12/5	N	N	N	N
		92	19-152	2008/12/5	N	N	N	N
		92	19-153	2008/12/5	N	N	N	N
		92	19-154	2008/12/5	N	N	N	N
		92	19-155	2008/12/5	N	N	N	N
		92	19-156	2008/12/5	N	N	N	N
		92	19-157	2008/12/5	Y	N	N	N
		92	19-158	2008/12/5	(LATER)	(LATER)	(LATER)	-

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SRP Section		DCD RAI Response						Impact from COL Information Update
No.	Title	RAI No.	Question No.	Response Date	Impact on DCD	Impact on COLA	Impact on PRA	
		92	19-159	2008/12/5	N	N	N	N
		92	19-160	2008/12/5	N	N	N	N
		92	19-161	2008/12/5	N	N	N	N
		92	19-162	2008/12/5	N	N	N	N
		92	19-163	2008/12/5	N	N	N	N
		92	19-164	2008/12/5	N	N	N	N
		92	19-165	2008/12/5	(LATER)	(LATER)	(LATER)	-
		92	19-166	2008/12/5	N	N	N	N
		92	19-167	2008/12/5	N	N	N	N
		92	19-168	2008/12/5	N	N	N	N
		92	19-169	2008/12/5	N	N	N	N
		92	19-170	2008/12/5	N	N	N	N
		92	19-171	2008/12/5	N	N	N	N
		92	19-172	2008/12/5	N	N	N	N
		92	19-173	2008/12/5	N	N	N	N
		92	19-174	2008/12/5	Y	N	N	N
		92	19-175	2008/12/5	N	N	N	N
		92	19-176	2008/12/5	N	N	N	N
		92	19-177	2008/12/5	N	N	N	N
		92	19-178	2008/12/5	N	N	N	N
		92	19-179	2008/12/5	N	N	N	N
		92	19-180	2008/12/5	N	N	N	N
		92	19-181	2008/12/5	N	N	N	N
		92	19-182	2008/12/5	N	N	N	N
		97	19-183	2008/12/8	N	N	N	N
		97	19-184	2008/12/8	N	N	Y	N
		97	19-185	2008/12/8	Y	N	N	N
		97	19-186	2008/12/8	N	N	N	N
		97	19-187	2008/12/8	N	N	N	N
		97	19-188	2008/12/8	N	N	Y	N
		97	19-189	2008/12/8	N	N	Y	N
		97	19-190	2008/12/8	N	N	N	N
		97	19-191	2008/12/8	N	N	N	N
		98	19-192	2008/12/5	N	N	N	N
		98	19-193	2008/12/5	N	N	Y	N
		100	19-194	2008/12/11	N	N	Y	N
		100	19-195	2008/12/11	N	N	N	N
		100	19-196	2008/12/11	N	N	N	N
		100	19-197	2008/12/11	N	N	Y	N
		100	19-198	2008/12/11	N	N	N	N
		100	19-199	2008/12/11	N	N	Y	N
		100	19-200	2008/12/11	N	N	N	N
		104	19-201	2008/12/19	N	N	N	N
		104	19-202	2008/12/19	N	N	Y	N
		104	19-203	2008/12/19	N	N	Y	N
		104	19-204	2008/12/19	N	N	Y	N
		104	19-205	2008/12/19	Y	N	N	N
19.1	Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities							
19.2	Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General	2	01-1	2008/5/16	N	N	N	N

Enclosure 4

UAP-HF-09010
Docket Number 52-021

Revised RAI Responses due to the COL Information Update

January, 2009
(Non-Proprietary and Security-Related Information Excluded)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 57 REVISION 0**
SRP SECTION:	**06.02.04 - CONTAINMENT ISOLATION SYSTEM**
APPLICATION SECTION:	**06.02.04 CONTAINMENT ISOLATION SYSTEM**
DATE OF RAI ISSUE:	**8/25/2008**

QUESTION NO. : 06.02.04-6

Describe ITAAC for verification of containment isolation valve placement.
How will completion of COL item 6.2(6), as written, ensure that the supplied as-built piping distances from the outer containment isolation valve to the containment will be such that the valves are located as close to containment as practical? (i.e. describe any inspections tests or acceptance criteria which will confirm that the as built piping distances will not exceed those listed in table 6.2.4-3)

ANSWER:

Since COL item 6.2(6) will be deleted in DCD rev.2, MHI believes this question will not be available.

~~A list of as-built pipe run distances from the outer containment isolation valves to the containment penetrations will be prepared prior to initial fuel load to confirm that as-built pipe run distance will not exceed those listed in table 6.2.4-3.~~

Impact on DCD

There is no impact on the DCD

Impact on COLA

There is no impact on the COLA

Impact on PRA

There is no impact on the PRA

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO.62 REVISION 0**
SRP SECTION:	**06.02.05 – COMBUSTIBLE GAS CONTROL IN CONTAINMENT**
APPLICATION SECTION:	**06.02.05 COMBUSTIBLE GAS CONTROL IN CONTAINMENT**
DATE OF RAI ISSUE:	**09/02/2008**

QUESTION NO. : 06.02.05-8

Provide additional information on how inspection and test requirements of GDCs 41, 42and 43 are met.

To satisfy the inspection and test requirements of GDC 41, 42, and 43, combustible gas control systems including hydrogen igniters and combustible gas monitors should be designed with provisions for periodic inservice inspection, operability testing, and leak rate testing of the systems or components. The tests should support the analyses of the functional capability of the equipment. In order to evaluate this requirement as it applies to the US-APWR CHS, additional information is required:

1) Provide details on the design features of the hydrogen monitoring system and the hydrogen ignition system that accommodate periodic inspection and testing to assure system integrity and operability of the systems active components.

2) Describe how proposed inservice test criteria will be established and on what design requirements the test criteria will be based.

3) In order to evaluate if the proposed design is capable of achieving the required overall system design basis performance goal of maintaining hydrogen in the containment atmosphere to less than 10% (by volume), provide additional performance data on the hydrogen igniter system such as: performance requirements for each igniter (i.e.) minimum igniter surface temperature, voltage and current. Also indicate the design criteria to be verified in the in-service tests and inspections. Provide a description of the in-service performance test, or indicate if the description of the in-service test and inspection program will be a COL item.

