2.4.17 Excore Instrumentation System

1.0 Description

The excore instrumentation system provides signals indicative of neutron flux level conditions to other I&C systems.

The EIS has the following safety related function:

- Provides neutron flux level signals to the Protection System (PS).

2.0 Arrangement

2.1 The EIS equipment is located as listed in Table 2.4.17-1—Excore Instrumentation System Equipment.

3.0 Seismic 1 Classifications

3.1 Equipment identified as Seismic Category I in Table 2.4.17-1 can withstand a design basis seismic event without loss of a safety function.

4.0 I&C Design Features, Displays and Controls

4.1 The EIS equipment classified as Class 1E in Table 2.4.17-1 can perform its safety function when subjected to electromagnetic interference (EMI), radio-frequency interference (RFI), electrostatic discharges (ESD), and power surges.

4.2 The EIS provides output signals listed in Table 2.4.17-2.

5.0 Electrical Power

5.1 The equipment identified as Class 1E in Table 2.4.17-1 receives power from its respective Class 1E division.

6.0 Environmental Considerations

6.1 Equipment listed as Class 1E in Table 2.4.17-1 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 2.4.17-3—Excore Instrumentation System ITAAC specifies the inspections, tests, analyses, and acceptance criteria for the EIS.

Table 2.4.17-1—Excore Instrumentation System Equipment
(2 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	Seismic Class	IEEE Class 1E	Harsh Environment
Source Range Detector, Division 1	30JKT01CX851	Reactor Building	I	Yes	Yes
Source Range Detector, Division 2	30JKT01CX852	Reactor Building	I	Yes	Yes
Source Range Detector, Division 3	30JKT01CX853	Reactor Building	I	Yes	Yes
Intermediate Range Detector, Division 1	30JKT02CX851	Reactor Building	I	Yes	Yes
Intermediate Range Detector, Division 2	30JKT02CX852	Reactor Building	I	Yes	Yes
Intermediate Range Detector, Division 3	30JKT02CX853	Reactor Building	I	Yes	Yes
Intermediate Range Detector, Division 4	30JKT02CX854	Reactor Building	I	Yes	Yes
Upper Core Half Power Range Detector, Division 1	30JKT03CX851	Reactor Building	I	Yes	Yes
Lower Core Half Power Range Detector, Division 1	30JKT03CX855	Reactor Building	I	Yes	Yes
Upper Core Half Power Range Detector, Division 2	30JKT03CX852	Reactor Building	I	Yes	Yes
Lower Core Half Power Range Detector, Division 2	30JKT03CX856	Reactor Building	I	Yes	Yes
Upper Core Half	30JKT03CX853	Reactor	I	Yes	Yes

Table 2.4.17-1—Excore Instrumentation System Equipment
(2 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	Seismic Class	IEEE Class 1E	Harsh Environment
Power Range Detector, Division 3		Building			
Lower Core Half Power Range Detector, Division 3	30JKT03CX857	Reactor Building	I	Yes	Yes
Upper Core Half Power Range Detector, Division 4	30JKT03CX854	Reactor Building	I	Yes	Yes
Lower Core Half Power Range Detector, Division 4	30JKT03CX858	Reactor Building	I	Yes	Yes

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

Table 2.4.17-2—Excore Instrumentation System Output Signals

Item #	Output Signal	Signal Generation	Recipient	# of Divisions	IEEE Class 1E
1	Intermediate Range Detector Signal	Auto	PS	4	Yes
2	Power Range Detector Signal	Auto	PS	4	Yes

Table 2.4.17-3—Excore Instrumentation System ITAAC

Commitment Wording	Inspection, Analysis or Test	Acceptance Criteria
2.1 The EIS equipment is located as listed in Table 2.4.17-1.	Inspections will be performed of the location of the EIS equipment.	The equipment listed in Table 2.4.17-1is located as listed in Table 2.4.17-1.
3.1 Equipment identified as Seismic Category I in Table 2.4.17-1 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 2.4.17-1.	(1) A report exists and concludes that the equipment listed as Seismic Category I in Table 2.4.17-1 is installed as designed. (2) A report exists and concludes that the equipment listed as Seismic Category I in Table 2.4.17-1 can withstand seismic design basis loads without loss of safety function.
4.1 The EIS equipment classified as Class 1E in Table 2.4.17-1 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 2.4.17-1.	A report exists and concludes that the equipment listed as Class 1E in Table 2.4.17-1 can perform its safety function when subjected to EMI, RFI, ESD, and power surges.
4.2 The EIS system provides output signals listed in Table 2.4.17-2.	Tests will be performed to verify the existence of output signals.	The EIS system provides output signals to the recipients listed in Table 2.4.17-2.
5.1 The equipment identified as Class 1E in Table 2.4.17-1 receives power from its respective Class 1E division.	Inspections will be performed to verify the source of power for Class 1E equipment.	The Class 1E equipment listed in Table 2.4.17-1 is powered from its respective Class 1E division.
6.1 Equipment listed as Class 1E in Table 2.4.17-1 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 2.4.17-1are qualified to perform their associated safety function in the environments that exist before and during the time required to perform their safety function.