

## **2.4.16 Reactor Pressure Vessel Level Measurement**

### **1.0 Description**

The reactor pressure vessel level (RPVL) measurement system provides an indication of the water level in the reactor vessel.

The RPVL measurement system has the following safety related functions:

- Provides indication of reactor vessel water level.

### **2.0 Arrangement**

2.1 The RPVL measurement system equipment is located as listed in Table 2.4.16-1—Reactor Pressure Vessel Level Measurement System Equipment.

### **3.0 Seismic 1 Classifications**

3.1 Equipment identified as Seismic Category I in Table 2.4.16-1 can withstand seismic design basis loads without loss of safety function.

### **4.0 I&C Design Features, Displays and Controls**

4.1 The RPVL measurement system equipment classified as Class 1E in Table 2.4.16-1 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 RPVL conditioning cabinets identified as Class 1E in Table 2.4.16-1 receive power from their respective Class 1E division.

### **6.0 Environmental Considerations**

6.1 Equipment listed as Class 1E in Table 2.4.16-1 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 2.4.16-2—Reactor Pressure Vessel Level Measurement System ITAAC specifies the inspections, tests, analyses, and acceptance criteria for the RPVL measurement system.

| <b>Table 2.4.16-1—Reactor Pressure Vessel Level Measurement System Equipment</b> |  |                           |                         |                      |                          |
|--|--|---------------------------|-------------------------|----------------------|--------------------------|
| <b>Equipment Description</b>   | <b>Equipment Tag Number <sup>(1)</sup></b>   | <b>Equipment Location</b> | <b>Seismic Category</b> | <b>IEEE Class 1E</b> | <b>Harsh Environment</b> |
| RPVL sensors, Division 1   | 30JKS10CL001<br>30JKS10CL002<br>30JKS10CL003 | Reactor Vessel            | I                       | Yes                  | Yes                      |
| RPVL sensors, Division 2   | 30JKS20CL001<br>30JKS20CL002<br>30JKS20CL003 | Reactor Vessel            | I                       | Yes                  | Yes                      |
| RPVL sensors, Division 3   | 30JKS30CL001<br>30JKS30CL002<br>30JKS30CL003 | Reactor Vessel            | I                       | Yes                  | Yes                      |
| RPVL sensors, Division 4   | 30JKS40CL001<br>30JKS40CL002<br>30JKS40CL003 | Reactor Vessel            | I                       | Yes                  | Yes                      |
| RPVL Conditioning Cabinet, Division 1  | 30CLE14GH001                                 | Safeguard Building 1      | I                       | Yes                  | No                       |
| RPVL Conditioning Cabinet, Division 2  | 30CLF14GH002                                 | Safeguard Building 2      | I                       | Yes                  | No                       |
| RPVL Conditioning Cabinet, Division 3  | 30CLG14GH003                                 | Safeguard Building 3      | I                       | Yes                  | No                       |
| RPVL Conditioning Cabinet, Division 4  | 30CLH14GH004                                 | Safeguard Building 4      | I                       | Yes                  | No                       |

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

**Table 2.4.16-2—Reactor Pressure Vessel Level Measurement System ITAAC**

| <b>Commitment Wording</b>   | <b>Inspection, Analysis or Test</b>  | <b>Acceptance Criteria</b>   |
|---|--|--|
| 2.1 The RPVL measurement system equipment is located as listed in Table 2.4.16-1.   | An inspection will be performed of the location of the RPVL measurement system equipment.  | The equipment listed in Table 2.4.16-1 is located as listed in Table 2.4.16-1.   |
| 3.1 Equipment identified as Seismic Category I in Table 2.4.16-1 can withstand a design basis seismic event 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 2.4.16-1.   | (1) A report exists and concludes that the equipment listed as Seismic Category I in Table 2.4.16-1 is installed as designed.<br><br>(2) A report exists and concludes that the equipment listed as Seismic Category I in Table 2.4.16-1 can withstand seismic design basis loads without loss of safety function. |
| 4.1 The RPVL measurement system equipment classified as Class 1E in Table 2.4.16-1 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 2.4.16-1.   | A report exists and concludes that the equipment listed as Class 1E in Table 2.4.16-1 can perform its safety function when subjected to EMI, RFI, ESD, and power surges.   |
| 5.1 The RPVL conditioning cabinets identified as Class 1E in Table 2.4.16-1 receive power from their respective Class 1E division.  | Inspections will be performed to verify the source of power for the RPVL conditioning cabinets.  | The RPVL conditioning cabinets identified as Class 1E in Table 2.4.16-1 receive power from their respective Class 1E division.   |
| 6.1 Equipment listed as Class 1E in Table 2.4.16-1 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 for the environmental conditions that could occur before and during a design basis accident. | A report exists and concludes that equipment listed as Class 1E in Table 2.4.16-1 are qualified to perform their associated safety function in the environments that exist before and during the time required to perform their safety function.   |