ANSWER:

1) The Containment Hydrogen Monitoring and Control System are designed and located so that they are accessible for inspection and testing periodically. The hydrogen monitor can be inspected during normal power operation, since it is located outside containment. And the hydrogen monitor provides a MCR indication and as such provides continuous testability. On the other hand, the hydrogen igniters are located inside containment, so that it can be inspected and tested by energizing during refueling outage. ~~The mechanical design features of the Containment Hydrogen Monitoring and Control System are deferred to the detailed design phase, specifically the design features of the hydrogen monitoring system~~

~~and the hydrogen ignition system that accommodate periodic inspection and testing to assure system integrity and operability of the systems active components are vendor specific and will be available when the equipment vendors are selected.~~

2) The test criteria of system function are based on the requirement of RG 1.7 Rev.3 and the performance requirement of this system. The specific inservice test, inspection and calibration of system equipment will be defined, upon receipt of this system design documents from the selected vendor. ~~Upon receipt of Containment Hydrogen Monitoring and Control System design documents from the selected vendor (to include design and fabrication drawings, calculations, bill of materials, reports, vendor specific inservice test procedures, etc.), the specific parameters for the acceptance tests, calibrations, and inservice tests of the monitors and igniters will be defined; the tests of the acceptability and functional capability of the monitor and igniters will include monitor sensitivity and igniter function-upon-demand requirements for maintaining hydrogen in the containment atmosphere to less than 10% (by volume).~~

3) The performance requirements for the hydrogen igniters are minimum surface temperature and auto initiation by an ECCS actuation signal. The design criterion of surface temperature is higher than 1500 deg F to achieve spontaneous ignition of hydrogen during severe accident conditions. ~~As part of the hydrogen igniter system submittal, the vendor's specific industrial experience and the hydrogen igniter system performance data will be required for review and evaluation to ensure that the system can achieve the governing design criteria regarding hydrogen control. As an example, the specific igniter surface temperature, voltage and current, and the test conditions will be evaluated against the projected calculated worst-case severe accident hydrogen control needs.~~

Thus, the description of the DCD Subsection 6.2.5.4 and Table 6.2.5-1 will be revised to reflect above-mentioned information. ~~Thus, the description of the inservice test and inspection program will be a COL item.~~

Impact on DCD

DCD Subsection 6.2.5.4 and Table 6.2.5-1 will be revised. Please see attachment 06.02.05-8-1.

~~DCD Subsection 6.2.5.4 and Subsection 6.2.8 will be revised to include the above COL item.~~

~~**6.2.5.4 Tests and Inspections**~~

~~Testing and inspections (including instrument calibration), as recommended by the hydrogen monitoring and control equipment vendor, are performed.~~
~~**The COL Applicant is responsible to provide the specific inspection and test features of the containment hydrogen monitoring and control system, including for the hydrogen monitor and the hydrogen igniters, upon receipt of selected equipment vendor information.**~~

~~**6.2.8 Combined License Information**~~

~~***COL 6.2(11)*** **The COL Applicant is responsible to provide the specific inspection and test features of the containment hydrogen monitoring and control system, including for the hydrogen monitor and the hydrogen igniters, upon receipt of selected equipment vendor information.**~~

Impact on COLA

There is no impact on the COLA.

~~There is impact on COLA to incorporate the DCD change.~~

Impact on PRA

There is no impact on the PRA.

containment isolation valves of the RMS containment air sampling line are manually opened.

~~The operating principle and accuracy of the hydrogen monitor (combustible gas analyzer) are provided by the COL Applicant.~~

6.2.5.3 Design Evaluation

Hydrogen monitoring and control is provided for the unlikely occurrence of an accident that is more severe than a postulated design-basis accident. Thus, the hydrogen monitor has detection and display ranges of 0 to 10% by volume of the containment air. This monitoring range satisfies the requirements of 10 CFR 50.34(f)(2)(ix)(A) and 50.44(c)(2) for combustible gas control. The accuracy of the hydrogen monitor is less than or equal to $\pm$10% of full span. The measured value of hydrogen concentration is utilized for operator actions and this accuracy is sufficient to accomplish the actions. These operator actions are discussed in Subsection 19.2.5. ~~to 20% of hydrogen in the air, and the~~ The hydrogen igniters are automatically energized by the ECCS actuation signal. However, the design evaluation is neither required nor provided for such a beyond-design-basis event.

Beyond-design-basis evaluations documented in Chapter 19 include a combustible gas release within containment corresponding to the equivalent amount of combustible gas that would be generated from a 100% fuel-clad coolant reaction, uniformly distributed. As discussed in Section B of Revision 3 of RG 1.7 (Ref. 6.2-29), these Chapter 19 evaluations are intended to show that hydrogen concentrations do not exceed 10 volume percent (10 vol.%) and that the structural integrity of the containment pressure boundary is maintained.

6.2.5.4 Tests and Inspections

~~Testing and inspections (including instrument calibration), as recommended by the hydrogen monitoring and control equipment vendor, are performed.~~

6.2.5.4.1 Preservice Testing

Chapter 14 describes the initial test program, which includes the pre-operational and startup testing.

Pre-operational testing of the hydrogen monitoring system is performed either before or after installation, but prior to plant startup to verify performance.

Pre-operational testing and inspection of the hydrogen ignition system is performed after installation and prior to plant startup to verify operability of the hydrogen igniters. Verification of the hydrogen igniter positions is also performed. This verification confirms~~It is verified~~ that the surface temperature of the hydrogen igniters meets or exceeds the hydrogen ignition temperature specified in Table 6.2.5-1, ~~as recommended by the vendor, to ensure~~ thereby ensuring ignition of hydrogen concentrations above the flammability limit.

6.2.5.4.2 Inservice Testing

Periodic testing and calibration are performed to provide ongoing confirmation that the hydrogen monitoring function can be reliably performed. The testing and calibration for hydrogen monitor meet the requirement of RG 1.7 Rev.3 (Ref.6.2-29).

The hydrogen ignition system is normally in standby. Periodic inspection and testing are performed to confirm the continued operability of the hydrogen ignition system. Operability testing consists of energizing the hydrogen igniters and confirming that the surface temperature meets or exceeds the hydrogen ignition temperature specified in Table 6.2.5-1, ~~as recommended by the vendor, to ensure~~ thereby ensuring ignition of hydrogen concentrations above the flammability limit. The hydrogen ignition system is also tested to automatically initiated by the ECCS actuation signal.

