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TOKYO, JAPAN

October 22, 2008

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-08240

Subject: MHI's Responses to US-APWR DCD RAI No. 74 Revision 0

Reference: 1) "Request for Additional Information No. 74 Revision 0, SRP Section: 09.05.02 – Communications Systems: Application Section 9.5.2," dated September 24, 2008.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Responses to Request for Additional Information No. 74 Revision 0" ("RAI Response"), which responds to the five questions that are contained within Reference 1.

As reflected in the enclosed RAI Response, the requests for additional information for security communication design and security power backup for non-portable communications equipment are addressed in MHI's recently filed Revision 1 to the US-APWR Design Control Document ("DCD"). Furthermore, MHI recognizes that several generic issues are currently being discussed between the NRC and the Nuclear Energy Institute Task Force on New Plant Security that could affect the scope and level of information on physical security to be provided in a design certification. MHI will promptly address and incorporate any necessary or appropriate changes based on these discussions into the US-APWR DCD.

The RAI Response is being submitted in two versions. One version (Enclosure 1) includes certain information, designated pursuant to the Commission guidance as sensitive unclassified non-safeguards information, referred to as security-related information ("SRI"), that is to be withheld from public disclosure under 10 CFR 2.390. The information that is SRI is identified by brackets. The second version (Enclosure 2) omits the SRI and is suitable for public disclosure. In the public version, the SRI is replaced by the designation "[Security-Related Information - Withheld Under 10 CFR 2.390]".

D081
NRC

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,

A handwritten signature in black ink that reads "Y. Ogata". The signature is written in a cursive style with a large initial "Y" and a long horizontal stroke extending to the right.

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

Enclosures:

1. Responses to Request for Additional Information No. 74 Revision 0 (SRI included version)
2. Responses to Request for Additional Information No. 74 Revision 0 (SRI excluded version)

CC: J. A. Ciocco
C. K. Paulson

Contact Information

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Enclosure 2

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Responses to Request for Additional Information No. 74 Revision 0

October 2008

(Security-Related Information Excluded)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

10/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 74 REVISION 0
SRP SECTION: 09.05.02 – Communications Systems
APPLICATION SECTION: 9.5.2
DATE OF RAI ISSUE: 9/24/2008

QUESTION NO.: 09.05.02-1

RAI 9.5.2-1

10 CFR 50, Appendix E, IV.E(9) requires at least one onsite and one offsite communications system, each with a backup power source. DC-FSAR Section 9.5.2.2.2 indicates that the plant PABX allows for normal and emergency communications. This indicates some communication or dependence between normal and emergency communications. DC-FSAR Section 9.5.2.2.5.2 states that "Effective emergency onsite and plant-to-offsite communications is provided by the onsite PABX and the offsite emergency response center PABX systems." This indicates two independent systems. Describe the independence between the onsite PABX and the offsite emergency response center PABX systems and their power sources (including backup power sources).

ANSWER:

There are two (2) independent telephone systems; the onsite PABX and the offsite emergency response center PABX systems. The two (2) telephone system arrangement assures effective on-site and off-site communications under normal and emergency conditions.

These are independent telephone systems consisting of digital commercial grade private automatic branch exchange (PABX) telephone systems. They each have independent uninterruptible power sources and effectively operate as independent facility telephone systems. This arrangement is not susceptible to common mode failure even though the separate PABXs are connected to local telephone company trunk lines as an interface into the national telephone system. Each independent PABX consists of these major components:

- The PABX's internal switching network controller (located in secure communications equipment location).
- Digital microcontroller for system data processing, control and logic functions.
- Controller arrays (gage system) consisting of logic cards, switching and control cards, power cards and related devices that facilitate PABX operation.
- Stations or telephone sets, sometimes called lines distributed throughout the plant (PABX #1) and offsite emergency response center (PABX #2).
- Outside Telco trunks that deliver signals to (and carry them from) the PABX.

- Master Console (switchboard) which allows the operator to handle incoming calls and control other PABX functions.
- Uninterruptible Power Supply (UPS) consisting of sensors, power switches and batteries for each PABX.
- Interconnecting wiring between system devices.

