REQUEST FOR ADDITIONAL INFORMATION 346-2641 REVISION 1

4/27/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 09.03.02 - Process and Post-Accident Sampling Systems
Application Section: 9.3.2

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)

09.03.02-10

Background

Three Mile Island (TMI) Action Plan Item III.D.1.1 in NUREG-0737 and 10 CFR 50.34(f)(2)(xxvi) require a leakage control program to minimize the leakage from those portions of the Process Sampling Systems (PSS) outside of the containment that contain or may contain radioactive material following an accident. Systems listed by Item III.D1.1 as potentially in scope of the requirement are residual heat removal (RHR), containment spray recirculation, high-pressure injection recirculation, containment and primary coolant sampling, reactor core isolation cooling, makeup and letdown (PWRs only), and waste gas (includes headers and cover gas system outside of containment in addition to decay or storage system)

DCD Table 6.3-1, Sheet 2, describes design features facilitating compliance with NUREG-0737 Item III.D.1.1 for the ECCS systems. However, no similar design details are provided for other systems that may be in scope of the requirement, including process sampling, CVCS, and RHRS. NUREG-0737 Item III.D.1,1 or 10 CFR 50.34(f)(2)(xxvi) are not listed among the design bases for the RHR, CVCS, or gaseous waste management system. Although DCD Section 9.3.2 lists NUREG-0737 Item III.D.1.1 and 10 CFR 50.34(f)(2)(xxvi) among the design bases for the process and postaccident sampling systems, no further detail is provided in DCD section 9.3.2 on how leakage control is ensured. Additionally, DCD Chapter 16, Technical Specification 5.5.2, “Primary Coolant Sources Outside Containment,” states the following:

> This program provides controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The systems include Containment Spray, Safety Injection, Chemical and Volume Control, and Sampling System. The program shall include the following:
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> a. Preventive maintenance and periodic visual inspection requirements and
> b. Integrated leak test requirements for each system at least once per 24 months.

This appears to describe a program intended to fulfill the requirements of NUREG-0737 Item III.D.1.1. However, Technical Specification 5.5.2 does not contain all the elements required by NUREG-0737 Item III.D.1.1. Finally, the initial and periodic tests required

by Item III.D1.1 would be performed by the COL holder. However, the US-APWR DCD does not identify a COL information item to ensure the COL holder has a leakage control program, and the initial leak test is not addressed in the initial test program information included in the DCD.

Requested Information

1. List the systems considered to be in scope of the requirements of NUREG-0737 Item III.D.1.1 or 10 CFR 50.34(f)(2)(xxvi). If any systems expected to contain radioactive materials after an accident are excluded from the leakage detection program, justify the exclusion of these systems.
2. Describe the design provisions that facilitate minimization and detection of leakage for each of the systems considered to be in scope of item III.D.1.1 or 10 CFR 50.34(f)(2)(xxvi), if not already described in the DCD.
3. Discuss the need to include a COL information item in the DCD to ensure the COL holder develops a program for leakage monitoring and prevention to fulfill the requirements of NUREG-0737 Item III.D.1.1 and 10 CFR 50.34(f)(2)(xxvi).
4. Clarify whether proposed Technical Specification 5.5.2 intended to fulfill the requirements of Item III.D.1.1 in NUREG-0737 and 10 CFR 50.34(f)(2)(xxvi). If so, these criteria should be referenced in the technical specification.
5. In DCD Tier 1 and Tier 2, provide the initial test program information for leakage control and detection for all systems outside containment that contain (or might contain) accident source term radioactive materials following an accident.