6.2.5.5 Instrumentation Requirements

One hydrogen monitor is installed to measure hydrogen concentration in containment air.

The hydrogen monitoring system is manually initiated after the containment isolation valves of the RMS containment air sampling line are manually opened. Hydrogen concentration indication is continuously displayed in the MCR.

The hydrogen ignition system is automatically energized by the ECCS actuation signal. The hydrogen ignition system may also be manually operated, as needed, in response to the indications of the hydrogen monitoring system.

6.2.6 Containment Leakage Testing

GDC 52, 53, and 54 of Appendix A to 10CFR50 require that the reactor containment vessel and piping systems that penetrate the containment be designed to accommodate periodic leakage rate testing. Further, Appendix J to 10CFR50 (Ref. 6.2-28), specifies leakage testing requirements for the containment, its penetrations, and isolation valves (Type A, B, and, C tests). The containment leakage rate testing program and limits are identified in Chapter 16. The US-APWR leakage rate testing program implements RG 1.163 (Ref. 6.2-30) including the following elements:

- Maximum allowable containment integrated leakage rate
- Pretest requirements
- Venting of fluid systems in containment atmosphere
- Stabilization of containment conditions (temperature, pressure, humidity)
- Testing methodology
- Acceptance criteria

Table 6.2.5-1 Containment Hydrogen Monitoring and Control Design Parameters

Parameter	Value
I. Hydrogen Detector	
Number	1
Range (% hydrogen)	0-10~~20~~
Accuracy	Less than or equal to ±10% of full span
II. Hydrogen Igniter	
Number	20
~~Type~~	~~Glow Plug~~
Surface Temperature (°F)	Exceeds 1500

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO.62 REVISION 0**
SRP SECTION:	**06.02.05 – COMBUSTIBLE GAS CONTROL IN CONTAINMENT**
APPLICATION SECTION:	**06.02.05 COMBUSTIBLE GAS CONTROL IN CONTAINMENT**
DATE OF RAI ISSUE:	**09/02/2008**

QUESTION NO. : 06.02.05-11

Discuss why the operating principle and accuracy of the combustible gas analyzer are provided by the COL applicant.

In meeting the requirements of 10 CFR Part 50, § 50.44, and GDC 41 regarding the functional capability of the combustible gas control systems to ensure that containment integrity is maintained, the US-APWR hydrogen detector system should meet the provisions of RG 1.7, Revision 3, Section C.2. 10 CFR 52.47 (c)(1) states that an application for certification of a nuclear power reactor design that is an evolutionary change from light–water reactor designs of plants that have been licensed before April 18, 1989, must provide an essentially complete nuclear power plant design. In order to evaluate the US-APWR hydrogen monitoring system as it related to satisfying the criteria of RG 1.7, Revision 3, Section C.2 more information is required. Discuss why the operating principle and accuracy of the combustible gas analyzer is provided by the COL applicant (COL 6.2(7)).

ANSWER:

The operating principle and accuracy of the hydrogen monitor will be added to the DCD Subsection 6.2.5.2 and 6.2.5.3, and this COL item, COL 6.2(7), will be deleted in the next revision of the DCD. Please see MHI letter to the U.S.NRC, "Transmittal of COL information Update for US-APWR Design Control Document Revision 1", UAP-HF-08259.

~~The Combustible Gas Control Systems and their components are non-safety. The basic concept meets the provisions of RG 1.7. The design of the structures, systems, and components are deferred until receipt of information based on the particular vendor equipment. Hence COL 6.2(7) will be established in the FSAR to track the requirements for provision of the operating principle and accuracy of the combustible gas analyzers.~~

Impact on DCD

DCD Subsection 6.2.5.2 and 6.2.5.3 will be revised in the next revision.
See MHI letter, UAP-HF-08259.

~~There is no impact on the DCD.~~

Impact on COLA

There is impact on the COLA in order to incorporate the deletion of COL 6.2(7).

~~There is no impact on the COLA.~~

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO.62 REVISION 0**
SRP SECTION:	**06.02.05 – COMBUSTIBLE GAS CONTROL IN CONTAINMENT**
APPLICATION SECTION:	**06.02.05 COMBUSTIBLE GAS CONTROL IN CONTAINMENT**
DATE OF RAI ISSUE:	**09/02/2008**

QUESTION NO. : 06.02.05-15

Indicate and justify what, if any, inspections, test analysis and acceptance criteria would be required to verify that the hydrogen load produced by materials within the containment that would yield hydrogen gas would not exceed the hydrogen load assumptions used in the severe accident progression analysis contained in the design certification.

COL Item Number 6.1(4) states that "The COL applicant is responsible to identify materials within the containment that would yield hydrogen gas by corrosion from the emergency cooling or containment spray solutions, and their use should be limited as much as practicable." In support of meeting the requirements of 10 CFR Part 50, §50.44, and GDC 41 and pursuant to SRP 6.2.5 acceptance criteria #1 and RG 1.7 revision 3 section C, paragraph 4, describe (or indicate where in the DCD it is described) any specific criteria to be used by a COL applicant to demonstrate that the use of such materials were minimized during construction. Indicate and justify what if any inspections, test analysis and acceptance criteria (ITAAC) would be required to verify that the hydrogen load produced by such materials would not exceed the hydrogen load assumptions used in the severe accident progression analysis contained in the design certification.

ANSWER:

RG 1.7 revision 3, states (emphasis added):

"In an accident more severe than the design-basis loss-of-coolant accident (LOCA), combustible gas is predominately generated within the containment as a result of the following factors:

(1) fuel clad-coolant reaction between the fuel cladding and the reactor coolant

(2) molten core-concrete interaction in a severe core melt sequence with a failed reactor vessel"

Also, 10 CFR 50.44 (c) (3), states:

"The amount of hydrogen to be considered must be equivalent to that generated from a fuel clad-coolant reaction involving 100 percent of the fuel cladding surrounding the active fuel region."

However, materials to be used for components within the containment will be selected for their compatibility with the spray solution in the LOCA and severe accident environment and for their intended normal service. The materials that would yield hydrogen gas will be added to the DCD

Subsection 6.1.1.2.1 and this COL item, COL 6.1(4), will be deleted in the next revision of the DCD. Please see MHI letter to the U.S.NRC, "Transmittal of COL information Update for US-APWR Design Control Document Revision 1", UAP-HF-08259. ~~These materials will be identified as they are selected, and their use will be limited as much as practicable per RG 1.7 revision 3.~~

Impact on DCD

DCD Subsection 6.1.1.2.1 will be revised in the next revision.
See MHI letter, UAP-HF-08259.

