

3.5.3 ENGINEERED SAFEGUARDS PROTECTION SYSTEM ACTUATION SETPOINTS

Applicability:

This specification applies to the engineered safeguards protection system actuation setpoints.

Objective:

To provide for automatic initiation of the engineered safeguards protection system in the event of a breach of Reactor Coolant System integrity.

Specification:

3.5.3.1 The engineered safeguards protection system actuation setpoints and permissible bypasses shall be as follows:

<u>Initiating Signal</u>	<u>Function</u>	<u>Setpoint</u>
High Reactor Building Pressure (1)	Reactor Building Spray	≤ 30 psig
	Reactor Building Isolation	≤ 30 psig
	High-Pressure Injection	≤ 4 psig
	Low-Pressure Injection	≤ 4 psig
	Start Reactor Building Cooling & Reactor Building Isolation	≤ 4 psig*
Low Reactor Coolant System Pressure	High Pressure Injection	$\geq 1600(2)$ and $\geq 500(3)$ psig
	Low Pressure Injection	$\geq 1600(2)$ and $\geq 500(3)$ psig
	Reactor Building Isolation	≥ 1600 psig (2)
4.16 kv E.S. Buses Undervoltage Relays		
Degraded Voltage (5)	Switch to Onsite Power Source and load shedding	3595 volts (4)
Degraded grid timer		10 sec (5)
Loss of voltage	Switch to Onsite Power Source and load shedding	2400 Volts (6)
Loss of voltage timer		1.5 sec (7)

- (1) May be bypassed for reactor building leak rate test.
- (2) May be bypassed below 1775 psig on decreasing pressure and is automatically reinstated before 1800 psig on increasing pressure.
- (3) May be bypassed below 925 psig on decreasing pressure and is automatically reinstated before exceeding 950 psig on increasing pressure.

- (4) Minimum allowed setting is 3560 v. Maximum allowed setting is 3650 v.
- (5) Minimum allowed time is 8 sec. maximum allowed time is 12 sec.
- (6) Minimum allowed setting is 2200 volts, maximum allowed setting is 2860 volts.
- (7) Minimum allowed time is (1.0) second, maximum allowed time is (2.0) seconds.

*For Hot Functional Testing prior to Cycle 5 criticality, the 4 psig Reactor Building isolation signal is not required for Nuclear Service Closed Cycle Cooling water, Intermediate cooling water and Reactor Coolant Pump seal injection (return line only). Remote Manual and 30 psig Reactor Building isolation signals are required if the 4 psig signal is not operable for these lines.

Bases

High Reactor Building Pressure

The basis for the 30 psig and 4 psig setpoints for the high pressure signal is to establish a setting which would be reached in adequate time in the event of a LOCA, cover a spectrum of break sizes and yet be far enough above normal operation maximum internal pressures to prevent spurious initiation.

Low Reactor Cooling System Pressure

The basis for the 1600 and 500 psig low reactor coolant pressure setpoint for high and low pressure injection initiation is to establish a value which is high enough such that protection is provided for the entire spectrum to break sizes and is far enough below normal operating pressure to prevent spurious initiation. Bypass of HPI below 1775 psig and LPI below 925 psig, prevents ECCS actuation during normal system cooldown.

4.16 KV ES Bus Undervoltage Relays

The basis for the degraded grid voltage relay setpoint is to protect the safety related electrical equipment from loss of function in the event of a sustained degraded voltage condition on the offsite power system. The timer setting prevents spurious transfer to the onsite source for transient conditions.

The loss of voltage relay and timers detect loss of offsite power condition and initiate transfer to the onsite source with minimal time delay.