

REQUEST FOR ADDITIONAL INFORMATION NO. 109-1637 REVISION 1

12/1/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 09.03.01 - Compressed Air System

Application Section: Section 9.3.1

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

09.03.01-1

RAI 9.3.1-1

Resolution of Generic Issue 43, "Reliability of Air Systems," ensures the reliability of safety-related equipment actuated or controlled by compressed air. An air system designed to air quality requirements of ANSI/ISA S7.3-R1981, "Quality Standard for Instrument Air," helps ensure that the compressed air system (CAS) and connected components will perform their safety-function. Tier 2 DCD Section 9.3.1.3, "Safety Evaluation," states that the instrument air system (IAS) meets the air quality standards specified in ANSI/ISA S7.3-R1981 and that periodic checks are made to ensure instrument air quality. However, no information concerning the air quality of the station service air system (SSAS) is provided. Additionally, the CAS has the capability to cross connect the instrument air and service air portions of the system, to supply safety related components when required. Regulatory Guide (RG) 1.68.3, "Preoperational Testing of Instrument and Control Air Systems," Position C.9, stresses the importance of all system components meeting the same air quality requirements.

The staff requests the applicant to clarify what air quality standards apply to the station service air system and how the SSAS air quality will be verified. Include this information in the DCD, identify which revision it will appear in, and provide a markup in your response.

09.03.01-2

RAI 9.3.1-2

DCD Tier 2, Table 6.2.4-3 (Sheet 6 of 8), part of the information provided for Penetration P245 indicates that the manual globe valve CAS-VLV-004 is normally open and is required to be open during shutdown. However, Figure 6.2.4-1 (Sheet 35 of 50) indicates that CAS-VLV-004 is locked closed. The staff requests the applicant to provide a revised indication of the valve position in the table or a revised figure that correctly identifies the normal position of CAS-VLV-004. Include this information in the DCD, identify which revision it will appear in, and provide a markup in your response.

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09.03.01-3

RAI 9.3.1-3

DCD Tier 1, Section 2.7.2.1, under the sub-heading of “Alarms, Displays, and Controls,” reference is made to Table 2.7.2-1 as the list identifying the alarms, displays and controls related to the Compressed Air and Gas (CAGS) that are located in the main control room. However, inspection of Table 2.7.2-1 revealed that no such list is included. The staff requests the applicant to include in the DCD a revised statement that correctly identifies the location of the list of alarms, displays, and controls related to the CAGS located in the MCR.

09.03.01-4

RAI 9.3.1-4

As part of the “Safety Evaluation” discussion provided in Section 9.3.1 of Revision 1 to the DCD Tier 2, the DC Applicant states, “the safety-related portions of the IAS, SSAS and compressed gas system, are designed to remain functional during and following a safe shutdown earthquake.” The DC Applicant later states that the CAGS does not perform any safety-related function other than containment isolation. In both statements, the Compressed Gas System (CGS) is identified as having a safety-related role. 10 CFR 52.47(b)(1) requires a DC applicant to provide proposed ITAAC necessary to ensure that a plant incorporating the certified design is built and will operate in accordance with the DC, the Atomic Energy Act and NRC regulations. In Revision 1 to DCD Tier 2 Section 9.3.6, the DC Applicant has specified a COL information item regarding a COL applicant’s responsibility to provide a CGS, consisting of a high-pressure nitrogen gas system, a low-pressure nitrogen gas system, the hydrogen gas system, carbon dioxide system, and oxygen supply system. However, there is no requirement for the COL applicant to propose suitable ITAAC to demonstrate that the CGS design meets the acceptance criteria that are necessary and sufficient to ensure that systems have been constructed and operate in conformance with the COL, the Atomic Energy Act, and NRC regulations. This omission is important since the compressed gas system is expected to perform a safety function as indicated above.

The staff requests the applicant to include in the DCD a COL information item that states that a COL applicant is responsible for providing the tests and inspection requirements for the CGS.

09.03.01-5

RAI 9.3.1-5

During the review of the application, the staff identified several apparent editorial errors. These are identified below.

RAI 9.3.1-5.a

DCD Tier 2, Table 1.9.2-9, in the discussion of SRP Section 9.3.1, “Compressed Air System,” the discussion of the “Status” states conformance with “Criterion 3, the instrument air system of the US-APWR is not shared.” GDC 3 is related to

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Fire Protection and is not directly concerned with the sharing of systems. GDC 5 is related to whether shared SSCs important to safety are capable of performing their required safety functions. The staff requests the applicant to include in the DCD a revised statement that correctly identifies the criterion related to the sharing of compressed air systems.

RAI 9.3.1-5.b

DCD Tier 2 Section 9.3.1.2.1.1, the last sentence in the fourth paragraph states, in part, "...header pressure is monitored and a low pressure alarm indicates a possible instrument air instrument air line rupture." The staff requests the applicant to include in the DCD a revised statement of the possible line rupture that will initiate the low pressure alarm.

RAI 9.3.1-5.c

DCD Tier 2 Section 9.3.1.2.1.1, the last paragraph refers to the "instrument air compressor unit" (singular) and to "instrument airA dryers" being located in the T/B. The staff requests the applicant to include in the DCD a revised description of the IAS components located in the T/B.

RAI 9.3.1-5.d

DCD Tier 2 Section 9.3.1.2.1.2, the third paragraph refers to the "service air compressor unit" (singular) being located in the T/B. The staff requests the applicant to include in the DCD a revised description of the number of SSAS compressors located in the T/B.

RAI 9.3.1-5.e

DCD Tier 2 Section 9.3.1.2.2.2, the paragraph under sub-heading "Air Receivers" refers to "compressed service air." The staff requests the applicant to include in the DCD a revised description of the compressed service working fluid.