~~There is no impact on the DCD.~~

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 50 REVISION 0**
SRP SECTION:	**06.02.06 - CONTAINMENT LEAKAGE TESTING**
APPLICATION SECTION:	**6.2.6 CONTAINMENT LEAKAGE TESTING**
DATE OF RAI ISSUE:	**8/19/2008**

QUESTION NO. : 06.02.06-2

(6.2.6-2) Please clarify what aspects of the containment leak rate testing (CLRT) program are to be certified as part of design certification of the US-APWR and what are to be left for the COL Applicant (COLA). Proposed COL item 6.2(8) states that essentially the entire program is the responsibility of the COLA. However, there is a commitment to RG 1.163 (and thus, by reference, to NEI 94-01 and ANSI/ANS 56.8-1994) and a CLRT program in the Technical Specifications (TS) sections 3.6.1 and 5.5.16. Further, there seem to be implied exceptions to RG 1.163 (e.g., not Type C testing all containment isolation valves (CIVs); not testing all CIVs with pressure applied in the correct direction; insufficient test, vent and drain valves to properly test the CIVs; and not committing to the version of ANS referenced in RG 1.163). If there are exceptions to the standards and regulatory guidance, please specifically identify them.

ANSWER:

DCD revision 1 Subsection 6.2.6 and COL item 6.2(8) will be updated in the next revision of DCD. Please see MHI letter to U.S.NRC, "Transmittal of COL information Update for US-APWR Design Control Document Revision 1", UAP-HF-08259.

MHI does not intend to deviate from 10 CFR 50 Appendix J, Option B, nor the methods approved by the Commission and endorsed in regulatory guide 1.163. Subsection 6.2.6.4 was revised by revision 1 of the DCD to reference NEI 94-01, as modified and endorsed by the NRC in RG 1.163, rather than ANSI/ANS 56.8. Reference 6.2-31 was revised by revision 1 of the DCD from ANSI/ANS 56.8-2002 to NEI-94-01, July 1995. Reference 5 of the Technical Specifications section B3.6.1 was revised by revision 1 of the DCD from ANSI/ANS 56.8-2002 to NEI 94-01.

DCD revision 1 Subsection 6.2.6 and Chapter 16, Technical Specifications, section 5.5.16 provide the program elements that are required to be implemented in detail by the COL licensee. COL Action 6.2(8) requires the COL Applicant to identify the implementation milestone for the containment leakage rate testing program described under 10 CFR 50, Appendix J.

Clarification of containment isolation valve testing and the addition of details showing test connections, vents and drains, are provided in response to RAI-50 Questions 06.02.06-4,

06.02.06-5, 06.02.06-6, 06.02.06-7, and 06.02.06-8. Additional clarification regarding compliance with 10 CFR 50 Appendix J, RG 1.163, NEI 94-01 and ANS56.8 are included in response to RAI-50 Questions 06.02.06-1 and 06.02.06-3.

Impact on DCD

DCD Subsection 6.2.6 will be revised in the next revision.
See MHI letter, UAP-HF-08259.

Impact on COLA

There is impact on the COLA in order to incorporate the update of COL 6.2(8).

Impact on PRA

There is no impact on the PRA

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO.49 REVISION 0**
SRP SECTION:	**06.04 – CONTROL ROOM HABITABILITY SYSTEM**
APPLICATION SECTION:	**06.04 HABITABILITY SYSTEMS**
DATE OF RAI ISSUE:	**08/19/2008**

QUESTION NO. : 06.04-18

The last paragraph of SRP 6.4 Section III.3.E.iv Review Procedures/ Ventilation System Layout and Functional Design contains the following words "... The location of the intakes with respect to the plant security fence should also be reviewed. Evaluation of the design options described above depends on the physical characteristics of the site as well as the plant design and, thus, can be finalized only at the COL stage of review."

DCD Section 6.4.7 "Combined License Information" does not contain a requirement that the COL Applicant perform the above review.

The staff requests that the DC applicant amend DCD Section 6.4.7 to reflect this requirement.

ANSWER:

Section III.3.E.iv of SRP 6.4 concerns the need to evaluate the physical characteristics of the site as they may affect the adequacy of a dual air intake design for the main control room emergency filtration system. The requirement for a COL Applicant to take into account site specific characteristics to ensure the sufficiency of the site specific atmospheric dispersion (X/Q values) in order to meet the US-APWR standard plant design is already encompassed by COL 2.3(2) and COL 15.0(1). Therefore, no further COL Information item is required in this respect.

Security-Related Information – Withhold Under 10 CFR 2.390

~~MHI concurs with the NRC that the COL applicant needs to evaluate the location of the intakes with respect to the plant security fence.~~

Impact on DCD

There is no impact on the DCD.

~~DCD Subsection 6.4.2.2, will be revised to discuss the location of the intakes with respect to the plant security fence and DCD Subsection 6.4.7 will also be revised to add this COL item.~~

~~**6.4.2.2 Ventilation System Design**~~

~~**The COL Applicant is responsible to evaluate design options and operating strategy relative to physical characteristics of the site, location of the intakes with respect to the plant security fence, including physical characteristics of areas adjacent to the security fence which may influence flow of contaminated air.**~~

~~**6.4.7 Combined License Information**~~

~~*COL 6.4(6)* **The COL Applicant is responsible to evaluate design options and operating strategy relative to physical characteristics of the site, location of the intakes with respect to the plant security fence, including physical characteristics of areas adjacent to the security fence which may influence flow of contaminated air.**~~

Impact on COLA

There is no impact on the COLA.

~~There is impact on COLA to incorporate the DCD change.~~

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 54**
SRP SECTION:	**14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria**
APPLICATION SECTION:	**Application Section: Tier 2 FSAR Sections 6.4, 9.4.1 through 9.4.5**
DATE OF RAI ISSUE:	**8/21/2008**

QUESTION NO.: 14.03.07-3, RAI 14.3.7.3.4-15

Appendix A to SRP 14.3, Section I.D.iii "Tier 2" reads …."*Tier 2 information includes…. iii. Supporting information on the inspections, tests, and analyses that should be performed to demonstrate that the acceptance criteria in the ITAAC have been met*"

DCD Section 9.4.3.4.2 (i.e. Testing and Inspection Requirements for the Non-Class 1E Electrical Room HVAC System) reads "*In addition to the general requirements in Section 9.4.3.4, battery fan operation is tested to insure automatic operation of the standby fan upon the airflow failure of the activated fan.*" The staff request that the DC applicant specify that this system attribute be tested in Tier 2 DCD Section 14.2.12.1.102 "Non-Class 1E Electrical Room HVAC System Preoperational Test".

