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TOKYO, JAPAN

May 20, 2013

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-13108

Subject: **Submittal of Revision to Published Topical Report (PQD-HD-19005-A Revision 0) entitled Quality Assurance Program (QAP) Description for Design Certification of the US-APWR**

References: 1) Letter MHI Ref: UAP-HF-11100, "Submittal of Revision to Published Topical Report (PQD-HD-19005-A Revision 0) entitled Quality Assurance Program (QAP) Description for Design Certification of the US-APWR", dated April 8, 2011. (ML11110A213)

By letter dated April 8, 2011 (Reference 1), Mitsubishi Heavy Industries, Ltd. (MHI) submitted a revised version of Quality Assurance Program Description (QAPD) PQD-HD-19005-A, Rev.0, to the U.S. Nuclear Regulatory Commission (NRC).

The purpose of this letter is to forward a further revised version of PQD-HD-19005-A, Rev. 0, to the NRC for approval. The change to PQD-HD-19005-A, Rev. 0, is a change of organization in the Nuclear Energy Systems in MHI. MHI is making this revision for administrative purposes only, and as such, this revision does not change any QA program commitments documented and approved by the NRC in the Safety Evaluation Report dated January 24, 2008 and does not reduce any QA program quality or safety aspects of the Design Certification.

Since various Chapters of the US-APWR Design Control Document (DCD), Revision 3 reference Revision 4 of the QAPD, MHI will update the revision number of the QAPD in Revision 4 of the DCD. The markups to the DCD related to the QAPD revision number are provided as an additional enclosure to this letter.

We make this administrative change to our QAPD effective April 1, 2013 since it does not reduce any QAP commitments or quality aspects of the design certification. We are requesting formal NRC review and approval as an administrative revision to our Quality Assurance Topical Report.

The QAPD is being submitted electronically on a compact disc (CD). This letter includes a copy of the non-proprietary version of the QAPD revision (Enclosure 1) and the non-proprietary DCD markup showing the updated to the QAPD revision number (Enclosure 2).

Please contact Mr. Joseph Tapia, General Manager of Licensing Department, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of this submittal. His contact information is provided below.

D081
NRO

Sincerely,

Yoshiki Ogata,
Executive Vice President
Mitsubishi Nuclear Energy Systems, Inc.
On behalf of Mitsubishi Heavy Industries, LTD.

Enclosures:

1. CD1: "Revised QAPD Topical Report (PQD-HD-19005, "Quality Assurance Program (QAP) Description for Design Certification of the US-APWR," Revision 5)"
2. DCD Markups for QAPD Revision 5

The file contained on the CD is listed in Attachment 1 hereto.

CC: J. A. Ciocco
J. Tapia

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Enclosure 2

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DCD Markups for QAPD Revision 5

May 2013

(Non-Proprietary)

