

April 2, 2014

APPLICANT: MITSUBISHI HEAVY INDUSTRIES, LTD.

APPLICATION: UNITED STATES - ADVANCED PRESSURIZED WATER REACTOR
DESIGN CERTIFICATION REVIEW

SUBJECT: SUMMARIES OF THE FEBRUARY 15, 2012; AND MARCH 21, 2012,
CLOSED TELECONFERENCE MEETINGS WITH MITSUBISHI HEAVY
INDUSTRIES, LTD. TO DISCUSS ISSUES RELATED TO BORON
DILUTION

On February 15, 2012; and March 21, 2012, closed teleconferences were held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Mitsubishi Heavy Industries Ltd. (MHI). The meeting notices were issued on February 8, 2012; and March 15, 2012; and are documented in the Agencywide Documents Access and Management System under accession numbers ML120310544, and ML120750175, respectively. The purpose of the meetings was to discuss MHI's approach to resolve Generic Safety Issue (GSI) 185, "Control of Recriticality Following Small-Break LOCAs in Pressurized-Water Reactors." The information discussed was proprietary. The list of the meeting attendees are provided as Enclosure 1.

The NRC staff had concerns regarding MHI's approach to resolve GSI-185, and issued Request for Additional Information (RAI) 352-2369. MHI's response, dated July 17, 2009, included an evaluation of post loss-of-coolant accident core recriticality when deborated slugs are inserted from the reactor coolant system loops. Following its review, the staff issued follow-up RAIs 718-5402, 719-5352 and 861-6062. The purpose of the February 15, 2012, teleconference was to discuss MHI's response to RAI 861-6062 regarding the core recriticality evaluation. To support the technical discussion, MHI provided a document containing its closure plan for GSI-185, entitled "Closure Plan for GSI-185 Issue, Core Recriticality following SBLOCAs – Proposal to Conduct Vessel Mixing Experimental Tests to Resolve NRC's Concern," (Enclosure 2). The closure plan contains two attachments, "Attachment-1 Test Summary on Vessel Mixing Tests for Small Break LOCA Boron Dilution," (Enclosure 3), and "Attachment-2 Preliminary Evaluations for US-APWR Core Recriticality following Small-Break LOCAs," (Enclosure 4). The supportive materials discussed at the meetings, which are provided as Enclosures 2 - 4, contain proprietary information and therefore are not available to the public.

The purpose of the March 21, 2012, meeting was to continue the discussion of MHI's closure plan for GSI-185 as well as MHI's responses to the NRC staff's RAIs related to this issue. Specifically, the NRC staff discussed information related to MHI's boron precipitation calculation and how MHI determined the switchover time of four hours of the direct vessel injection to the hot leg injection line.

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Please direct any inquiries to me at 301-415-3249, or via e-mail to Ruth.Reyes@nrc.gov.

/RA/

Ruth C. Reyes, Project Manager
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Office of New Reactors

Docket No. 52-021

Enclosures:
As stated

cc w/Encl 1: See next page

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List of Attendees

**Closed Teleconference with Mitsubishi Heavy Industries, Ltd. to
Discuss MHI's Approach to GSI-185 Held on February 15, 2012**

NAME	REPRESENTING
Nick Heatrow	Bechtel
Al Passwater	Bechtel
Lynne Vanderpool	Bechtel
Jim Gibson	Dominion Virginia Power
Vesselin Palazov	Information Systems Laboratory (NRC Contractor)
Hideaki Ikeda	Mitsubishi Heavy Industries Ltd.
Masayuki Kauchi	Mitsubishi Heavy Industries Ltd.
Yasushi Makino	Mitsubishi Heavy Industries Ltd.
Yuta Maruyama	Mitsubishi Nuclear Energy Systems
Rebecca Steinman	Mitsubishi Nuclear Energy Systems
Joseph Donoghue	Nuclear Regulatory Commission
Fred Forsaty	Nuclear Regulatory Commission
Mike Takacs	Nuclear Regulatory Commission

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**Closed Teleconference with Mitsubishi Heavy Industries, Ltd. to
Discuss MHI's Approach to GSI-185 Held on March 21, 2012**

NAME	REPRESENTING
Vesselin Palazov	Information Systems Laboratory (NRC Contractor)
Shinji Otani	Mitsubishi Heavy Industries Ltd.
Kenya Sato	Mitsubishi Heavy Industries Ltd.
Tetsuya Teramae	Mitsubishi Heavy Industries Ltd.
Hidetomo Yamada	Mitsubishi Heavy Industries Ltd.
Yuta Maruyama	Mitsubishi Nuclear Energy Systems
C. Keith Paulson	Mitsubishi Nuclear Energy Systems
Rebecca Steinman	Mitsubishi Nuclear Energy Systems
Joseph Donoghue	Nuclear Regulatory Commission
Fred Forsaty	Nuclear Regulatory Commission
Mike Takacs	Nuclear Regulatory Commission

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(Revised 03/14/2014)

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