ANSWER:

Tier 2 DCD Section 14.2.12.1.102, Non-Class 1E Electrical Room HVAC System Preoperational Test, includes Test Method item C.1: "Verify manual and automatic controls in the normal and emergency operating modes." Included in this scope is testing of automatic fan swapover logic.

In general, identifying all specific automatic logic functions for a system is beyond the level of detail for preoperational test abstracts contained in Subsection 14.2.12.1 of the DCD. Similarly, test acceptance criteria typically refer to the applicable section of the DCD where the design features are described. Preoperational test abstract 14.2.12.1.102 refers to Subsection 9.4.3 in Acceptance Criteria item D.1. As noted in the question statement, this subsection includes a description of battery fan operation and automatic operation of the standby fan upon the airflow failure of the activated fan.

Before developing the preoperational test procedures, a more detailed plan for the test will be developed in the test specifications, which provide specific details regarding design features requiring testing (such as specific fan autostart logic), delineation of specific plant operational

conditions at which tests are to be conducted, testing methodologies to be utilized, specific data to be collected, and acceptable data analysis techniques. The development of the administrative process for development of test specifications is described in DCD Subsection 14.2.3. ~~included in COL information 14.2(3) in Subsection 14.2.13 of the DCD.~~

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 54**
SRP SECTION:	**14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria**
APPLICATION SECTION:	**Application Section: Tier 2 FSAR Sections 6.4, 9.4.1 through 9.4.5**
DATE OF RAI ISSUE:	**8/21/2008**

QUESTION NO.: 14.03.07-5, RAI 14.3.7.3.6-10

US APWR Section 6.5.1.7 identifies material requirements for the ESF filter system. The COL applicant is responsible to provide an as-built list of materials used to show that radiolytic or pyrolitic decomposition products, if any, of each material will not interfere with the safe operation of this or any other ESF. SRP 14.3.7, Section III.2 requires that Tier 1 and Tier 2 information be consistent. US APWR Section 2.7.5.2 Tier 1 ITAAC acceptance criteria appear to be deficient compared to the requirements identified in US APWR Section 6.5.1.7. ITAAC in Table 2.7.5.2-3 do not address verification of as-built materials. Provide additional ITAAC consistent with the requirements of US APWR Section 6.5.1.7.

ANSWER:

~~DCD Revision 1, Section 6.5.1.7 states~~

~~"The ESF filter system materials are specified to resist premature failure of the annulus emergency exhaust system or any other ESF system due to radiolytic and pyrolytic decomposition products. The COL Applicant is responsible to provide an as-built list of material used in or on the ESF filter systems by their commercial names, quantities (estimate where necessary), and chemical composition and show that the radiolytic or pyrolytic decomposition products, if any, of each material will not interfere with the safe operation of this or any other ESF."~~

SRP 14.3.7, Section III.2 requires that Tier 1 and Tier 2 information be consistent. MHI does not interpret this requirement to mean that the level of detail in Tier 1 be similar to that of Tier 2. RG 1.206 and SRP 14.3 ITAAC guidance appear to be silent on the as-built list of materials referenced in DCD Section 6.5.1.7. MHI believes this to be below the level of detail for Tier 1 information.

Furthermore, this COL Item, COL 6.5(4), will be deleted in the next revision of the DCD since the design information of the materials used in or on the ESF filter systems will be added to the DCD

Subsection 6.5.1.7. Please see MHI letter to the U.S.NRC, "Transmittal of COL information Update for US-APWR Design Control Document Revision 1", UAP-HF-08259.

Impact on DCD

DCD Subsection 6.5.1.7 will be revised in the next revision.
See MHI letter, UAP-HF-08259.
~~There is no impact on the DCD.~~

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 51 REVISION 0**
SRP SECTION:	**14.03.11 – Containment Systems and Severe Accidents – Inspections, Tests, Analyses, and Acceptance Criteria**
APPLICATION SECTION:	**14.3.4.11**
DATE OF RAI ISSUE:	**8/19/2008**

QUESTION NO.: 14.03.11-7

(14.3.4.11-7)
Provide verification through ITAAC that the location of the outermost isolation valve is such that the length of the pipe from containment to the valve is not greater than the specified value.

Containment isolation valves are designed to be located within certain distance from the containment. Table 6.2.4-3, List of Containment Penetrations and System Isolation Provisions, (Column 10), in Tier 2 provides the length of the pipe and the CIV distances should not be greater than the value defined. This is a key design feature and should be included in Tier 1 design description. An ITAAC verifying that the valve positions do not violate this maximum distance is considered applicable.

ANSWER:

MHI believes that the length of the pipe does not reach the safety significance threshold for an ITAAC. The shorter the length of pipe run between the CIV and containment the likelihood of a pipe break is only incrementally less, but the consequences remain unchanged. GDC 55, 56 and 57 state that isolation valves outside containment shall be located as close to containment as practical. MHI understands the basis of this requirement but this requirement is not directly related to safety because it does not adversely affect the safety if the as-built length of the pipe does not meet the value of Tier 2 Table 6.2.4-3. This is consistent with the assumptions for US-APWR ITAAC as described in DCD Chapter 14, Section 14.3 and consistent with the NRC staff position on ITAAC for the containment isolation system. ~~As-built pipe length will be demonstrated as described in COL item 6.2(6).~~

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: **NO.39-548 REVISION 0**

SRP SECTION: **19 – Probabilistic Risk Assessment and Severe Accident Evaluation**

APPLICATION SECTION: **19**

DATE OF RAI ISSUE: **7/29/2008**

QUESTION NO. : 19-58

(Follow-up to Question 19-26) Revise the DCD to include a combined license (COL) information item or similar commitment that ensures the COL applicant will develop shutdown response guidelines that satisfy NUMARC 91-06, as stated in response to Question 19-26.

