

2.5.9 Lighting System

1.0 Description

The lighting system (LGT) includes the emergency lighting and special emergency lighting sub-systems. The non-safety-related functions provided by these two sub-systems include providing main control room (MCR) and remote shutdown station (RSS) lighting for normal and off normal operation.

2.0 Mechanical Design Features, Electrical and Seismic Classifications

2.1 Lighting fixtures in the MCR are Seismic Category II and can withstand seismic design basis loads without affecting plant safety functions.

3.0 Electrical Considerations

3.1 Emergency lighting in the MCR and RSS is powered from the emergency power supply system (EPSS).

3.2 Special emergency lighting in the MCR and RSS is powered from the Class 1E uninterruptible power supply system (EUPS).

3.3 The emergency lighting and special emergency lighting sub-systems combined provide at least 50 foot candles illumination at the MCR and RSS workstations.

3.4 The special emergency lighting system provides at least ten foot candles illumination at the MCR and RSS workstations.

4.0 Inspection, Tests, Analyses and Acceptance Criteria

4.1 Table 2.5.9-1—Lighting System Inspections, Tests, Analyses and Acceptance Criteria provides the ITAAC for the LGT.

Table 2.5.9-1 Lighting System Inspections, Tests, Analyses and Acceptance Criteria (2 Sheets)

	Commitment	Inspection, Test or Analysis	Acceptance Criteria
2.1	Lighting fixtures in the MCR can withstand seismic design basis loads without affecting plant safety functions.	<ul style="list-style-type: none"> a. An inspection will be performed. b. Type testing, analysis, or a combination of type testing and analysis will be performed. 	<ul style="list-style-type: none"> a. A report exists and concludes that the MCR lighting fixtures are installed as designed. b. A report exists and concludes that the MRC lighting fixtures can withstand seismic design basis loads without affecting plant safety functions.
3.1	Emergency lighting in the MCR and RSS is powered from the EPSS.	A test will be performed.	<p>The emergency lighting system provides lighting in the MCR and is powered from the EPSS.</p> <p>The emergency lighting system provides lighting in the RSS and is powered from the EPSS.</p>
3.2	Special emergency lighting in the MCR and RSS is powered by the EUPS.	A test will be performed.	<p>The special emergency lighting system provides lighting in the RSS and is powered from the EUPS.</p> <p>The special emergency lighting system provides lighting in the RSS and is powered from the EUPS.</p>
3.3	The emergency lighting and special emergency lighting sub-systems combined provide at least 50 ft candles illumination at the MCR and RSS workstations.	A test will be performed.	<p>The emergency lighting and special emergency lighting sub-systems provide at least 50 ft candles at the MCR operator workstation.</p> <p>The emergency lighting and special emergency lighting sub-systems provide at least 50 ft candles at the RSS operator workstation.</p>

Table 2.5.9-1 Lighting System Inspections, Tests, Analyses and Acceptance Criteria (2 Sheets)

	Commitment	Inspection, Test or Analysis	Acceptance Criteria
3.4	The special emergency lighting system provides at least ten foot candles illumination at the MCR and RSS workstations.	A test will be performed.	The special emergency lighting system provides at least ten foot candles at the MCR operator workstation when it is the only MCR lighting system in operation. The special emergency lighting system provides at least ten foot candles at the RSS operator workstation when it is the only RSS lighting system in operation.

2.5.10 Normal Power Supply System

1.0 Description

The normal power supply system (NPSS) provides non-Class 1E power to non-safety-related loads including reactor coolant pumps (RCP) during normal operation.

2.0 Arrangement

2.1 The functional arrangement of NPSS equipment is shown in Figure 2.5.10-1—Normal Power Supply System Functional Arrangement.

2.2 Equipment identified as Class 1E in Table 2.5.10-1— Normal Power Supply System Electrical Equipment Design, are located as listed in Table 2.5.10-1.

3.0 Mechanical Design Features, Electrical and Seismic Classifications

3.1 Equipment listed as Class 1E in Table 2.5.10-1 are qualified as Seismic Category I and can withstand seismic design basis loads without loss of safety function.

4.0 I&C Design Features, Alarms, Displays and Controls

4.1 Displays listed in Table 2.5.10-1 are retrievable in the main control room (MCR) and remote shutdown station (RSS) as listed in Table 2.5.10-1.

4.2 NPSS equipment controls are provided in the MCR and RSS as listed in Table 2.5.10-1.

5.0 Electrical Considerations

5.1 Control power for the RCP circuit breakers listed in Table 2.5.10-1 is provided by the Class 1E uninterruptible power supply system (EUPS) from the same division.