Table 1.6-1 Material Referenced as Topical Reports

MIC-03-01-0 0002
MIC-03-01-0 0002 S1

Report Number(1)	Title	DCD Section Number(2)
MUAP-07001-P MUAP-07001-NP	The Advanced Accumulator, Revision ~~3~~4, ~~March~~August 2011	~~1.5.4, 6.3.7~~1.5.1, 6.3.2
MUAP-07006-P MUAP-07006-P	Defense-in-Depth and Diversity, Revision 2, June 2008	~~1.5.4, 7.1.5, 7.3.5, 7.8.5, 7.9.5~~1.5.2, 7.1, 7.1.3, 7.1.4, 7.3.1, 7.5.1, 7.8, 7.8.1, 7.8.2, 7.8.3, 7.9.2, 16(B 3.3.6)
MUAP-07007-P MUAP-07007-NP	HSI System Description and HFE Process, Revision ~~3~~4, ~~October 2009~~July 2011	~~1.5.4, 7.1.5, 7.5.5, 7.6.5, 18.1.7, 18.2.5, 18.3.5, 18.4.5, 18.7.5, 18.8.5, 18.9.5, 18.10.5~~1.5.2, 7.1, 7.1.1, 7.1.3, 7.5.1, 7.6.1, 7.8, 18.1.1, 18.1.5, 18.2.2, 18.3.2, 18.3.3, 18.4.2, 18.7.2, 18.7.3, 18.8.2, 18.9.2, 18.10.2
MUAP-07008-P MUAP-07008-NP	Mitsubishi Fuel Design Criteria and Methodology, Revision 2, July 2010	~~4.2.6, 4.3.6, 4.4.8, 15.0.5, 15.4.11,~~ 4.2.1, 4.2.2, 4.2.3, 4.3.1, 4.3.2, 4.4.1, 4.4.2, 4.4.4, 15.0.2, 15.4.8
MUAP-07009-P MUAP-07009-NP	Thermal Design Methodology, May 2007	~~4.4.8, 15.0.5, 15.1.7, 15.2.10, 15.3.6, 15.4.11, 15.6.7~~4.4.1, 4.4.2, 4.4.4, 15.0.2, 15.3.1, 15.3.3, 15.4.1, 15.4.3, 15.4.8
MUAP-07010-P MUAP-07010-NP	Non-LOCA Methodology, Revision ~~1~~2, ~~October 2010~~August 2011	~~6.2.9, 15.0.5, 15.1.7, 15.2.10, 15.3.6, 15.4.11, 15.5.4, 15.6.7~~6.2.1, 15.0.2, 15.1.1, 15.1.2, 15.1.3, 15.1.4, 15.1.5, 15.2.1, 15.2.6, 15.2.7, 15.2.8, 15.3.1, 15.3.3, 15.4.1, 15.4.2, 15.4.3, 15.4.8, 15.5.2, 15.6.1, 15.6.3
MUAP-07011-P MUAP-07011-NP	Large Break LOCA Code Applicability Report for US-APWR, Revision 1, March 2011	~~1.5.4, 6.3.7, 15.0.5, 15.6.7~~1.5.2, 15.0.2, 15.6.5
MUAP-07012-P-A MUAP-07012-NP-A	LOCA Mass and Energy Release Analysis Code Applicability Report for US-APWR, Revision 2, June 2009	~~6.2.9~~6.2.1
MUAP-07013-P MUAP-07013-NP	Small Break LOCA Methodology for US-APWR, Revision 2, October 2010	~~6.2.9, 15.0.5, 15.6.7~~6.2.1, 15.0.2, 15.6.5
MUAP-07034-P MUAP-07034-NP	FINDS: Mitsubishi PWR Fuel Assemblies Seismic Analysis Code, Revision 3, July 2010	4.2.3
PQD-~~DH~~HD-19005	Quality Assurance Program (QAP) Description For Design Certification of the US-APWR, Revision ~~3~~4~~5~~, ~~September 2009April 2011~~May 2013	~~17.5.5, 18.1.7, 18.10.5~~8.4.2, 8.4.4, 17.3, 17.4.4, 17.4.10, 17.5, 17.5.2, ~~18.1.1,~~ 18.1.2, 18.1.3, 18.1.4, 18.1.5, 18.1.7, 18.10.1, 18.10.5

MIC-03-01-0 0024
MIC-03-01-0 0027
MIC-03-01-0 0002
MIC-03-01-0 0002 S1

NOTE(1): -P(proprietary) , -NP(non-proprietary)

The AAC GTGs are automatically started by the undervoltage signal on the 6.9 kV permanent buses, P1 or P2, and are automatically connected to their respective permanent buses within 100 seconds. The AAC GTGs can be connected manually to the onsite Class 1E buses by closing the non-Class 1E ~~disconnect switch~~circuit breaker in the selector circuit and the Class 1E incoming circuit breaker in the Class 1E 6.9 kV switchgear as described in Subsection 8.4.1.3. Power supply to at least one of the onsite Class 1E ac train can be restored from the AAC sources within 60 minutes. The availability of power supply to one of the four Class 1E trains is adequate for coping with an SBO event. This meets the requirements of Criterion 3 of Section C.3.3.5 of RG 1.155 (Reference 8.3.1-21). MIC-03-08-0 0002

Each AAC GTG has sufficient capacity to operate the systems necessary for coping with an SBO event for the time required to bring and maintain the plant in safe shutdown condition. Two AAC GTGs are provided even though the provision of only one is adequate to meet the regulatory requirements. This meets the contingency of one AAC GTG not available. Single failure for the AAC GTGs need not be considered in accordance with Appendix B, RG 1.155 (Reference 8.3.1-21). Each AAC GTG has adequate fuel to operate the systems required for coping with an SBO for 8 hours. Therefore, the AAC GTGs meet Criterion 4 of Section C.3.3.5, RG 1.155 (Reference 8.3.1-21).