ANSWER:

The section 19.2.5 of DCD which describes the accident management will be revised reflecting this RAI. Development of ~~accident management program~~ the maintenance procedure is one of the COL items identified in Chapter ~~19~~-13, and will include ~~a shutdown response guideline~~ shutdown responses as part of the ~~program~~ procedure to incorporate the discussions given in NUMARC 91-06.

Impact on DCD

The DCD will be revised reflecting this response to this RAI.

Impact on COLA

This RAI and its response will impact the COLA, which refers the DCD.

Impact on PRA

There is no impact on PRA from this RAI and the response as this additional information does not cause any changes to the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: **NO.39-548 REVISION 0**

SRP SECTION: **19 – Probabilistic Risk Assessment and Severe Accident Evaluation**

APPLICATION SECTION: **19**

DATE OF RAI ISSUE: **7/29/2008**

QUESTION NO. : 19-59

(Follow-up to Question 19-27) Footnote 8 in RG 1.206, Section C.I.19, Appendix A, states that: "'PRA-based insights' are those insights identified during the DC [design certification] process that ensure that assumptions made in the PRA will remain valid in the as-to-be-built, as-to-be-operated plant and include assumptions regarding SSC and operator performance and reliability, ITAAC, interface requirements, plant features, design and operational programs, and others. The usage of the phrase is intended to be consistent with its use in Table 19.59-29 of the AP600 design control document [DCD]." In the AP600 DCD, each insight receives a disposition such as a reference to another portion of the DCD, an ITAAC, or a COL information item. Question 19-27 requested that such a disposition be added to Table 19.1-113 for each shutdown entry, as well as the inclusion of additional features that reduce shutdown risk. Amend DCD Table 19.1-113 to add the requested dispositions for all entries, and include the assumptions and insights provided in response to Question 19-27.

ANSWER:

The DCD Table 19.1-113 will be revised adding the requested dispositions for all entries, and include the assumptions and insights provided in response to Question 19-27. The section 19.2.5 of DCD, which describes the accident management, will be revised reflecting this RAI. Development of ~~accident management program~~ the maintenance procedure is one of the COL items identified in Chapter ~~19~~ 13, and will include ~~a shutdown response guideline~~ shutdown responses.

Impact on DCD

The DCD will be revised reflecting this response to this RAI.

Impact on COLA

This RAI and its response will impact the COLA, which refers the DCD.

Impact on PRA

There is no impact on PRA from this RAI and the response as this additional information does not cause any changes to the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: **NO.39-548 REVISION 0**

SRP SECTION: **19 – Probabilistic Risk Assessment and Severe Accident Evaluation**

APPLICATION SECTION: **19.1**

DATE OF RAI ISSUE: **7/29/2008**

QUESTION NO. : 19-69

(Follow-up to Question 19-1) As stated in the response to Question 19-1, page 19.1-103 of the DCD indicates that the "allowable" LOOP recovery time is one hour. Provide justification for this assumption. Do any LOOP-initiated loss-of-RHR scenarios result in boiling in the RCS in less than an hour? If so, describe the scenario and provide a description and results of the time-to-boil calculation. Describe procedures and training related to closure of the equipment hatch and other containment penetrations without offsite power. State how long containment closure is expected to take both with and without offsite power.

ANSWER:

For the LOOP recovery, as described in the DCD, one hour is assumed to be the allowable time until the uncover of the reactor core. This is taken from previous PRA studies and experience with mid-loop operation, and is conservatively applied to all POSs.

As a response of this RAI, MHI calculated the allowable time until the uncover of the reactor core for each POS by MAAP. The analysis conditions and results are shown in Table 19.69-1.

Procedures and training related to containment closure are addressed in the COL item ~~on an accident management program~~ 13.5(7) in the maintenance procedure, which will be developed in accordance with NUMARC91-06.

Impact on DCD

There is no impact on DCD from this RAI as the response contains only additional information

Impact on COLA

There is no impact on COLA from this RAI as the response contains only additional information.

Impact on PRA

There is no impact on PRA from this RAI and the response as this additional information does not cause any changes to the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: NO.39-548 REVISION 0

SRP SECTION: 19 – Probabilistic Risk Assessment and Severe Accident Evaluation

APPLICATION SECTION: 19

DATE OF RAI ISSUE: 7/29/2008

QUESTION NO. : 19-73

What indication of temperature, pressure, and level is available to the operators during shutdown? For each, state the type of sensor, its location in the RCS, any associated alarms and trips, and the controls that ensure the indication is available during shutdown. Discuss whether these sensors are susceptible to errors identified at current plants (e.g., errors in differential pressure caused by RCS inventory swept into the pressurizer, failures of Tygon tubing, and inaccurate hot leg temperature measurement after a loss of flow).

ANSWER:

Typical indications of temperature, pressure and level during shutdown are shown in Table 19-73.1. This table summarizes the type of sensor, location in the RCS and associated alarms.

As for RCS water level for shutdown, three types of instruments are provided in US-APWR design. The first one is narrow range water level instrument (2ch), the second one is mid range water level instrument, and the third one is wide range water level. These instruments lines are permanent equipments, so monitoring RCS water level during shutdown (e.g., mid-loop operation) does not basically use Tygon tubing.

Narrow range and mid range water level instruments measure the level between the bottom of cross over leg and pressurizer gas phase, so these instruments indicate correct water level. If errors occur in the measurement due to differential pressure caused by RCS inventory swept into the pressurizer, it can be considered that all RHR pumps are inoperable. In such a situation, water level in the core can be obtained by measuring the reactor vessel water level.

As for inaccurate hot leg temperature measurement after a loss of flow, reactor coolant hot leg temperature instruments are located in the flow path during RHR operation, so this parameter can be accurately indicated.

The section 19.2.5 of DCD which describes the accident management will be revised reflecting this RAI. Development of ~~accident management program~~ the maintenance procedure is one of the COL items identified in Chapter ~~19~~ 13, and will include ~~a shutdown response guideline~~ shutdown responses as part of the ~~program~~ procedure to incorporate the discussions given in NUMARC 91-06. Moreover this COL Item will include the controls that ensure the indication is available during shutdown.

