

March 3, 2011

APPLICANT: MITSUBISHI HEAVY INDUSTRIES, LTD

APPLICATION: UNITED STATES – ADVANCED PRESSURIZED WATER REACTOR DESIGN CONTROL DOCUMENT

SUBJECT: SUMMARY OF MEETING WITH MITSUBISHI HEAVY INDUSTRIES LTD. TO DISCUSS UNITED STATES – ADVANCED PRESSURIZED WATER REACTOR DESIGN CONTROL DOCUMENT CHAPTER 7 AND DIGITAL INSTRUMENTATION AND CONTROLS KEY ISSUES

On August 18-19, 2010, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC), Mitsubishi Heavy Industries, Ltd. (MHI), Mitsubishi Nuclear Energy Systems, Inc. (MNES), and members of the Public. The meeting was held at the NRC Headquarters in Rockville, MD. The purpose of the meeting was to discuss the NRC staff's key issues with the review of United States - Advanced Pressurized Water Reactor (US-APWR) digital instrumentation and controls (I&C) design and for MHI to present its proposed path forward to resolve the key issues. The meeting was publicly noticed on August 4, 2010 (ADAMS accession number ML102150233).

This meeting focused on the discussion of unresolved design issues that have significant licensing schedule uncertainties and planning for upcoming interactions. Enclosure 1 contains a list of meeting attendees. Enclosures 2 - 5 contain the meeting presentations.

The NRC staff reviewed their findings for two I&C key issues, Data Communications and Quality Assurance (QA). The NRC staff also covered regulatory requirements and examples of the key issues. The NRC staff discussed their position on the path forward, stating that a simpler data communication design is needed to demonstrate sufficient independence between safety and non-safety systems within a predictable review schedule. MHI must also demonstrate that the I&C design is in regulatory compliance by completing the required QA activities. MHI stated that they felt the QA issue is a case of improper documentation and not an actual QA issue. The NRC staff discussed the need for MHI to complete a Commercial Grade Dedication (CGD) of the Mitsubishi Electric Total Advanced Controller (MELTAC) system in accordance with applicable requirements and that the CGD program should fully address applicable staff guidance and endorsed industry documents, or provide sufficient justification for alternatives.

In addition, the NRC staff stated that MHI should revise and resubmit both the application and basic software program manuals (SPMs) to ensure all applicable regulatory criteria are addressed. NRC staff commented that alternatives to staff guidance may be proposed. However, the alternatives must have sufficient justification for the staff to make a reasonable assurance finding at the end of the review. NRC staff stated that the examples provided do not represent a comprehensive list of issues, and that MHI should only consider them as guidance. MHI should conduct a more thorough review of the I&C design to find other areas that are lacking. NRC staff reminded MHI they have not looked at everything, and there may still be issues for MHI to address.

MHI stated that they felt that the necessary information has been provided in submitted reports. The NRC staff agreed that a significant amount of information has been submitted and that they have had some of the documents for only a short time. It will take time to review the submissions to verify MHI's claims. MHI suggested a roadmap to assist staff in locating information that satisfies the requirements.

MHI presented their understanding of the Digital I&C Key Licensing Issues. They understood the analog-to-digital transition review challenge, but stressed they did not want the status of the review to go backward. They first presented an overview of each issue and where the design is consistent with NRC guidance. MHI then discussed specific design changes that can be implemented to more easily demonstrate compliance with Interim Staff Guidance (ISG)-04 and their willingness to expeditiously provide additional information that may be required by the staff to complete the review.

For inter-division communication, MHI discussed in detail how the design is consistent with NRC guidance regarding support for safety functions and complexity. For MELTAC QA issues, MHI stated that compensatory measures will be taken for Field Programmable Gate Arrays (FPGAs) and basic software issues. Corrective actions are being taken to establish a Quality Assurance Plan (QAP) that is in full compliance to 10 *Code of Federal Regulations* (CFR) Part 50 Appendix B. MHI went on to explain their CGD process for MELTAC and inclusion of an Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) to remove this issue from the critical path of design review. To resolve the SPM issues, MHI discussed the documents they have submitted for NRC review and the confidence of achieving the right balance of docketed and audited material. MHI also discussed SPM compliance to existing and draft security guidance.

The NRC staff concluded the meeting by discussing the path forward. Effective communication is important to resolving these key issues. The NRC staff feels each side is clear in communicating issues; however, they are not fully connecting. MHI would like more face-to-face meetings to provide more clarity. The NRC staff stated the face-to-face meetings are resource intensive and not necessarily better. Future interactions need to focus on the right topics and have the right information. The NRC is looking for clear explanations of how the design meets the regulatory requirements. MHI referred to the roadmap they intend to submit that should assist the staff review. Both sides recognized the challenges of complete the review. The NRC stated that they would respond to MHI's closure plan letter within two weeks of receiving the letter. MHI requested a public meeting the week of September 20, 2010. The NRC responded that they would look at resource availability and get back MHI to schedule the next meeting.

