



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

June 19, 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-09328

**Subject: MHI's Responses to US-APWR DCD RAI No. 363-2645 Revision 0**

**Reference:** [1] "Request for Additional Information No. 363-2645 Revision 0, SRP Section: 09.02.05 – Ultimate Heat Sink - Design Certification and New License Applicants, Application Section: 9.2.5," dated May 13, 2009.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Response to Request for Additional Information No. 363-2645 Revision 0".

Enclosure 1 contains the response to 1 question in 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.

DO81  
NRC

**Enclosures:**

1. Responses to Request for Additional Information No. 363-2645 Revision 0

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

Contact Information

C. Keith Paulson, Senior Technical Manager  
Mitsubishi Nuclear Energy Systems, Inc.  
300 Oxford Drive, Suite 301  
Monroeville, PA 15146  
E-mail: [ck\\_paulson@mnes-us.com](mailto:ck_paulson@mnes-us.com)  
Telephone: (412) 373-6466

Docket No. 52-021  
MHI Ref: UAP-HF-09328

Enclosure 1

UAP-HF-09328

Docket No. 52-021

Responses to Request for Additional Information  
No. 363-2645 Revision 0

June 2009

---

---

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

---

---

6/19/2009

**US-APWR Design Certification  
Mitsubishi Heavy Industries, Ltd.  
Docket No. 52-021**

**RAI NO.:** NO. 363-2645 REVISION 0  
**SRP SECTION:** 9.2.5 – Ultimate Heat Sink  
**APPLICATION SECTION:** 9.2.5  
**DATE OF RAI ISSUE:** 5/13/2009

---

**QUESTION NO.: 09.02.01-10**

10 CFR 52.47(b) requires the Design Control Document (DCD) to contain inspection, testing, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance the plant will be built and will operate according to the DCD. Once the conceptual design is identified, provide ITAAC for the design. In addition, Standard Review Plan (SRP) 9.2.5 Section III, paragraph 1 instructs the staff to confirm the overall arrangement of the UHS. The staff identified the following question/additions to Tier 2, DCD Section 14.2. These items need to be addressed to assure completeness and accuracy of the plant design and licensing basis.

1. Testing under Section 14.2.12.1.34 should specifically address the ultimate heat sink (UHS) being included as part of the prerequisites for conducting the essential service water system (ESWS) test.

2. There was no preoperational test for the UHS. The preoperational test should be based on the conceptual design that is to be provided. A range of temperature inputs should be used to verify UHS response. UHS makeup flow rate should meet design flow requirements. UHS level and temperature instruments and alarms should be tested. Other tests that are specific to the conceptual design should be included such as testing of forced draft fans and valves and pump head and pump flow. Modify the section to include this additional testing requirement after the conceptual design has been provided. [RAI 9.2.5-01 (ID2145/8760) also address this issue]

3. Section 14.2.12.2.4.21 will test the UHS for the UHS heat rejection capability test. Simply referring to "the heat rejection capability of the ESWS to the UHS meets design requirements" is too vague and does not provide sufficient specificity. The heat rejection capability for 2 trains operating and 4 trains operating should be verified. Therefore, additional information is needed to more clearly identify what the acceptance criteria are for the tests that are included in the UHS test program.

---

**ANSWER:**

This RAI is similar to RAI 286-2145, Question number 09.02.05-1. The response to this RAI still stands and will be reiterated below:

"The ultimate heat sink (UHS) described in Tier 2 DCD Section 9.2.5 is based on the premise that a large portion of the design elements are site-specific and therefore the design details, including process and instrument diagrams (P&IDs), type of equipment and their arrangement, instrumentation, valve positions, process flowrates, etc., will be appropriately provided by the COL applicant. The Tier 2 DCD Subsection 9.2.5.2 also clearly states that, "based on the specific site conditions and meteorological data" the type of UHS, including the necessary equipment and component layout will be identified in the COLA referencing the DCD. It follows that the conceptual design required in 10 CFR 52.47(a)(24) is outside the scope of the DCD and can only be duly provided by the COL applicant.

The description in the Tier 1 DCD Subsection 3.2 regarding the maximum cooling water supply of 95° F from the UHS to the essential service water system (ESWS) is the only nonsite-specific parameter in the UHS as it relates to the design cooling capacities of the ESWS components necessary to maintain overall plant integrity. The Tier 2 DCD Subsection 14.3.6, "Combined License Information" states in COL 14.3(1) that, "*The COL applicant provides the ITAAC for the site specific portion of the plant systems specified in Subsection 14.3.5, Interface Requirements [14.3.4.7].*" The ITAAC for the UHS, therefore, is appropriately addressed such that reiterating it in the Tier 2 DCD Subsection 9.2.5 is unnecessary. It follows that identifying the UHS in the Technical Specifications Subsection 16.3.7.9 is beyond the scope of the DCD.

The design bases for the UHS are adequately provided in Tier 2 DCD Subsection 9.2.5 except for RG 1.72 which is a site-specific requirement. Preoperational testing for the UHS is also a site-specific requirement to be addressed by the COL applicant in its ITAAC program."

**Answer to Item 1:**

Tier 2 DCD Section 14.2.12.1.34.B, item 4 states that, "Required support systems are available." This statement is mean to include all support systems, including the UHS, necessary for the operability and integrity of the ESWS. Therefore, no additional statement will be added to the DCD from this standpoint.

**Answer to Item 2:**

Response to this item is the same as the response to RAI 286-2145, Question number 09.02.05-1 reiterated above.

**Answer to Item 3:**

An additional criterion will be added to Tier 2 DCD Section 14.2.12.2.4.21 item D to include verification of the rejection capability of two operating and four operating ESWS trains.

**Impact on DCD**

Tier 2 DCD Section 14.2.12.2.4.21 item D will be revised to add the following acceptance criterion:

"2. The heat rejection capability of two operating and four operating ESWS trains are verified."

**Impact on COLA**

There is no impact on the COLA.

**Impact on PRA**

There is no impact on the PRA.