These systems are independently located (one to serve the plant and one to serve the designated offsite emergency response center). These systems are used for both normal and emergency communications functions. They therefore meet the requirements delineated in 10CFR50, Appendix E IV.E(9)

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

10/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 74 REVISION 0
SRP SECTION: 09.05.02 – Communications Systems
APPLICATION SECTION: 9.5.2
DATE OF RAI ISSUE: 9/24/2008

QUESTION NO.: 09.05.02-2

RAI 9.5.2-2

DC-FSAR Sections 9.5.2 and 13.6 neither reference 10 CFR 73.45(g)(4)(i) nor discuss routine security operations. Address the ability of the communications networks to transmit rapid and accurate security information among onsite forces for routine security operation, assess contingencies, and response to a contingency.

ANSWER:

Under NRC regulations, 10 CFR 73.55(f)(1) governs communications among onsite security forces at nuclear power plants. The regulation referenced in the RAI, 10 CFR 73.45, is applied to fixed sites to meet the performance requirements of 10 CFR 73.20 for facilities that possess or use formula quantities of strategic special nuclear material. Nuclear fuel at operating power reactors is governed by 10 CFR 73.55, not 10 CFR 73.45, because it does not constitute strategic special nuclear material. Similarly, the nuclear fuel to be used for the US-APWR does not constitute strategic special nuclear material since it is enriched to a maximum allowable U-235 enrichment of 5wt %. [Refer to US-APWR Design Control Document (“DCD”), Rev. 1, Sections 4.3.2.1 and 4.3.2.6 and Table 4.2-1.] Furthermore, by virtue of the exemption provided for by 10 CFR 73.6(b), irradiated nuclear fuel is exempt from the performance requirements of 10 CFR 73.20 and from the related requirements for fixed sites in 10 CFR 73.45 and 10 CFR 73.46. Rather, as reflected in the Commission’s statement of considerations for its physical security rules, 10 CFR 73.55 provides the applicable physical security provisions for nuclear power plants that only possess strategic special nuclear material in the form of irradiated nuclear fuel. [Refer to “Requirements for the Physical Protection of Nuclear Power Reactors,” 42 Fed. Reg. 10,836,10,838 (1977); “Physical Protection of Plants and Materials,” 43 Fed. Reg. 35,321, 35,325 (1978) (“there is a separate section, § 73.55 to cover the protection of power reactors”).]

In accordance with 10 CFR 73.55(f)(1), US-APWR DCD Rev 1, Section 13.6.2.5, Security Communication Systems, does discuss routine security operation and addresses the ability of the communications networks to transmit rapid and accurate security information among onsite forces for routine security operation, assess contingencies, and response to a contingency as follows:

[Security-Related Information - Withheld Under 10 CFR 2.390]

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

10/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 74 REVISION 0
SRP SECTION: 09.05.02 – Communications Systems
APPLICATION SECTION: 9.5.2
DATE OF RAI ISSUE: 9/24/2008

QUESTION NO.: 09.05.02-3

RAI 9.5.2-3

DC-FSAR Sections 9.5.2 and 13.6 neither reference 10 CFR 73.46(f) nor discuss continuous communications and communication networks available in the alarm station.

Address the ability of the communications networks to maintain continuous communication with an individual in each continuously manned alarm station; the ability to call for assistance from other guards, watchmen, and armed response personnel and from law enforcement authorities; the availability of telephone service and radio or microwave communication, either directly or through an intermediary, for the capability of communication with the law enforcement authorities; and that the non-portable communications equipment controlled by the licensee and required by 10CFR 73.46(f) remains operable from independent power sources in the event of the loss of normal power.

ANSWER:

As discussed in the response to RAI 9.5.2-2, 10 CFR 73.55 provides the applicable physical security provisions for nuclear power plants such as the US-APWR. As also set forth in the response to RAI 9.5.2-2, US-APWR DCD Rev 1, Section 13.6.2.5, Security Communication Systems, does address the continuous communications and communication networks available in the alarm station to communicate with on duty guard force personnel and local law enforcement agencies. Additionally, US APWR DCD Rev 1, Section 13.6.2.6, Security Power does provide that non-portable communications equipment will remain operable from independent power sources in the event of the loss of normal power as required by 10 CFR 73.55.(f)(4).

