

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

July 26, 2011

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-11234

**Subject: MHI's Supplemental Responses to US-APWR DCD RAI No. 139-1533 Revision 1 (SRP 09.05.02)**

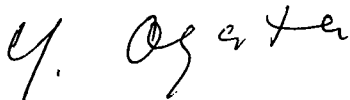
**Reference:** 1) "Request for Additional Information No. 139 Revision 1, SRP Section: 09.05.02 – Communications Systems: Application Section 9.5.2," dated January 9, 2008.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Supplemental Response to Request for Additional Information No. 139-1533 Revision 1" (RAI Response), which provides supplemental information to Question 09.05.02-6.

As reflected in the enclosed RAI Response, the request for additional information for security communication design is addressed in Section 13.6 of MHI's recently filed Revision 3 to the US-APWR Design Control Document ("DCD").

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of this submittal. His contact information is below.

Sincerely,



Yoshiki Ogata,  
General Manager- APWR Promoting Department  
Mitsubishi Heavy Industries, LTD.

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Enclosures:

1. Supplemental Response to Request for Additional Information No. 139-1533 Revision 1

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

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Enclosure 1

UAP-HF-11234  
Docket No. 52-021

Supplemental Response to Request for Additional Information  
No. 139-1533, Revision 1

July, 2011

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**SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

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07/26/2011

**US-APWR Design Certification**

**Mitsubishi Heavy Industries**

**Docket No 52-021**

**RAI NO.:** NO. 139-1533 REVISION 1  
**SRP SECTION:** 09.05.02 – COMMUNICATIONS SYSTEMS  
**APPLICATION SECTION:** 9.5.2  
**DATE OF RAI ISSUE:** 1/9/2009

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**QUESTION NO.: 09.05.02-6**

US-APWR Design Certification Final Safety Analysis Report Sections 9.5.2 and 13.6 neither reference nor discuss 10 CFR 73.45(e)(2)(iii). Only COL Item, COL 9.5(7), mentions this requirement. Is the intent to address the communication subsystems in this COL item? Also, identify how this requirement is to be referenced in Section 9.5.2.

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**SUPPLEMENTAL ANSWER:**

Per the meeting of June 30, 2011, with the NRC Staff, Luminant, and Mitsubishi Nuclear Energy Systems, 10 CFR 73.20, 10 CFR 73.45 and 10 CFR 73.46 are not applicable to commercial nuclear power plants. Security communications are discussed in Section 13.6 of the US-APWR Design Control Document, which makes reference to Section 9.5.2 of the DCD as appropriate.

Accordingly, Section 9.5.2 of the DCD will be revised as follows to delete references to 10 CFR 73.20, 10 CFR 73.45 and 10 CFR 73.46, as well as to make other conforming changes:

Section 9.5.2 will be revised to delete, "security and detection systems (10 CFR 73.45(e)(2)(iii))," from the second paragraph.

The third paragraph of Section 9.5.2 will be revised to state as follows:

The plant's communication systems are not safety-related in that they are not needed to mitigate the consequences of a design basis accident. However, they are important to safety in that they are needed to operate the facility and important to plant security in that they enable continuous communications between the security force personnel, the continuously manned central alarm station, and the main control room (10 CFR 73.55(j) (Ref. 9.5.2-5). Security communications are discussed in Section 13.6.

09.05.02-1

Section 9.5.2.2.2.2 will be revised to delete the last sentence of the section.

Section 9.5.9 will be revised to delete COL Information Items COL 9.5(7) and COL 9.5(9).

Section 9.5.10 will be revised to delete references 9.5.2-23, 9.5.2-28 and 9.5.2-29.

Impact on DCD

See attached marked up pages 9.5-16, 9.5-22, 9.5-49, 9.5-52 and 9.5-53. (Attachment-1)

Impact on R-COLA

The information addressing COL Information Items COL 9.5(7) and COL 9.5(9) will be deleted from the Comanche Peak 3 & 4 FSAR Section 9.5.2.

Impact on S-COLA

The information addressing COL Information Items COL 9.5(7) and COL 9.5(9) will be deleted from the North Anna 3 FSAR Section 9.5.2.

Impact on PRA

There is no impact on the PRA.

9. AUXILIARY SYSTEMS

US-APWR Design Control Document

9.5.1.5 Instrumentation Requirements

Pressure sensors start the fire pumps on decreasing fire main water pressure. Pressure indicators confirm adequate pressures for automatic and manual suppression systems, and selected pressure sensors monitor air pressure in fire suppression piping.

Valve position sensors are used to monitor the position of water supply valves (i.e., serve a supervisory function).

The fire water storage tank, if a fire water storage tank is used, is monitored for level and temperature. The diesel-driven fire pump fuel storage tank, if a diesel driven fire pump is used, is monitored for level.

The fire pumps are operable from the MCR. The run status of the fire pumps are indicated on the display in MCR.

9.5.2 Communication Systems

The communication systems provide for effective intra-plant and plant-to-offsite communications during normal, transient, fire, accidents, off-normal phenomena (e.g., LOOP), and security-related events. The various plant communication systems provide independent, alternate, redundant communication paths to ensure the ability to communicate with station and offsite agencies during all operating conditions.