5.2 Control power for the RCP switchgear source breakers listed in Table 2.5.10-1 is provided by the EUPS of a different division.

6.0 Equipment and System Performance

6.1 Each RCP circuit breaker trips open on a signal from the protection system.

6.2 Each RCP switchgear source breaker trips open on a protection system signal.

7.0 Inspection, Tests, Analyses and Acceptance Criteria

7.1 Table 2.5.10-2—Normal Power Supply System Inspections, Tests, Analyses, and Acceptance Criteria, provides the ITAAC for the NPSS.

Table 2.5.10-1—Normal Power Supply System Electrical Equipment Design

Equipment Description	IEEE Class 1E	Equipment Location	MCR / RSS Displays	MCR / RSS Controls
RCP #1 Circuit Breaker	Yes	Safeguard Building 1	Breaker position / Breaker position	Open / Open
RCP #2 Circuit Breaker	Yes	Safeguard Building 2	Breaker position / Breaker position	Open / Open
RCP #3 Circuit Breaker	Yes	Safeguard Building 3	Breaker position / Breaker position	Open / Open
RCP #4 Circuit Breaker	Yes	Safeguard Building 4	Breaker position / Breaker position	Open / Open
RCP #1 Switchgear Source Breaker	Yes	Safeguard Building 1	Breaker position / Breaker position	Open / Open
RCP #2 Switchgear Source Breaker	Yes	Safeguard Building 2	Breaker position / Breaker position	Open / Open
RCP #3 Switchgear Source Breaker	Yes	Safeguard Building 3	Breaker position / Breaker position	Open / Open
RCP #4 Switchgear Source Breaker	Yes	Safeguard Building 4	Breaker position / Breaker position	Open / Open

Table 2.5.10-2—Non-Class 1E Normal Power Supply Inspections, Tests, Analyses, and Acceptance Criteria (2 Sheets)

	Commitment	Inspection, Test or Analysis	Acceptance Criteria
2.1	The functional arrangement of the NPSS is as shown on Figure 2.5.10-1.	An inspection will be performed.	The as-built NPSS conforms to the functional arrangement as shown in Figure 2.5.10-1.
2.2	Equipment identified as Class 1E in Table 2.5.10-1 are located as listed in Table 2.5.10-1.	An inspection will be performed.	The equipment listed as Class 1E in Table 2.5.10-1 are located as indicated in Table 2.5.10-1.
3.1	Equipment listed as Class 1E in Table 2.5.10-1 are qualified as Seismic Category I and can withstand seismic design basis loads without loss of safety function.	<ul style="list-style-type: none"> a. An inspection will be performed. b. Type testing, analysis, or a combination of type testing and analysis will be performed. 	<ul style="list-style-type: none"> a. A report exists and concludes that the equipment designated as Class 1E in Table 2.5.10-1 is installed as designed. b. A report exists and concludes that the equipment listed as Class 1E in Table 2.5.10-1 can withstand seismic design basis loads without loss of safety function.
4.1	Displays listed in Table 2.5.10-1 are retrievable in the MCR and RSS as listed in Table 2.5.10-1.	An inspection will be performed.	<p>Displays listed in Table 2.5.10-1 as being retrieved in the MCR can be retrieved in the MCR.</p> <p>Displays listed in Table 2.5.10-1 as being retrieved in the RSS can be retrieved in the RSS.</p>
4.2	NPSS equipment controls are provided in the MCR and the RSS as identified in Table 2.5.10-1.	A test will be performed.	<p>Controls listed in Table 2.5.10-1 as being in the MCR exists in the MCR.</p> <p>Controls listed in Table 2.5.10-1 as being in the RSS exists in the RSS.</p>
5.1	Control power for the RCP circuit breakers listed in Table 2.5.10-1 is provided by the EUPS from the same division.	A test will be performed.	Control power for the RCP circuit breakers listed in Table 2.5.10-1 is provided by the EUPS from the same division.

**Table 2.5.10-2—Non-Class 1E Normal Power Supply
Inspections, Tests, Analyses, and Acceptance
Criteria (2 Sheets)**

	Commitment	Inspection, Test or Analysis	Acceptance Criteria
5.2	Control power for the RCP switchgear source breakers listed in Table 2.5.10-1 is provided by the EUPS of a different division.	A test will be performed.	Control power for the RCP switchgear source breakers listed in Table 2.5.10-1 is provided by the EUPS of a different division.
6.1	Each RCP circuit breaker trips open on a protection system signal.	A test will be performed.	Each RCP circuit breaker trips open on a protection system signal.
6.2	Each RCP switchgear source breaker trips open on a protection system signal.	A test will be performed.	Each RCP switchgear source breaker trips open on a protection system signal.