Table 19-73.1 Typical indications of temperature, pressure, and level during shutdown

	Type of sensor	Location	Alarms	Remark
Reactor coolant hot leg temperature (Wide range)	Resistance Temperature Detector (RTD)	Hot leg	-	-
Reactor coolant cold leg temperature (Wide range)	RTD	Cold leg	-	-
Pressurizer pressure	Transmitter	Pressurizer	High and Low	-
Reactor coolant pressure	Transmitter	CS/RHR pump suction piping	-	-
Pressurizer water level	Transmitter	Pressurizer	High and Low	-
RCS water level (narrow)	Transmitter	Crossover leg	High, Below normal, Low and Low-low	For mid-loop operation
RCS water level (mid)	Transmitter	Crossover leg	High	For mid-loop operation
RCS water level (wide)	Transmitter	Crossover leg	High and Low	For mid-loop operation

Impact on DCD

~~There is no impact on DCD from this RAI as the response contains only additional information.~~ The DCD will be revised reflecting this response to this RAI.

Impact on COLA

There is no impact on COLA from this RAI as the response contains only additional information.

Impact on PRA

There is no impact on PRA from this RAI and the response as this additional information does not cause any changes to the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

01/09/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No.52-021

RAI NO.: NO.35 REVISION 0

SRP SECTION: 19 – Probabilistic Risk Assessment and Severe Accident Evaluation

APPLICATION SECTION: RG 1.206

DATE OF RAI ISSUE: 7/24/2008

QUESTION NO. : 19-83

Several sequences in many event trees indicate that both containment spray (top event CSA) and alternate core injection by CS/RHR through the cold legs (e.g., top events CRB and CRB1) can be successful in same sequence (e.g., LLOCA sequence #18 and VSLOCA sequence #3). Since event CRB requires closing the containment spray header isolation valves (Table 6A.3-4), it appears that containment spray ceases its operation when alternate core injection is activated by the operator. Please state the key assumptions that were made and explain the basis of the assumed mission time for the containment spray function and the time window for successful switching to alternate core injection.

ANSWER:

In the US-APWR PRA for operations at power, containment spray system is modeled having two functions, i.e. ordinary containment spray function and alternate core cooling function. Containment spray system consists of 4 independent trains and these two functions can be achieved simultaneously. This alternate core cooling function is briefly described in DCD Subsection 19.2.5. Function and mission time of these functions are described below.

Containment spray function:
Containment spray header containment isolation valves are opened and CS/RHR pumps are activated upon issuance of containment spray signal, accordingly lines to supply RWSP water to spray header is set up.

Alternate core cooling function:
The CS/RHR pumps have function to supply RWSP water into the cold leg piping by manually switching over the CS/RHR pump lines to the cold leg in case of high head injection system failure.

Mission time for the containment spray function:
The mission time of containment spray system is defined as 24 hours considering the reduced heat removal ability from containment due to the application of alternate core cooling function. This mission time is discussed in Chapter 5 Section 5.6 of the PRA technical report and evaluated as sufficient time to mitigate the various accidental events.

Time window for successful switching to alternate core cooling:
The time from onset of accident till core uncovery is evaluated as approximately 30 minutes in Case1.4-1 of Chapter 5 Attachment A Table5A.1.4-1 of the PRA technical report, which assumes LOCA event with 8 in. diameter breach under failure of both high head injection system and alternate core cooling. From this evaluation result, it is considered that core damage can be prevented if alternate core cooling is achieved within 30 minutes after onset of LOCA. As stated in Chapter 5 Attachment A Table 5A.1.5-1, the success criterion of alternate core cooling to prevent core damage is 1 out of 4 cold leg injection. Hence, in the actual operation, switchover of two CS/RHR trains from containment spray line-up to alternate core cooling line-up is expected.

Major operator actions and the expected time are evaluated as following.

(1) RCS depressurization by secondary side cooling: Approximately 10 minutes
(To open main steam relief valve. This operation should be performed when alternate core cooling is required and the RCS pressure is higher than the CS/RHR pump shutoff head.)

(2) Switchover of two trains from containment spray line-up to alternate core cooling line-up: Approximately 10 minutes
(To close containment spray header containment isolation valve and open RHR flow control valve and RHR discharge line containment isolation valve)

It is evaluated through the success criteria analysis in Chapter 5 of the PRA technical report that the necessary time to reduce RCS pressure below the CS/RHR shutoff head via RCS depressurization by secondary side cooling is achieved within several minutes, less than 10 minutes. It is therefore considered that operations for alternate core cooling can be completed within 30 minutes.

Key assumption is that operations explained above are incorporated in the ~~operational procedures~~ emergency operating procedure, and the related activities are defined as a COL item in DCD Section ~~19.3~~ 13.5 (i.e. COL ~~19.3(6)~~ 13.5(6).)

In addition, it should be noted that this alternate core cooling function is not credited in case of large break LOCA scenario, conservatively assuming that the operation can not be performed within the limited time available for operation. The event tree developed for the LBLOCA includes a heading for alternate core cooling although the failure probability of this function is set as 1.0.

