

  
**MITSUBISHI HEAVY INDUSTRIES, LTD.**  
16-5, KONAN 2-CHOME, MINATO-KU  
TOKYO, JAPAN

March 25, 2010

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-10078

**Subject: MHI's Response to US-APWR DCD RAI No. 550-4359 Revision 2**

**Reference:** 1) "Request for Additional Information No. 550-4359 Revision 2, SRP Section: 14.03.11 – Containment Systems and Severe Accidents – Inspections, Tests, Analyses, and Acceptance Criteria, Application Section: 14.3.4.11" dated March 16, 2010.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Responses to Request for Additional Information No. 550-4359 Revision 2."

Enclosed is the response to Question 14.03.11-43 that is contained within Reference 1.

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

Sincerely,



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

Enclosure:

1. Response to Request for Additional Information No. 550-4359 Revision 2

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

Contact Information

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Docket No. 52-021  
MHI Ref: UAP-HF-10078

Enclosure 1

UAP-HF-10078  
Docket No. 52-021

Responses to Request for Additional Information No. 550-4359  
Revision 2

March 2010

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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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03/25/2010

**US-APWR Design Certification**

**Mitsubishi Heavy Industries**

**Docket No. 52-021**

**RAI NO.:** NO. 550-4359 REVISION 2  
**SRP SECTION:** 14.03.11- CONTAINMENT SYSTEMS AND SEVERE ACCIDENTS  
**APPLICATION SECTION:** 14.3.4.11  
**DATE OF RAI ISSUE:** 3/16/2010

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**QUESTION NO.:** 14.03.11-43

**RAI 14.3.4.11-31**

The staff requested, in RAI 51-916, Question 14.03-11-8 (14.3.4.11-8) and RAI 222-1933, Question 14.03.11-34 (14.3.4.11-24) that the applicant provide ITAAC required to verify the minimum inventory of alarms, displays and controls associated with the containment instrumentation shown on Figure 2.11.2-1, that are not listed in Table 2.11.2-1, and to amend Table 2.11.2-1 as required. The staff also requested that for systems with containment isolation functions (e.g., CVCS, SGBDS, PSS), the applicant provide ITAAC to verify the display of position indication of the containment isolation valves in the MCR, to include the displays of the CIV positions in the respective system tables. The staff requested the applicant provide ITAAC required to verify the minimum inventory of alarms, displays and controls are provided for the Containment Hydrogen Monitoring and Control system (CHS), as described in the design description paragraph 2.11.4.1.

In a letter dated September 18, 2008, Mitsubishi responded to RAI 51-916, Question 14.03-11-8 (14.3.4.11-8) that ITAAC to verify the display of position indication of the containment isolation valves in the MCR will be added in the respective system tables.

In a letter dated April 23, 2009, Mitsubishi responded to RAI 222-1933, Question 14.03.11-34 (14.3.4.11-24) that Tier 1 table 2.11.2-1 will be revised to consolidate all valves with containment isolation function to make them subject to CIS ITAAC in Tier 1 table 2.11.2-2. MHI also indicated that DCD Tier 1 will be revised as needed to ensure each of the CIVs in the revised table 2.11.2-1 is included in it's appropriate table of alarms, displays and controls.

In a letter dated January 13, 2009, Mitsubishi responded to RAI 488-3745, Question 14.03.11-42 (14.3.4.11-30) stating that CCW containment isolation valves NCS-VLV-403 A and B have been added to Tier 1 Table 2.7.3.3-2 in DCD Revision 2. NRC staff has reviewed the DCD revision and the following information is needed:

The staff noted that ITAAC item 11 in Tier 1 Table 2.7.3.3-5 is not clearly defined.

Remote operated valves to which this ITAAC item applies should be clearly identified by valve ID. Clarify this ITAAC by providing a specific reference to a valve ID in ITAAC table 2.7.3.3-4

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**ANSWER:**

MHI has revised Table 2.7.3.3-4 to provide a specific reference to a valve ID. In this review, MHI found the label for B-CCW pump missing in Figure 2.7.3.3-1 (Sheet 1 of 2). MHI has also revised

this typographical error on the P&ID.

MHI reviewed all relevant tables of MCR/RSC alarms, displays, and controls and found that Table 2.7.2-2 should be revised.

A similar change will be also made in Table 2.7.2-2.

#### **Impact on DCD**

See attachment 1 for the proposed markup of Table 2.7.3.3-4 and Figure 2.7.3.3-1 (Sheet 1 of 2) and attachment 2 for the markup of Table 2.7.2-2.

#### **Impact on COLA**

There is no impact on the COLA.

#### **Impact on PRA**

There is no impact on the PRA.