Some parts of the facility communication systems, related functions and external interfaces are the responsibility of the licensee and are addressed by the COL Applicant. These items include the communications aspects of the licensee's security and detection systems (10 CFR 73.45(e)(2)(iii)), the emergency response center (10 CFR 50.34(f)(2) and 10 CFR 50.47(b)(8)), the technical support center, the emergency plan (10 CFR 50 Appendix E) and fire response plans (10 CFR 50, Appendix A, GDC 3) (Ref. 9.5.2-1, 2, 3 and 4).

The plant's communication systems are not safety-related in that they are not needed to mitigate the consequences of a design basis accident. However, they are important to safety in that they are needed to operate the facility and to provide security for the plant; by enabling each guard, watchman, or armed response individual on duty to maintain continuous communication with security forces and with appropriate agencies (10 CFR 73.55(e) and (f) (Ref. 9.5.2-5). Security communications are discussed in Section 13.6.

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9.5.2.1 Design Basis

The principal design criteria for the communication system are that they enable continuous communications between the security force personnel, the continuously manned central alarm station, and the main control room. The communication system is designed to provide assurance that the facility will be operated in a safe and sound manner to protect the health and safety of the public. The communication system is designed to provide assurance that the facility will be operated in a safe and sound manner to protect the health and safety of the public. The communication system is designed to provide assurance that the facility will be operated in a safe and sound manner to protect the health and safety of the public.

in that they enable continuous communications between the security force personnel, the continuously manned central alarm station, and the main control room

the necessary design elements for the US-APWR are the concepts inherent in the design that provide reasonable assurance of the health and safety of the public. The communication system is designed to provide assurance that the facility will be operated in a safe and sound manner to protect the health and safety of the public.

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**9.5.2.2.2 Emergency Telephones**

Emergency telephones are color-coded, (e.g., red), to distinguish them from normal telephones. These telephones are dedicated and are used for:

- Emergency notification system (ENS - NRC)
- Local/state emergency notification
- Health physics network
- Plant security
- Offsite emergency operations facility (EOF)

Communication between the onsite technical center (TSC) and main control room (MCR) may be made using the PABX, station radio system, plant page system and the sound powered telephone system. The sound powered telephone system is an on site system and can not be used to communicate with offsite facilities. ~~The PABX telephone system is also used for notification purposes associated with unauthorized or unconfirmed removal of strategic nuclear material pursuant to the requirement addressed in 10 CFR 73.20(a) (Ref. 9.5.2-23).~~

**9.5.2.2.3 PABX Power Source**

The PABX is powered from the plant non safety-related load group and consists of independent chargers and batteries for each PABX node. The batteries have the capability to operate the plant telephone system for approximately 8 hours following loss of the normal ac. Each node can be switched over to another node's power source in case of its own power failure or for maintenance. However, the switching mechanism is interlocked such that each node can only be connected to a single source.

**9.5.2.2.3 Sound Powered Telephone System (SPTS)**

The SPTS is a dedicated means of communication that does not require external power sources. The SPTS is intended for use as a backup communications system, or for use during special, specific plant operations (e.g., testing, refueling). The components are flame retardant, watertight and installed at specific points in the plant to provide a reliable backup communication system. The SPTS uses both fixed and portable sound powered telephone units. It is independent of the PA/PL and PABX systems.

The function of the SPTS is to provide a dedicated communication system between key plant locations including:

- a. MCR
- b. TSC
- c. Reactor refueling areas (inside and outside of containment)

- COL 9.5(4) *The COL Applicant addresses all communication system interfaces external to the plant (offsite locations). These include interfaces to utility private networks, commercial carriers and the federal telephone system. The configuration of these connections will include consideration of the concerns raised in IE Bulletin 80-15.*
- COL 9.5(5) *The COL Applicant addresses the emergency offsite communications including the crisis management radio system.*
- COL 9.5(6) *The COL Applicant addresses connections to the Technical Support Center from where communications networks are provided to transmit information pursuant to the requirements delineated in 10 CFR 50 Appendix E, Part IV.E.9.*
- COL 9.5(7) ~~*The COL Applicant addresses a continuously manned alarm station required by 10 CFR 73.46(e)(5) and the communications requirements delineated in 10 CFR 73.45(g)(4)(i) and (ii). The COL Applicant addresses notification of an attempted unauthorized or unconfirmed removal of strategic special nuclear material in accordance with 10 CFR 73.45(e)(2)(iii).*~~ Deleted
- COL 9.5(8) *The COL Applicant addresses offsite communications for the onsite operations support center.*
- COL 9.5(9) ~~*The COL Applicant addresses the emergency communication system requirements delineate in 10 CFR 73.55(f) such that a single act cannot remove onsite capability of calling for assistance and also as a redundant system during onsite emergency crisis.*~~ Deleted
- COL 9.5(10) Deleted
- COL 9.5(11) *The COL Applicant is to specify that adequate and acceptable sources of fuel oil are available, including the means of transporting and recharging the fuel storage tank, following a design basis accident.*
- COL 9.5(12) *The COL Applicant is to address the need for installing unit heaters in the Power Source Fuel Storage Vault during the winter for site locations where extreme cold temperature conditions exist.*

#### 9.5.10 References

- 9.5.1-1 "Fire protection." Energy. Title 10 Code of Federal Regulations Part 50.48, U.S. Nuclear Regulatory Commission, Washington, DC.
- 9.5.1-2 SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria", U.S. Nuclear Regulatory Commission, Washington, DC, October 28, 2005.
- 9.5.1-3 "Fire Protection," Energy Title 10 Code of Federal Regulations Part 50, Appendix A, GDC 3, U.S. Nuclear Regulatory Commission, Washington, DC.