A 25 consecutive start preoperational test, without loading, will be performed for each AAC GTG. DCD_09.04. 01-30

The AAC power system will be inspected and tested periodically based on manufacturer's recommendations and Reg 1.155 to demonstrate operability and reliability. The surveillance test interval does not exceed 3 months (Quarterly). During the quarterly test the AAC is started and brought to operating conditions. Additionally, during every refueling outage, the AAC generator is tested by performing a timed start and rated load capacity test. Following preoperational testing, ~~The reliability of~~ the AAC power system will be maintained to meet or exceed 95% reliability as determined in accordance with NSAC-108 (Reference 8.4-2) or equivalent methodology to meet Criterion 5 of Section C.3.3.5, RG 1.155 (Reference 8.3.1-21). Testing and maintenance of the AAC is evaluated under the reliability assurance program and the maintenance rule program. DCD_09.04. 01-30 DCD_09.04. 01-33

Procedures to cope with SBO are addressed in Section 13.5 and the training is addressed in Section 13.2. These include all operator actions necessary to cope with SBO for at least the duration in accordance with Subsection 8.4.2.1.1 and to restore normal long-term core cooling/decay heat removal once ac power is restored. This meets the requirement of Regulatory Position C.3.4 of RG 1.155.

The quality assurance of AAC GTG is controlled in accordance with DCD Chapter 17 and related topical report PQD-HD-19005 Revision ~~4~~2~~5~~ (Reference 8.4-3). This meets the requirements of Regulatory Position C.3.5 of RG 1.155. MIC-03-08-0 0003 MIC-03-08-0 0004

8.4.3 Combined License Information

No additional information is required to be provided by a COL Applicant in connection with this section.

8.4.4 References

8.4-1 Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors, NUMARC 87-00, Revision. 1, August 1991.

8.4-2 Reliability of Emergency Diesel Generators at U.S Nuclear Power Plants, NSAC-108, September 1986.

8.4-3 Quality Assurance Program (QAP) Description For Design Certification of the US-APWR, PQD-HD-19005 Revision ~~43~~5, ~~April 2011September 2009~~May 2013. MIC-03-08-0 0003 MIC-03-08-0 0004

8.4-4 US-APWR Evaluation and Design Enhancement to Incorporate Lessons Learned from TEPCO's Fukushima Dai-ichi Nuclear Power Station Accident, MUAP-13002, Revision 0, March 2013. MIC-03-08-0 0002

17.3 Quality Assurance Program

The General Manager of Nuclear Energy Systems Headquarters (NESH) is responsible for the Design Certification Activities of US-APWR. The design activities performed by the Nuclear Energy Systems Engineering Center for the US-APWR standard plant design are subjected to the QA Program controls specified in "Quality Assurance Program (QAP) Description For Design Certification of the US-APWR (PQD-HD-19005 Rev.~~43~~5)" (Ref 17.5-4).

MIC-03-17-0 0003

Subcontractors of the Nuclear Energy Systems Engineering Center performing design activities in support of the US-APWR are also required to follow QAPD (PQD-HD-19005 Rev.~~43~~5).

MIC-03-17-0 0003

For the Quality Assurance Program Description during the Design Certification phase for the US-APWR standard plant design, see Section 17.5.

MIC-03-17-0 0004

The COL Applicant is responsible for the development of a Quality Assurance Program Description applicable to site-specific design activities and for plant construction and operation phases.

corrective actions for design and operational errors that degrade non-safety-related SSCs within the scope of the RAP. A description of the proposed method for developing/integrating the operational RAP into operating plant programs (e.g., maintenance rule, quality assurance) is performed during the COL application phase. The development/integration of the operational RAP is performed during the COL license holder phase and prior to initial fuel loading. All SSCs identified as risk-significant within the scope of the D-RAP should be categorized as high-safety-significant (HSS) within the scope of initial Maintenance Rule. The integration of reliability assurance activities into existing operational programs will also address establishment of:

1) *Reliability performance goals for risk-significant SSCs consistent with the existing maintenance and quality assurance processes on the basis of information from the DRAP (for example, implementation of the maintenance rule following the guidance contained in RG 1.160 is one acceptable method for establishing performance goals provided that SSCs are categorized as HSS within the scope of the Maintenance Rule program), and*

2) *Performance and condition monitoring requirements to provide reasonable assurance that risk-significant SSCs do not degrade to an unacceptable level during plant operations.*

17.4.10 References

17.4-1 "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Design," SECY 95-132, U.S. Nuclear Regulatory Commission, Washington, DC, May 1995.

17.4.2 "Quality Assurance Program (QAP) Description For Design Certification of the US-APWR (PQD-HD-19005 Rev.~~43~~5, May 2013)" MIC-03-17-0 0003

17.4-3 'Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,' "Domestic Licensing of Production and Utilization Facilities," Energy. Title 10, Code of Federal Regulations, Part 50.65, U.S. Nuclear Regulatory Commission, Washington, DC. MIC-03-17-0 0004

17.4-4 10 CFR 50.69 SSC Categorization Guideline ,NEI 00-04 Rev 0 Draft, Nuclear Energy Institute, July 2005.

