November 6, 2007

LICENSEE: MITSUBISHI HEAVY INDUSTRIES (MHI)

FACILITY: US-APWR STANDARD DESIGN PRE-APPLICATION REVIEW

SUBJECT: SUMMARY OF THE AUGUST 23, 2007 PUBLIC MEETING ON SAFETY FEATURES AND PLANT DESIGN FEATURES FOR THE US-APWR

On August 23, 2007, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Mitsubishi Heavy Industries (MHI) at NRC Headquarters in Rockville, Maryland. The purpose of the meeting was to discuss plant safety features and plant design concepts for the US-APWR and to obtain feedback from the NRC staff. A list of meeting attendees is provided as Enclosure 1. MHI presented a handout, which is shown in Enclosure 2, and can be accessed through the Agencywide Documents Access and Management System (ADAMS) accession number ML072890316.

Safe Shutdown

MHI began the meeting by discussing and explaining the term "safe shutdown" and how the US-APWR design accomplishes safe shutdown. Specific safety related systems are used to complete and maintain safe shutdown, which are not directly related to the mitigation of accident consequences. MHI explained that while bringing to, and maintaining, the plant in Hot Standby or Cold Shutdown status the safe shutdown systems are required to control reactivity, provide reactor coolant makeup (RCS makeup), control reactor pressure, and remove decay heat. MHI then proceeded to explain how the US-APWR design accomplishes these functions. Reactivity control is accomplished using feed and bleed with the Safety Injection (SI) pumps, and the emergency letdown lines. This design meets SRP 7.4 (NUREG-0800) and uses the same design as the SP-90, an evolutionary pressurized-water reactor (PWR) by Westinghouse. RCS makeup is also provided by the SI pump. This design, once again, mimics Westinghouse SP-90 and meets SRP 7.4. RCS pressure control is similar to current PWRs, except the system is depressurized by a motor operated Safety Depressurization Valve. US-APWR decay heat removal and RCS cooling is similar to current PWRs, except the Steam Generator cooling system has four (4) Emergency Feed Water pumps as opposed to three (3) Auxiliary Feed Water pumps. Two (2) of the four (4) pumps are motor driven, while the other two pumps are turbine driven. The heat removal provided by the residual heat removal system is similar to current PWRs except four (4) trains are used as opposed to two (2).

Next, MHI discussed the safe shutdown support systems, which consist of the Component Cooling Water System (CCWS), the Essential Service Water System (ESWS), and the HVAC systems. The CCWS consists of a four (4) safety train configuration, which is separated into two (2) independent sections, while the ESWS is completely separated into four (4) trains. The Class 1E electrical room HVAC consists of a four (4) safety train configuration, which is separated into two (2) independent sections. The Essential Chilled Water System is also a four (4) train system with one chiller unit and water pump on each train. One expansion tank with a separator tank is shared by two trains. MHI concluded the safe shutdown portion of the presentation by emphasizing that the four (4) train design provides safe shutdown capability with a single failure during online maintenance of one (1) train.

Station Blackout

Station Blackout (SBO) refers to the complete loss of AC electric power to the essential and nonessential switchgear buses. SBO therefore requires the loss of offsite power along with a turbine trip and failure of the onsite emergency AC power system. SBO does not mean the loss of AC power from battery fed inverters. After introducing the concept of a station blackout, MHI explained how the US-APWR will deal with an SBO. Once a blackout occurs, all offsite power and the four (4) Emergency Power Sources (EPS) are lost. The two (2) alternate AC (AAC) power sources and batteries will still be available. A tie-line between the permanent medium voltage bus and the safety medium voltage bus will be manually connected and the needed safety and non-safety loads will be manually restarted. All of these operations can be performed within one hour. The plant can maintain the integrity of the RCP seal and maintain decay heat removal until completion of switching the buses and re-starting the loads, which should occur in less than one hour.

Layout Design

MHI explained that the US-APWR will be designed with robust structures that provide protection from natural phenomena, and provide physical separation for the safe shutdown systems. The design protects against internal floods by placing safety components above the internal flood level in safety buildings designed to withstand external floods. Safety components are also placed in seismic category-I buildings, and the appropriate wall/roof thickness is provided to protect against tornado missiles. Fire protection is provided by installing trains in independent compartments, and assuming that all safety components in a fire area are rendered inoperable.

MHI concluded the public meeting by reiterating that comments and suggestions from the NRC staff would be appreciated, and considered to improve the quality of the Design Control Document (DCD). Members of the public were in attendance, but Public Meeting Feedback forms were not received. Please direct any inquiries to me at 301-415-1626, or bcl1@nrc.gov.

/RA/

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US-APWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Project No. 751

Enclosures:
1. List of Attendees
2. Mitsubishi Handout - US-APWR
   9th Pre-Application Review Meeting -
   Safety Features (ML072890316)

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ADAMS ACCESSION NO: ML072900591 Package: ML072900571

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OFFICIAL AGENCY RECORD

Summary of the August 23, 2007 Public Meeting on Safety Features and Plant Design Features for the US-APWR dated November 6, 2007

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Safety Feature Topical Reports
August 23, 2007

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Enclosure 2

Mitsubishi Handout - US-APWR
9^{th} Pre-Application Review Meeting-
Safety Features

(ML072890316)

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