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- 9.5.2-7 IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations, IEEE Std. 308, 2001.
- 9.5.2-8 Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications, EPRI NP-5652, June 1988.
- 9.5.2-9 Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems, Regulatory Guide 1.180 Revision 1, October 2003.
- 9.5.2-10 National Electric Code, NFPA 70, 2005.
- 9.5.2-11 Standard for the Fire Protection of Telecommunications Facilities, NFPA 76, 2005.
- 9.5.2-12 Audible Signal Appliances, UL 464, 2003.
- 9.5.2-13 Electrical Equipment for Use in Class I and II, Division 2 and Class 3 Hazardous Locations, UL 1604, 1994.
- 9.5.2-14 Visual Signaling Appliances, UL 1638 Edition 4, 2001.
- 9.5.2-15 Telecommunications Telephone Terminal Equipment, Cordless Telephone Operation and Feature Performance Requirements, TIA-470.320-C, 2006.
- 9.5.2-16 FOTP-49 - Procedure to Measure Nuclear Radiation Effects in Optical Waveguides, EIA/TIA-455-49A, 1989.
- 9.5.2-17 Telecommunications Cabling Standards - Part 1: General Requirements, Part 2: Balanced Twisted-Pair Cabling, ANSI/TIA/EIA-568-B-1/2, 2001.
- 9.5.2-18 Commercial Building Standard for Telecommunications Pathways and Spaces, ANSI/TIA/EIA-569-B, 2004.
- 9.5.2-19 Optical Fiber Cable Color Coding, ANSI/TIA/EIA-598-C, 2005.
- 9.5.2-20 Telecommunication, Title 47, Code of Federal Regulations (Federal Communications Commission).
- 9.5.2-21 Access to telecommunications service, telecommunications equipment and customer premises equipment by persons with disabilities, Title 47, Code of Federal Regulations (Federal Communications Commission), Part 6.
- 9.5.2-22 IEEE Recommended Practice for Powering and Grounding Electronic Equipment, IEEE Std. 1100, 2005.
- 9.5.2-23 General Performance Objectives, NRC Regulations Title 10, Code of Federal Regulations, 10 CFR Part 73.20. Deleted
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- 9.5.2-24 U.S. Nuclear Regulatory Commission, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG-0654 Revision 1, November 1980.
- 9.5.2-25 Guidelines for Fire Protection for Nuclear Power Plants, BTP SPLB 9.5-1.
- 9.5.2-26 Radio Frequency Devices, Title 47, Code of Federal Regulations (Federal Communications Commission), Part 15.
- 9.5.2-27 Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power, US NRC IE Bulletin 80-15.
- 9.5.2-28 ~~Fixed site physical protection systems, subsystems, components, and procedures, NRC Regulations Title 10, Code of Federal Regulations, 10 CFR Part 73.46:~~ Deleted
- 9.5.2-29 ~~Performance Capabilities of Fixed Site Physical Protection Systems – Communications Subsystems, NRC Regulations Title 10, Code of Federal Regulations, 10 CFR Part 73.45:~~ Deleted
- 9.5.2-30 Acceptable Programs for Respiratory Protection, Regulatory Guide 8.15 Revision 1, October 1999.
- 9.5.2-31 Guideline on Evaluation and Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Applications, EPRI TR-106439, October 1996.
- 9.5.3-1 IESNA Lighting Handbook, Illuminating Engineering Society of North America (IESNA), 9th Edition.
- 9.5.3-2 U.S. Nuclear Regulatory Commission, Human-System Interface Design Review Guidelines, NUREG-0700 Revision 2, May 2002.
- 9.5.4-1 Qualification and Test Plan of Class 1E Gas Turbine Generator System, MUAP-07024-P (Proprietary) and MUAP-07024-NP (Non-Proprietary) December, 2007.
- 9.5.4-2 Fuel Oil Systems for Standby Diesel-Generators, ANSI N195, 1976.
- 9.5.4-3 Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants, Regulatory Guide 1.26 Revision 4, March 2007.
- 9.5.4-4 Seismic Design Classification, Regulatory Guide 1.29 Revision 4, March 2007.
- 9.5.4-5 Fuel Oil Systems for Standby Diesel Generators, Regulatory Guide 1.137 Revision 1, October 1979.
- 9.5.4-6 Fuel Oil Systems for Safety-Related Emergency Diesel Generators, ANSI/ANS-59.51, 1997.
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