2.4.10 Process Information and Control System

Design Description

1.0 System Description

The process information and control system (PICS) is organized into two redundant, independent divisions located in separate Safeguard Buildings. The PICS is implemented with an industrial I&C platform. It provides monitoring and control of plant systems. The PICS is non-safety related and is provided in both the main control room (MCR) and the remote shutdown station (RSS).

2.0 Arrangement

2.1 The location of the PICS equipment is as listed in Table 2.4.10-1—Process Information and Control System Equipment.

3.0 I&C Design Features, Displays, and Controls

3.1 Deleted.

3.2 The PICS design is accomplished through a phased approach which includes the following (or equivalent) phases:

1. Software Basic Design Phase.
2. Software Detailed Design Phase.
3. Software Integration and Validation Phase.
4. Site Acceptance Test and Installation and Commissioning Phase.

3.3 Deleted.

3.4 Electrical isolation is provided on PICS connections between the RSS and the MCR to prevent the propagation of credible electrical faults.

3.5 The capability to transfer control of the PICS from the MCR to the RSS exists in a fire area separate from the MCR and allows transfer of control without entry into the MCR.

3.6 PICS equipment listed in Table 2.4.10-1 can perform its safety function when subjected to electromagnetic interference (EMI) and radio-frequency interference (RFI).

3.7 The PICS provides self-diagnostic features for a real-time representation of system status.

3.8 Safety-related actuators located in multiple trains shall not be grouped together on PICS manual grouped commands.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.4.10-2 lists the PICS ITAAC.

Table 2.4.10-1—Process Information and Control System Equipment

Description	Location
PICS Cabinets Division 1	Safeguard Building 2
PICS Cabinets Division 2	Safeguard Building 3

Table 2.4.10-2—Process Information and Control System ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The location of the PICS equipment is as listed in Table 2.4.10-1.	An inspection of the location of the as-built PICS equipment will be performed.	The PICS equipment listed in Table 2.4.10-1 is located as listed in Table 2.4.10-1.
3.1	Deleted.	Deleted.	Deleted.
3.2	The PICS design is accomplished through a phased approach which includes the following (or equivalent) phases: 1. Software Basic Design Phase. 2. Software Detailed Design Phase. 3. Software Integration and Validation Phase. 4. Site Acceptance Test and Installation and Commissioning Phase.	a. Analyses will be performed to verify that the outputs for the PICS Software Basic Design Phase conform to the requirements of that phase. b. Analyses will be performed to verify that the outputs for the PICS Software Detailed Design Phase conform to the requirements of that phase. c. Analyses will be performed to verify that the outputs for the PICS Software Integration and Validation Phase conform to the requirements of that phase. d. Analyses will be performed to verify that the outputs for the PICS Site Acceptance Test and Installation and Commissioning Phase conform to the requirements of that phase.	a. A report concludes that the outputs for the PICS Software Basic Design Phase conform to the requirements of that phase. b. A report concludes that the outputs for the PICS Software Detailed Design Phase conform to the requirements of that phase. c. A report concludes that the outputs for the PICS Software Integration and Validation Phase conform to the requirements of that phase. d. A report concludes that the outputs for the PICS Site Acceptance Test and Installation and Commissioning Phase conform to the requirements of that phase.
3.3	Deleted.	Deleted.	Deleted.

Table 2.4.10-2—Process Information and Control System ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.4	Electrical isolation is provided on PICS connections between the RSS and the MCR to prevent the propagation of credible electrical faults.	a. Type tests, analyses, or a combination of type tests and analyses will be performed on the electrical isolation devices between PICS connections between the RSS and the MCR. b. An inspection will be performed on connections between the as-built RSS and the as-built MCR.	a. A report concludes that the Class 1E isolation devices used between PICS connections between the RSS and the MCR prevent the propagation of credible electrical faults. b. Class 1E electrical isolation devices exist on connections between the RSS and the MCR.
3.5	The capability to transfer control of the PICS from the MCR to the RSS exists in a fire area separate from the MCR and allows transfer of control without entry into the MCR.	a. An inspection will be performed to verify that as-built controls exist in a fire area separate from the MCR for transfer of control of the PICS from the MCR to the RSS. b. Tests will be performed to verify that controls allow transfer of control of the PICS from the MCR to the RSS without entry into the MCR.	a. Controls exist in a fire area separate from the MCR for transfer of control of the PICS from the MCR to the RSS. b. Transfer switches perform transfer of control of the PICS from the MCR to the RSS without entry into the MCR.
3.6	PICS equipment listed in Table 2.4.10-1 can perform its safety function when subjected to EMI and RFI.	Type tests or type tests and analyses will be performed to demonstrate that the PICS equipment listed in Table 2.4.10-1 can perform its safety function when subjected to EMI and RFI.	PICS equipment listed in Table 2.4.10-1 can perform its safety function when subjected to EMI and RFI.
3.7	The PICS provides self-diagnostic features for a real-time representation of system status.	A test will be performed that confirms that PICS performs self-diagnosis functions.	A report concludes that PICS software execution and hardware are monitored and switch-over to a fault-tolerant server unit is initiated upon detection of a software or hardware failure.

Table 2.4.10-2—Process Information and Control System ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.8	Safety-related actuators located in multiple trains shall not be grouped together on PICS manual grouped commands.	An inspection shall be performed to verify that as-built safety related actuators located in multiple trains are not grouped together on PICS manual grouped commands.	Safety related actuators located in multiple trains are not grouped together on PICS manual grouped commands.

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