17.4-5 Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants, NUREG/CR-6928, U.S. Nuclear Regulatory Commission, Washington, DC, February 2007.

17.4-6 Guide to the Collection And Presentation of Electrical, Electronic, Sensing Component, And Mechanical Equipment Reliability Data For Nuclear Power

17.5 Quality Assurance Program Description

During the Design Certification phase for US-APWR standard plant design, the MHI-NESH US-APWR Project Quality Assurance Program (QAP) is the top-level policy that establishes the quality assurance policy and assigns major functional responsibilities. The QAP provides for the methods and establishes the QAP and administrative control requirements described in "Quality Assurance Program (QAP) Description For Design Certification of the US-APWR (PQD-HD-19005 Rev.~~43~~5)" (MHI QAPD)(Ref 17.5-4), that meet 10 CFR Part 50, Appendix B and 10 CFR Part 52 for safety-related SSCs. The MHI QAPD is based on the requirements of ASME NQA–1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, as specified in Ref.17.5-4. MIC-03-17-0 0003 MIC-03-17-0 0004 DCD_03.02. 02-17

Selected elements of the QAP description (QAPD) are also applied to SSCs that are nonsafety-related in accordance with their contribution to plant safety (Part III of Reference 17.5-4) or to meet NRC guidance that establishes applicable quality assurance requirements. The controls applied to nonsafety-related SSCs per the QAPD Part III are referred to as "augmented" quality assurance controls. The contribution of nonsafety-related SSCs to plant safety is determined by (1) the SSC's risk-significance as determined by the D-RAP as described in Section 17.4 and (2) the reliance on the SSC to address regulatory events, such as ATWS, fire protection and SBO. Specific program controls are applied to these nonsafety-related SSCs in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety. DCD_03.02. 02-17

The MHI QAPD for the Design Certification Phase has been prepared on the basis of the NRC approved QAP template (NEI, 06-14A Rev.4 and earlier revisions) (Ref 17.5-3) prepared by the Nuclear Energy Institute and has been evaluated against the SRP. The MHI QAPD provides the controls that implement the QAP. MHI performed a comparison of the MHI QAPD against the SRP (Mar. 2007) (Ref 17.5-2) and the draft SRP (Sept. 2006) (Ref 17.5-1) which was used as a reference for the MHI QAPD and determined that the MHI QAPD is satisfactory.

Business policies of MHI-NESH establish high level responsibilities and authority for carrying out administrative functions which are outside the scope of the QAP.

Procedures establish practices for certain activities which are common to all MHI-NESH organizations performing those activities such that the activity is controlled and carried out in a manner that meets QAP requirements. Organization specific procedures establish detailed implementation requirements and methods, and may be used to implement the business policies of MHI-NESH or be unique to particular functions or work activities.

The COL Applicant is responsible for the development of a Quality Assurance Program Description for site-specific design activities and for plant construction and operation.

17.5.1 Combined License Information

COL 17.5(1) *The COL Applicant shall develop and implement a Quality Assurance Program Description for site-specific design activities and for plant construction and operation.*

17.5.2 References

17.5-1 "Draft Standard Review Plan (SRP) 17.5 dated September 22, 2006"

17.5-2 "Standard Review Plan (SRP) 17.5 March 2007"

17.5-3 "Quality Assurance Program Description (NEI 06-14A Rev.4 and earlier versions)"

17.5-4 "Quality Assurance Program (QAP) Description For Design Certification of the US-APWR (PQD-HD-19005 Rev.~~43~~5, May 2013)" | MIC-03-17-0 0003 MIC-03-17-0 0004

18.1-6 Quality Assurance Program (QAP) Description for Design Certification of the US-APWR, PQD-HD-19005, Revision ~~3~~4~~5~~, Mitsubishi Heavy Industries, Ltd., ~~September 2009April 2011~~May 2013. MIC-03-18-00001 MIC-03-18-00003

18.1-7 Human Factors Engineering Program Review Model, NUREG-0711, Revision 2, U.S. Nuclear Regulatory Commission, Washington, DC, February 2004.

18.1-8 Specific Exemptions, NRC Regulations Title 10, Code of Federal Regulations, Part 50.12.

18.1-9 Petition for Rulemaking, NRC Regulations Title 10, Code of Federal Regulations, Part 2.802.