**Table 2.7.3.3-4 Component Cooling Water System Equipment Alarms, Displays, and Control Functions (Sheet 1 of 2)**

Equipment/Instrument Name	MCR/RSC Alarm	MCR Display	MCR/RSC Control Function	RSC Display
Component cooling water pumps (NCS-MPP-001 A, B, C, D)	No	Yes	Yes	Yes
CCW supply header tie line isolation valves (NCS-MOV-020A,B)	No	Yes	Yes	Yes
CCW return header tie line isolation valves (NCS-MOV-007A,B)	No	Yes	Yes	Yes
CS/RHR heat exchanger CCW outlet valves (NCS-MOV-145A,B,C,D)	No	Yes	Yes	Yes
RCP CCW supply line outside containment isolation valves (NCS-MOV-402A,B)	No	Yes	Yes	Yes
RCP CCW supply line outside containment isolation valve bypass valves (NCS-MOV-445A,B)	No	Yes	Yes	Yes
RCP CCW return line inside containment isolation valves (NCS-MOV-436A,B)	No	Yes	Yes	Yes
RCP CCW return line inside containment isolation valve bypass valves (NCS-MOV-447A,B)	No	Yes	Yes	Yes
RCP CCW return line outside containment isolation valves (NCS-MOV-438A,B)	No	Yes	Yes	Yes
RCP CCW return line outside containment isolation valve bypass valves (NCS-MOV-448A,B)	No	Yes	Yes	Yes
RCP motor CCW supply line isolation valves (NCS-MOV-446A,B,C,D)	No	Yes	Yes	Yes
RCP CCW supply line tie line isolation valves (NCS-MOV-232A,B)	No	Yes	Yes	Yes
RCP CCW return line tie line isolation valves (NCS-MOV-233A,B)	No	Yes	Yes	Yes
RCP CCW return line isolation valve (NCS-MOV-234A,B)	No	Yes	Yes	Yes
RCP CCW supply line isolation valves (NCS-MOV-401A,B)	No	Yes	Yes	Yes
Letdown heat exchanger CCW supply line outside containment isolation valve (NCS-MOV-531)	No	Yes	Yes	Yes
Letdown heat exchanger CCW return line outside containment isolation valve (NCS-MOV-537)	No	Yes	Yes	Yes
Excess letdown heat exchanger CCW supply line outside containment isolation valve (NCS-MOV-511)	No	Yes	Yes	Yes
Excess letdown heat exchanger CCW return line outside containment isolation valve (NCS-MOV-517)	No	Yes	Yes	Yes

**Table 2.7.3.3-4 Component Cooling Water System Equipment Alarms, Displays, and Control Functions (Sheet 2 of 2)**

Equipment/Instrument Name	MCR/RSC Alarm	MCR Display	MCR/RSC Control Function	RSC Display
Auxiliary building CCW supply line first isolation valve (NCS-AOV-601)	No	Yes	Yes	Yes
Auxiliary building CCW supply line second isolation valve (NCS-AOV-602)	No	Yes	Yes	Yes
Turbine building CCW supply line first isolation valves (NCS-AOV-661A,B)	No	Yes	Yes	Yes
Turbine building CCW supply line second isolation valves (NCS-AOV-662A,B)	No	Yes	Yes	Yes
RCP thermal barrier heat exchanger CCW return line first isolation valves (NCS-MOV-129A,130A,131A,132A)	No	Yes	Yes	Yes
RCP thermal barrier heat exchanger CCW return line second isolation valves (NCS-MOV-129B,130B,131B,132B)	No	Yes	Yes	Yes
CCW header flow (NCS-FT-034,035,037,038)	No	Yes	No	Yes
CCW supply temperature (NCS-TE-025,026,027,028)	Yes	Yes	No	Yes
CCW header pressure (NCS-PT-030,031,032,033)	Yes	Yes	No	Yes
CCW surge tank water level (NCS-LT-010,011,020,021)	Yes	Yes	No	Yes
RCP thermal barrier component cooling water flow (NCS-FT-129A,B,130A,B,131A,B,132A,B)	Yes	Yes	No	Yes