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

10/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 74 REVISION 0
SRP SECTION: 09.05.02 – Communications Systems
APPLICATION SECTION: 9.5.2
DATE OF RAI ISSUE: 9/24/2008

QUESTION NO.: 09.05.02-4

RAI 9.5.2-4

DC-FSAR Sections 9.5.2 and 13.6 neither reference 10 CFR 73.55(f) nor discuss routine security operations. Address the capability of each guard, watchman or armed response individual on duty being capable of maintaining continuous communication with an individual in each continuously manned alarm station, who shall be capable of calling for assistance from other guards, watchmen, and armed response personnel and from local law enforcement authorities. Also address the capability of continuous communication, radio or microwave transmitted two-way voice communication, either directly or through an intermediary, in addition to conventional telephone service, between local law enforcement authorities and the facility. In addition, address the independence of the power sources for the communications equipment in the event of the loss of normal power.

ANSWER:

US APWR DCD Rev 1, Section 13.6.2.5, Security Communication Systems, references 10 CFR 73.55(f) and does discuss the capability of each guard, watchman or armed response individual on duty being capable of maintaining continuous communication with an individual in each continuously manned alarm station, who shall be capable of calling for assistance from other guards, watchmen, and armed response personnel and from local law enforcement authorities. It also addresses the capability of continuous communication, radio or microwave transmitted two-way voice communication, either directly or through an intermediary, in addition to conventional telephone service, between local law enforcement authorities and the facility.

US APWR DCD Rev 1, Section 13.6.2.6, Security Power, discusses the independence of the power sources for the communications equipment in the event of the loss of normal power, but does not reference 10 CFR 73.55(f).

Impact on DCD

The DCD will be revised to add a reference to 10 CFR 73.55(f) in the first sentence of Section 13.6.2.6, Security Power as follows.

[Security-Related Information - Withheld Under 10 CFR 2.390]

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

10/22/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.: NO. 74 REVISION 0
SRP SECTION: 09.05.02 – Communications Systems
APPLICATION SECTION: 9.5.2
DATE OF RAI ISSUE: 9/24/2008

QUESTION NO.: 09.05.02-5

RAI 9.5.2-5

DC-FSAR Section 9.5.2.1.2 states "The selection of these systems and components is based on the guidance provided in EPRI NP-5652, "Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications" (Ref. 9.5.2-8)." Also, per NUREG-0800, Section 9.5.2, the guidance of EPRI TR-106439, "Guideline on Evaluation and Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Applications," (accepted by an NRC safety evaluation dated July 17, 1987) should be considered if computer-based equipment is involved. Describe how EPRI TR-106439 was considered in the selection of digital equipment for communication systems.

ANSWER:

The US-APWR internal plant communications systems are designed to use commercial (and industrial) grade, "off the shelf" products. The plant radio system, the plant telephone system and the plant page system are based on digital technology. These systems are classified as "important to safety" (as used in 10CFR50 Appendix A) since they are needed for routine operations and for a variety of post-DBA activities (e.g. coordination of onsite and offsite response).

To meet the equipment qualification issues associated with the use of commercial grade equipment by the nuclear industry in 1988 EPRI published NP-5652, "Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)". A supplement to NP-5652, TR-102260, "Supplemental Guidance for the Application of EPRI Report NP-5652 on the Utilization of Commercial Grade Items" was issued in 1994. TR-102260 provided additional clarifications in the use of NP-5652. EPRI NP-5652 (including supplement and related technical reports) forms the basis for the qualification for use of commercial grade components in nuclear power plants. Since digital systems rely on high quality software (firmware in most cases), additional guidance in the use of these systems was provided in 1996 when EPRI published TR-106439, "Guideline on Evaluation and Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Applications". TR-106439 was primarily intended to help operating nuclear plants upgrade instrument and control systems in nuclear power plants due to increased maintenance costs and equipment obsolescence. However, TR-106439

provides the guidance and methodologies by which important to safety digital equipment may be evaluated and accepted. TR-106439, which has been endorsed by the NRC, forms the basis for digital communications equipment evaluations, qualifications and selection at this time.

Impact on DCD

MHI will change the description of the DCD 9.5.2.1.2 third sentence from

"The selection of these systems and components is based on the guidance provided in EPRI 5652, "Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications" (Ref. 9.5.2-7)."

to

"The selection of these systems and components is based on the guidance provided in EPRI 5652, "Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications" (Ref. 9.5.2-7) and EPRI TR-106439, "Guideline on Evaluation and Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Applications" (Ref 9.5.2-XX)."

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.