18.1-10 An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, Regulatory Guide 1.174, Revision 1, November 2002.

18.1-11 General Design Criteria for Nuclear Power Plants, NRC Regulations Title 10, Code of Federal Regulations, Part 50, Appendix A.

18.1-12 US-APWR HSI Design, MUAP-09019-P (Proprietary) and MUAP-09019-NP (Non-Proprietary), Revision 2, September 2012. DCD_18-106 MIC-03-18-00001

18.1-13 US-APWR Human System Interface Verification and Validation (Phase 1a), MUAP-08014-P (Proprietary) and MUAP-08014-NP (Non-Proprietary), Revision 1, May 2011.

18.1-14 US-APWR HSI Design Implementation Plan, MUAP-10009, Revision 2, September 2012.

18.1-15 Verification and Validation implementation plan, MUAP-10012, Revision 2, September 2012.

18.1-16 Design Implementation, MUAP-10013, Revision 2, September 2012.

18.1-17 Human Performance Monitoring Implementation Plan, MUAP-10014, Revision 2, September 2012.

~~18.1-18 US-APWR Probabilistic Risk Assessment, US-APWR HSI Design, MUAP-07030-P (Proprietary) and MUAP-09030-NP (Non-Proprietary), Revision 2, December 2009.~~ DCD_18-107

18.1-18 US-APWR Staffing & Qualifications Implementation Plan (MUAP-10008), Revision 2, September 2012. MIC-03-18-00001

18.10.3 Results

The V&V Phase 1 results are ~~to be~~ documented in ~~the US Operator V&V Technical Report~~Reference 18.10-6 Part 1, and Reference 18.10-7, Part 3. The Phase 2 results, ~~to~~which include V&V program staffing and resources, the detailed procedures for conducting the V&V program, the V&V program data, analysis, and results, identification, and resolution of HEDs, and the major conclusions from these activities along with their bases, ~~are to be issued in the US-APWR HF V&V report~~will be documented in a results summary report in accordance with Reference 18.10-5. MIC-03-18-0 0001 MIC-03-18-0 0001

~~MUAP-10012 (Reference 18.10-5) are not taken credit for as any part of the final NUREG-0711 V&V, but instead are a bases for the HSI design and this Implementation Plan and as such are viewed as supplemental information.~~Phase 1 verification and validation activities for the US-Basic HSIS, as documented in References 18.10-6 and 18.10-7, are not credited for the US-APWR HSIS verification and validation, as required by NUREG-0711 Section 11. Phase 1 V&V activities are considered part of the US-Basic HSIS design process. Compliance to NUREG-0711 Section 11, relies on the Phase 2 V&V program which will be conducted in accordance with Reference 18.10-5. DCD_18-153 MIC-03-18-0 0001

18.10.4 Combined License Information

No additional information is required to be provided by a COL Applicant in connection with this section.

COL 18.10(1) *Deleted*

COL 18.10(2) *Deleted*

18.10.5 References

18.10-1 Quality Assurance Program (QAP) Description for Design Certification of the US-APWR, PQD-HD-19005, Revision ~~3~~4~~4~~5, Mitsubishi Heavy Industries, Ltd., ~~SeptemberApril 20092011~~May 2013. MIC-03-18-0 0001 MIC-03-18-0 0003

18.10-2 HSI System Description and HFE Process, MUAP-07007-P (Proprietary) and MUAP-07007-NP (Non-Proprietary), Revision ~~3~~5, ~~October 2009~~November 2011. MIC-03-18-0 0001

18.10-3 U.S. Nuclear Regulatory Commission, Human-System Interface Design Review Guidelines, NUREG-0700, Revision 2, May 2002.

18.10-4 Nuclear Power Plant Simulators for Use in Operator Training, ANSI/ANS 3.5, 1998.

18.10-5 US-APWR Verification and Validation Implementation Plan, MUAP-10012, Revision 2, September 2012. DCD_18-150 MIC-03-18-0 0001

18.10-6 US-APWR Human System Interface Verification and Validation Phase 1a, MUAP-08014, Revision 1, May 2011.

ATTACHMENT 1

Docket No. 52-021
MHI Ref: UAP-HF-13108

FILES CONTAINED ON CD 1

CD 1: **"Revised QAPD Topical Report (PQD-HD-19005, "Quality Assurance Program (QAP) Description for Design Certification of the US-APWR," Revision 5)"**

Contents of CD

	File Name	Size	Sensitivity Level
1.	PQD-HD-19005 Revision 5.pdf	1,164 KB	Non-Proprietary