

2.4.14 Hydrogen Monitoring System

1.0 Description

The hydrogen monitoring system (HMS) provides for the monitoring of hydrogen concentration in the containment atmosphere.

The HMS has the following safety related function:

- Measures the hydrogen concentration in containment.

2.0 Arrangement

2.1 The HMS system equipment is located as listed in Table 2.4.14-1—Hydrogen Monitoring System Equipment.

3.0 Seismic 1 Classifications

3.1 Equipment identified as Seismic Category I in Table 2.4.14-1 can withstand seismic design basis loads without loss of safety function.

4.0 I&C Design Features, Displays and Controls

4.1 The HMS equipment classified as Class 1E in Table 2.4.14-1 can perform its safety function when subjected to electromagnetic interference (EMI), radio-frequency interference (RFI), electrostatic discharges (ESD), and power surges.

5.0 Electrical Power

5.1 The equipment identified as Class 1E in Table 2.4.14-1 receives power from a Class 1E power supply.

6.0 Environmental Considerations

6.1 Equipment listed as Class 1E in Table 2.4.14-1 that are designated as harsh environment will perform their safety function in the environments that exist before and during the time required to perform their safety function.

7.0 System Inspections, Tests, Analyses, and Acceptance Criteria

7.1 Table 2.4.14-2—Hydrogen Monitoring System ITAAC specifies the inspections, tests, analyses, and acceptance criteria for the HMS.

Table 2.4.14-1—Hydrogen Monitoring System Equipment

| Equipment Description | Equipment Tag Number ⁽¹⁾ | Equipment Location | Seismic Category | IEEE Class 1E | Harsh Environment |
|------------------------------|--|---------------------------|-------------------------|----------------------|--------------------------|
| Hydrogen Sensor | 30JMU10CQ001 | Reactor Building | I | Yes | Yes |
| Hydrogen Sensor | 30JMU10CQ002 | Reactor Building | I | Yes | Yes |
| Hydrogen Sensor | 30JMU10CQ003 | Reactor Building | I | Yes | Yes |
| Hydrogen Sensor | 30JMU10CQ004 | Reactor Building | I | Yes | Yes |
| Hydrogen Sensor | 30JMU10CQ005 | Reactor Building | I | Yes | Yes |
| Hydrogen Sensor | 30JMU10CQ006 | Reactor Building | I | Yes | Yes |
| Hydrogen Sensor | 30JMU10CQ007 | Reactor Building | I | Yes | Yes |

1) Equipment tag numbers are provided for information and are not part of the design certification.

Table 2.4.14-2—Hydrogen Monitoring System ITAAC

| Commitment Wording | Inspection, Analysis or Test | Acceptance Criteria |
|---|--|---|
| 2.1 The HMS equipment is located as listed in Table 2.4.14-1. | Inspections will be performed of the location of the HMS equipment. | The equipment listed in Table 2.4.14-1 is located as listed in Table 2.4.14-1. |
| 3.1 Equipment identified as Seismic Category I in Table 2.4.14-1 can withstand seismic design basis loads without loss of safety function. | Inspections, type tests, tests, analyses or a combination of tests and analyses will be performed on the equipment designated as Seismic Category I in Table 2.4.14-1. | (1) A report exists and concludes that the equipment listed as Seismic Category I in Table 2.4.14-1 installed as designed. (2) A report exists and concludes that the equipment listed as Seismic Category I in Table 2.4.14-1 withstand seismic design basis loads without loss of safety function. |
| 4.1 The HMS equipment classified as Class 1E in Table 2.4.14-1 can perform its safety function when subjected to EMI, RFI, ESD, and power surges. | Type tests, tests, analyses or a combination of these will be performed for the Class 1E equipment listed in Table 2.4.14-1. | A report exists and concludes that the equipment listed as Class 1E in Table 2.4.14-1 can perform its safety function when subjected to EMI, RFI, ESD, and power surges. |
| 5.1 The equipment identified as Class 1E in Table 2.4.14-1 receives power from a Class 1E power supply. | Inspections will be performed to verify the source of power for Class 1E equipment. | The Class 1E equipment listed in Table 2.4.14-1 is powered from a Class 1E power supply. |
| 6.1 Equipment listed as Class 1E in Table 2.4.14-1 that are designated as harsh environment will perform their safety function in the environments that exist before and during the time required to perform their safety function. | Type tests, tests, analyses or a combination of tests and analyses will be performed to demonstrate the ability of the equipment to perform their safety function in the environments that exist before and during the time required to perform their safety function. | A report exists and concludes that equipment listed as Class 1E in Table 2.4.14-1 are qualified to perform their associated safety function in the environments that exist before and during the time required to perform their safety function. |