Please direct any inquiries to William Ward at 301-415-7038, or via e-mail at William.Ward@nrc.gov.

Sincerely,

/RA/

William R. Ward, Senior Project Manager
US-APWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-021

Enclosures:

1. List of Attendees
2. NRC: US-APWR Key I&C Issues (ML102320590)
3. MHI: Digital I&C Key Licensing Issues (ML102320593)
4. MHI: Digital I&C Key Licensing Issues
– Inter-division Communications (ML102320594)
5. MHI: Digital I&C Key Licensing Issues
– MELTAC QA and SPM (ML102320597)

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William R. Ward, Senior Project Manager
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- 8. MHI: Digital I&C Key Licensing Issues (ML102320593)
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OFFICE	DNRL/NMIP: PM	DNRL/NMIP: LA	DE/ICE2: BC	DNRL/NMIP: PM	DNRL/NMIP: BC
NAME	WWard	CSmith (J.Hennigan for)	IJung	JCiocco	HHamzehee
DATE	02/16/11	02/23/11	02/28/11	03/02/11	03/02/11
OFFICE	DNRL/NMIP: PM				
NAME	WWard				
DATE	03/02/11				

OFFICIAL RECORD COPY

DC Mitsubishi - US APWR Mailing List
cc:

(Revised 02/15/2011)

Ms. Michele Boyd
Legislative Director
Energy Program
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Mr. Gary Wright, Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Atsushi Kumaki
Mitsubishi Heavy Industries, Ltd.
APWR Promoting Department
Wadasaki-cho- 1-1-1, Hyogo-ku
Kobe 652-8585 JAPAN

Dr. Masanori Onozuka
Mitsubishi Nuclear Energy Systems, Inc.
1001 19th Street North, Suite 710
Arlington, VA 22201-5426

Dr. C. Keith Paulson
Mitsubishi Nuclear Energy Systems, Inc.
300 Oxford Drive, Suite 301
Monroeville, PA 15146

Mr. Tom Sliva
7207 IBM Drive
Charlotte, NC 28262

Mr. Robert E. Sweeney
IBEX ESI
4641 Montgomery Avenue
Suite 350
Bethesda, MD 20814

Mr. Ed Wallace
General Manager - Projects
PBMR Pty LTD
P. O. Box 9396
Centurion 0046
Republic of South Africa

DC Mitsubishi - US APWR Mailing List

Email

APH@NEI.org (Adrian Heymer)
atsushi_kumaki@mhi.co.jp (Atsushi Kumaki)
awc@nei.org (Anne W. Cottingham)
bgattoni@roe.com (William (Bill) Gattoni)
BrinkmCB@westinghouse.com (Charles Brinkman)
chris.maslak@ge.com (Chris Maslak)
ck_paulson@mnes-us.com (C Keith Paulson)
ckpaulson@aol.com (C.K. Paulson)
CumminWE@Westinghouse.com (Edward W. Cummins)
cwaltman@roe.com (C. Waltman)
david.hinds@ge.com (David Hinds)
david.lewis@pillsburylaw.com (David Lewis)
DeLaBarreR@state.gov (R. DeLaBarre)
Derlinda.Bailey@chguernsey.com (Derinda Bailey)
donald.woodlan@luminant.com (Donald Woodlan)
eliza.seedcoalition@gmail.com (Elza Brown)
erg-xl@cox.net (Eddie R. Grant)
f.tanaka@mnes-us.com
gcesare@enercon.com (Guy Cesare)
james.beard@gene.ge.com (James Beard)
jerald.head@ge.com (Jerald G. Head)
jim.riccio@wdc.greenpeace.org (James Riccio)
Joseph_Hegner@dom.com (Joseph Hegner)
jrund@morganlewis.com (Jonathan Rund)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lchandler@morganlewis.com (Lawrence J. Chandler)
lon.burnam@house.state.tx.us (Lon Burnam)
m.goto@mnes_us.com
Marc.Brooks@dhs.gov (Marc Brooks)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
Mark.Crisp@chguernsey.com (Mark Crisp)
mark.vannoy@mnes-us.com
masahiko_kaneda@mhi.co.jp (Masahiko Kaneda)
masanori_onozuka@mnes-us.com (Masanori Onozuka)
masato.oba@mnes-us.com
masayuki_kambara@mhi.co.jp (Masayuki Kambara)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
mayorsouthern@granbury.org (Mayor David Southern)
media@nei.org (Scott Peterson)
mike_moran@fpl.com (Mike Moran)
MSF@nei.org (Marvin Fertel)
mutsumi_ishida@mnes-us.com (Mutsumi Ishida)

