February 13, 2009

Mr. Yoshiki Ogata, General Manager
APWR Promoting Department
Mitsubishi Heavy Industries, Ltd.
16-05, Konan 2-Chome, Minato-Ku
Tokyo, 108-8215 Japan

SUBJECT: MITSUBISHI HEAVY INDUSTRIES, INC. - REQUEST FOR ADDITIONAL INFORMATION ON TOPICAL REPORT MUAP-07009-P, REVISION 0, "THERMAL DESIGN METHODOLOGY"

Dear Mr. Ogata:

By letter dated May 31, 2007, Mitsubishi Heavy Industries, Inc. (MHI) submitted for U. S. Nuclear Regulatory Commission (NRC) staff, review of the Topical Report MUAP-07009-P, Revision 0, "Thermal Design Methodology." The NRC staff has reviewed the Topical Report MUAP-07009-P, Revision 0, and has determined that additional information is needed for the NRC staff to complete its review. Subsequently, the NRC staff sent a draft request for additional information (RAI) electronically on December 8, 2008.

MHI is requested to provide a response within 30 days of the date of this letter. MHI's responses to the NRC RAI will be addressed in the NRC staff's safety evaluation report for the Topical Report MUAP-07034-P. The RAI list is enclosed.

Sincerely,

/RA/

Ruth Reyes, Project Manager
US-APWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-021

Enclosure:
As stated

cc: See next page

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REQUEST FOR ADDITIONAL INFORMATION TOPICAL REPORT
THERMAL DESIGN METHODOLOGY
MUAP-07009 REV. 0

US-APWR TOPICAL REPORT

Mitsubishi Heavy Industries, Inc.

Docket No. 52-021

SRSB Branch

1. Provide a description or a reference of the fuel which Mitsubishi Heavy Industries, Inc. (MHI) intends to use in the U. S. Advanced Power Water Reactor (US-APWR), which includes the number of grid spacers and the distance between grid spacers.

2. MHI needs to demonstrate that the US-APWR fuel can be conservatively predicted by the WRB-1 and WRB-2 correlations. In the past, this has been accomplished through test data specific to the fuel design in question. In response to RAI DNB-1, and subsequent MHI presentation to the Advisory Committee on Reactor Safeguards on October 23 – 24, 2008, MHI indicated that the fuel used in the US-APWR would differ from fuel used in the WRB-1 and WRB-2 data bases, as well as differ from the fuel and data presented in Appendix C of the US-APWR Thermal Design Methodology (MUAP-07-009-P). Compared with the fuel used in generating the WRB-1 and WRB-2 correlations, the US-APWR fuel will have different grid designs (Z2 and Z3). Compared with the fuel in Appendix C, the US-APWR fuel will have a 14 foot heated length instead of a 12 foot heated length, will have additional grid spacers, and may have a different grid spacing (it is not clear what the grid spacing of the US-APWR fuel will be). To demonstrate that US-APWR fuel can be conservatively predicted by the WRB-1 and WRB-2 correlations, MHI must provide one of the following:

   A. MHI will need to provide the NRC with data confirming the WRB-1 and WRB-2 correlations ability to conservatively predict critical heat flux (CHF) for the US-APWR fuel. This data must be from a test assembly which matches all of the relevant parameters which effect the CHF performance of the US-APWR fuel (such as hydraulic diameter, grid type, grid spacing, heat length, etc.).

   B. MHI will need to provide the NRC with a substantial technical justification as to the similarities between the US-APWR fuel and the fuel for which MHI does have data. This justification would need to contain arguments specifically related to the thermal hydraulic phenomena occurring in a fuel bundle, as well as, that those phenomena are understood sufficiently as to allow MHI to predict, with a high degree of certainty the behavior of an untested fuel design.

   C. Finally, MHI must provide test data to validate the applicability of the WRB-1 and the WRB-2 correlations specific to fuel design intended for use in the US-APWR.

Enclosure

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