3.6 Reactor Coolant Pressure Boundary Leak Detection

Design Description

The reactor coolant pressure boundary leakage detection monitoring provides a means of detecting and quantifying the reactor coolant leakage. To detect unidentified leakage inside containment, the following diverse methods are provided to quantify and assist in locating the leakage:

- Containment Sump Level
- Reactor Coolant System Inventory Balance
- Containment Atmosphere Radiation

Leakage detection monitoring is accomplished using instrumentation and other components of several systems.

1. The diverse leak detection methods provide the nonsafety-related function of detecting small leaks when RCS leakage indicates possible reactor coolant pressure boundary degradation.

Inspection, Tests, Analyses, and Acceptance Criteria

Table 3.6-1 specifies the inspections, tests, analyses, and associated acceptance criteria for the leak detection equipment.

Table 3.6-1
Inspections, Tests, Analyses, and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The diverse leak detection methods provide the nonsafety-related function of detecting small leaks when RCS leakage indicates possible reactor coolant pressure boundary degradation.	See Tier 1 Material sections: i) See Tier 1 Material, Table 2.3.10-4, Item 7a for the sump level measuring instruments WLS-034 and WLS-035. ii) See Tier 1 Material, Table 3.5-6, Item 1 for the containment atmosphere radioactivity monitor PSS-RE027. iii) See Tier 1 Material, Table 2.1.2-4, Items 5a, 7a, and 10 for the pressurizer level measuring instruments RCS-195A, RCS-195B, RCS-195C, and RCS-195D. iv) See Tier 1 Material, Table 2.1.2-4, Items 5a and 7a for the RCS hot and cold leg temperature instruments RCS-121A, RCS-121B, RCS-121C, RCS-121D, RCS-122A, RCS-122B, RCS-122C, RCS-122D, RCS-131A, RCS-131B, RCS-131C, RCS-131D, RCS-132A, RCS-132B, RCS-132C, and RCS-132D. v) See Tier 1 Material, Table 2.1.2-4, Items 5a, 7a, and 10 for the RCS pressure instruments RCS-140A, RCS-140B, RCS-140C, and RCS-140D. vi) See Tier 1 Material, Table 2.3.2-4, Item 13 for the letdown and makeup flow instruments CVS-001 and CVS-025. vii) See Tier 1 Material, Table 2.3.10-4, Item 10 for the reactor coolant drain tank level instrument WLS-002.	See Tier 1 Material sections: i) See Tier 1 Material, Table 2.3.10-4, Item 7a for the sump level measuring instruments WLS-034 and WLS-035. ii) See Tier 1 Material, Table 3.5-6, Item 1 for the containment atmosphere radioactivity monitor PSS-RE027. iii) See Tier 1 Material, Table 2.1.2-4, Items 5a, 7a, and 10 for the pressurizer level measuring instruments RCS-195A, RCS-195B, RCS-195C, and RCS-195D. iv) See Tier 1 Material, Table 2.1.2-4, Items 5a and 7a for the RCS hot and cold leg temperature instruments RCS-121A, RCS-121B, RCS-121C, RCS-121D, RCS-122A, RCS-122B, RCS-122C, RCS-122D, RCS-131A, RCS-131B, RCS-131C, RCS-131D, RCS-132A, RCS-132B, RCS-132C, and RCS-132D. v) See Tier 1 Material, Table 2.1.2-4, Items 5a, 7a, and 10 for the RCS pressure instruments RCS-140A, RCS-140B, RCS-140C, and RCS-140D. vi) See Tier 1 Material, Table 2.3.2-4, Item 13 for the letdown and makeup flow instruments CVS-001 and CVS-025. vii) See Tier 1 Material, Table 2.3.10-4, Item 10 for the reactor coolant drain tank level instrument WLS-002.