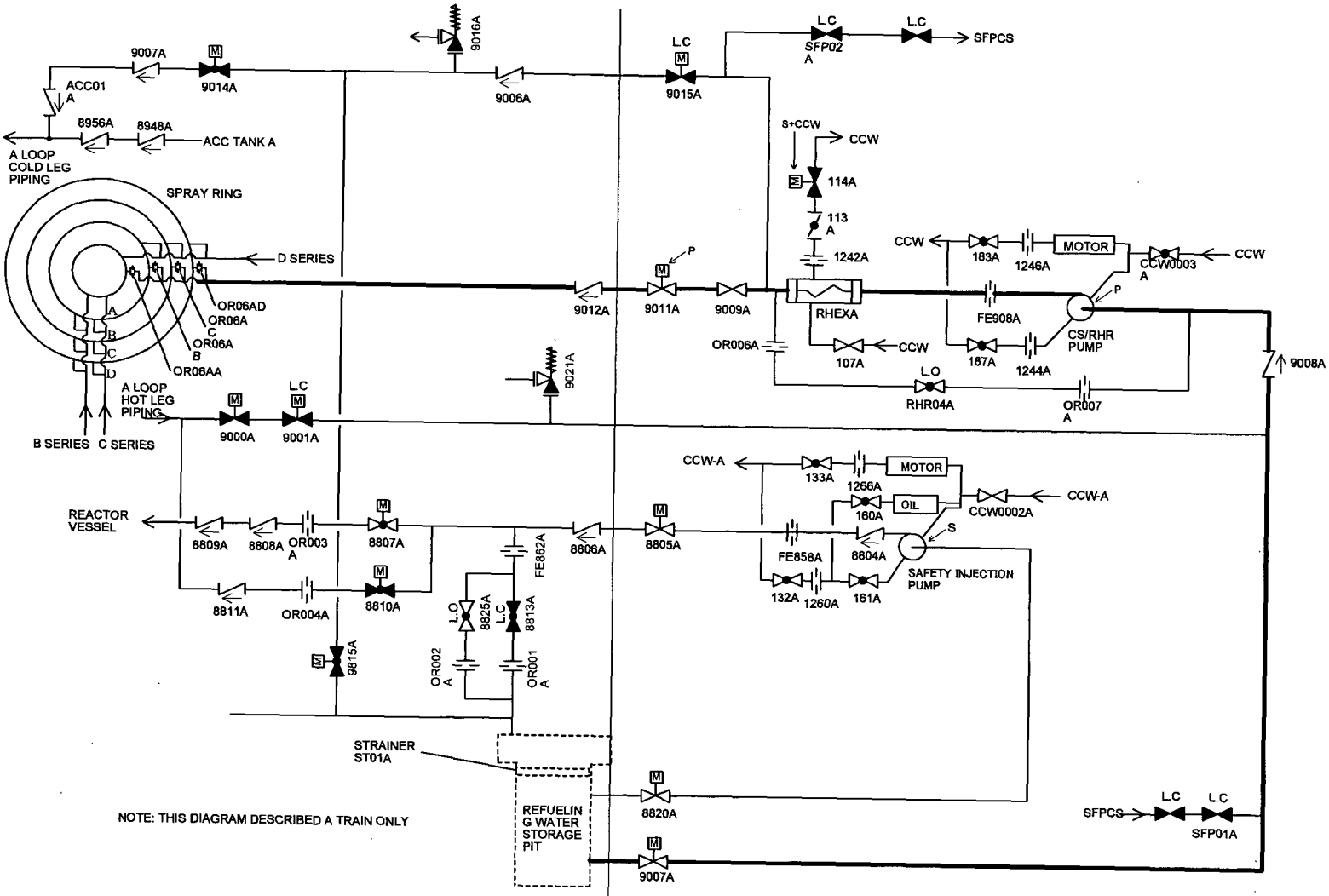

Figure 19-83.1 Containment spray

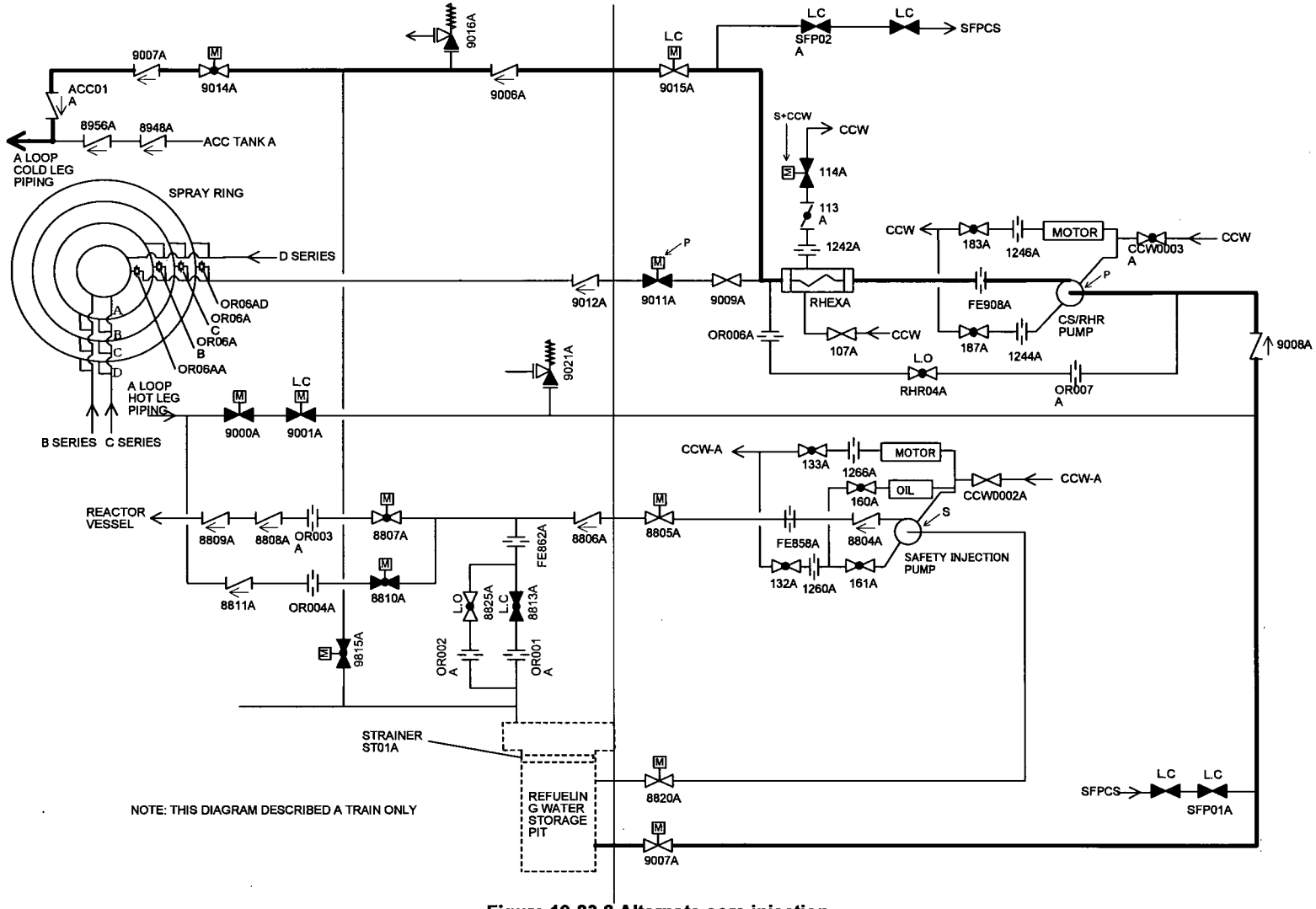

Figure 19-83.2 Alternate core injection

Impact on DCD

There is no impact on DCD from this RAI as the response contains only additional information.

Impact on COLA

There is no impact on COLA from this RAI as the response contains only additional information.

Impact on PRA

There is no impact on PRA from this RAI as the response contains only additional information.