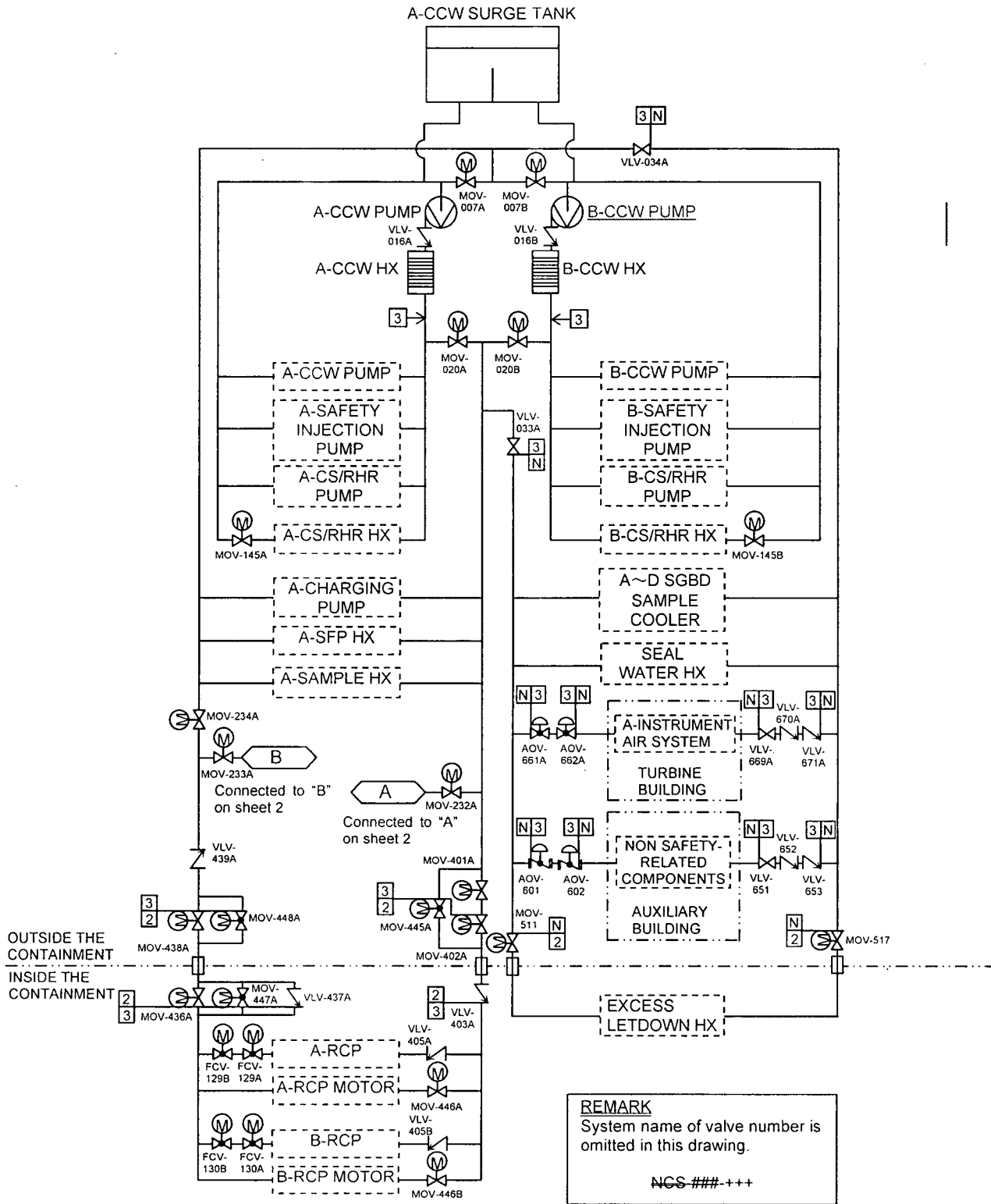


Figure 2.7.3.3-1 Component Cooling Water System (Sheet 1 of 2)

**Table 2.7.2-1 Compressed Air and Gas System Component Location**

Component Name	Component Location
A-Instrument Air Compressor Package	Turbine Building
B- Instrument Air Compressor Package	Turbine Building
A-Service Air Compressor Package	Turbine Building
B-Service Air Compressor Package	Turbine Building
C-Service Air Compressor Package	Turbine Building

**Tale 2.7.2-2 Compressed Air and Gas System Equipment Alarms, Displays and Control Functions**

Equipment Name	MCR/RSC Alarm	MCR Display	MCR/RSC Control Function	RSC Display
Instrument air pressure (IAS-PT-010)	Yes	Yes	No	Yes

**Table 2.7.2-3 Compressed Air and Gas System Inspections, Tests, Analyses, and Acceptance Criteria**

Design Commitment	Inspections, Tests Analyses	Acceptance Criteria
1. The functional arrangement of the CAGS is as described in the design description.	1. An inspection of the as-built system will be performed.	1. The as-built CAGS conforms to the functional arrangement as described in the Design Description of this Subsection 2.7.2.1.
2. Deleted.	2. Deleted.	2. Deleted.
3. MCR alarms and displays of the parameters identified in Table 2.7.2-1 can be retrieved in the MCR.	3. Inspection will be performed for the retrievability of the CAGS parameters in the MCR.	3. The MCR alarms and displays identified in Table 2.7.2-1 can be retrieved in the as-built MCR.
4. RSC alarm and display are identified in Table 2.7.2-1.	4. Inspections of the as-built RSC alarm and display will be performed.	4. Alarm and display exist on the as-built RSC as identified in Table 2.7.2-1.