DC Mitsubishi - US APWR Mailing List

mweatherhahn@winston.com (M. Wetterhahn)
nan_sirirat@mnes-us.com (Sirirat Mongkolkam)
nirsnet@nirs.org (Michael Mariotte)
Nuclaw@mindspring.com (Robert Temple)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul@beyondnuclear.org (Paul Gunter)
pbessette@morganlewis.com (Paul Bessette)
plarimore@talisman-intl.com (Patty Larimore)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
Russell.Wells@Areva.com (Russell Wells)
ryan_sprengel@mnes-us.com (Ryan Sprengel)
sabinski@suddenlink.net (Steve A. Bennett)
sandra.sloan@areva.com (Sandra Sloan)
satoshi_hanada@mnes-us.com (Satoshi Hanada)
satoshi_watanabe@mnes-us.com (Satoshi Watanabe)
sfrantz@morganlewis.com (Stephen P. Frantz)
shinji_kawanago@mnes-us.com (Shinji Kawanago)
stephan.moen@ge.com (Stephan Moen)
steven.hucik@ge.com (Steven Hucik)
strambgb@westinghouse.com (George Stramback)
Tansel.Selekler@nuclear.energy.gov (Tansel Seleklek)
tgilder1@luminant.com (Tim Gilder)
tmatthews@morganlewis.com (T. Matthews)
tom.miller@hq.doe.gov (Tom Miller)
trsmith@winston.com (Tyson Smith)
Vanessa.quinn@dhs.gov (Vanessa Quinn)
vijukrp@westinghouse.com (Ronald P. Vijuk)
Wanda.K.Marshall@dom.com (Wanda K. Marshall)
whorin@winston.com (W. Horin)
yoshiki_ogata@mhi.co.jp (Yoshiki Ogata)

LIST OF ATTENDEES

Name	Agency/Affiliation	August 18	August 19
1. William Ward	NRC/NRO	XX	XX
2. Royce Beacom	NRC/NRO/DE	XX	XX
3. Ken Scarola	MNES/NAE	XX	XX
4. Shinji Kiuchi	MNES	XX	
5. Kenji Mashio	MNES	XX	XX
6. Chad Modro	MEPPI	XX	XX
7. Hossein Hamzehee	NRC/NRO	XX	XX
8. Ian Jung	NRC/NRO	XX	XX
9. Tarico Sweat	NRC/NRO	XX	XX
10. Hulbert Li	NRC/DE/ICE2	XX	XX
11. Terry Jackson	NRC/NRO/DE/ICE1	XX	XX
12. Robert Atkinson	Dominion	XX	XX
13. Wayne Donne	Dominion	XX	XX
14. Makoto Takashima	MHI	XX	XX
15. Tarun Roy	NRC/NRO	XX	XX
16. Dan O'Neal	NRC/NRO	XX	
17. Masafumi Utsumi	MHI	XX	XX
18. Joe Ashcraft	NRO	XX	XX
19. Khoi Nguyen	NRO	XX	
20. Keith Paulson	MNES	XX	XX
21. Gina Borsh	Dominion	XX	
22. Hirokazu Fumon	MHI	XX	XX
23. Katsumi Akagi	MELCO	XX	XX
24. Makoto Ito	MELCO	XX	XX
25. Hidetoshi Matsushita	MELCO	XX	XX
26. Yukiko Hirano	MELCO	XX	XX
27. Mike Muhlheim	ORNL	XX	XX
28. Sean Smith	LM NS&S	XX	XX

Name	Agency/Affiliation	August 18	August 19
29. Jeff Ciocco	NRO	XX	XX
30. Erick M. Martinez	NRO/DE/ICE2	XX	XX
31. Mutsumi Ishida	MNES	XX	XX
32. Stephen Monarque	NRC/NRO/DNRL	XX	
33. Ryan Sprengel	MNES	XX	XX
34. Pat Samples	MNES	XX	XX
35. Gil Remley	MEPPI	XX	XX
36. James Biggins	NRC/OGC	XX	XX
37. Jack Y. Zhao	NRC/NRO/DE	XX	
38. Michael Chinworth	JNES	XX	XX
39. Hidehiko Yamachika	JNES	XX	
40. Mike Waterman	NRC/RES	XX	
41. Tom Bergman	NRC/NRO	XX	XX
42. Hiroshi Shirasawa	MNES	XX	
43. Deanna Zhang	NRC/NRO	XX	XX
44. William Freebairn	Platts	XX	XX
45. Kimberly Keithline	NEI	XX	
46. Alan Levin	AREVA		XX
47. Chad Wilhelm	Bechtel/Dominion		XX
48. Deana Raleigh	Scientech		XX
49. Kimberley Corp	NRC/NRO		XX
50. Glenn Jones	Dominion		XX
51. Sean Smith	LM NS&S		XX
52. Daniel Santos	NRC/NRO		XX

Enclosure 1