Table 3.3.1-1 (page 1 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT
1.	Manual Reactor Trip	1,2	2	B	SR 3.3.1.12	NA	NA
		3 (a), 4 (a), 5 (a)	2	C	SR 3.3.1.12	NA	NA
2.	Power Range Neutron Flux						
	a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ 109.4% RTP	≤ 109% RTP
	b. Low	1(b),2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10 SR 3.3.1.14	≤ 25.4% RTP	≤ 25% RTP
3.	Power Range Neutron Flux Rate						
	a. High Positive Rate	1,2	4	D	SR 3.3.1.7 SR 3.3.1.10	≤ 5.4% RTP with time constant ≥ 2 sec	≤ 5% RTP with time constant ≥ 2 sec
	b. [Unit 1 only] High Negative Rate	1,2	4	D	SR 3.3.1.7 SR 3.3.1.10	≤ 5.4% RTP with time constant ≥ 2 sec	≤ 5% RTP with time constant ≥ 2 sec
4.	Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	≤ 40% RTP	≤ 35% RTP
		2(d)	2	H	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	≤ 40% RTP	≤ 35% RTP

(a) With Reactor Trip Breakers (RTBs) closed and Rod Control System capable of rod withdrawal.
(b) Below the P-10 (Power Range Neutron Flux) interlocks.
(c) Above the P-6 (Intermediate Range Neutron Flux) interlocks.
(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

a. Power Range Neutron Flux—High Positive Rate (continued)

Power Range Neutron Flux—High and Low Setpoint trip Functions to ensure that the criteria are met for a rod ejection event.

The LCO requires all four of the Power Range Neutron Flux—High Positive Rate channels to be OPERABLE. The channels are combined in a 2-out-of-4 trip Logic.

In MODE 1 or 2, when there is a potential to add a large amount of positive reactivity from a rod ejection accident (REA), the Power Range Neutron Flux—High Positive Rate trip must be OPERABLE. In MODE 3, 4, 5, or 6, the Power Range Neutron Flux—High Positive Rate trip Function does not have to be OPERABLE because other RTS trip Functions and administrative controls will provide protection against positive reactivity additions. Also, since only the shutdown banks may be withdrawn in MODE 3, 4, or 5, the remaining complement of control bank worth ensures a sufficient degree of SDM in the event of an REA. In MODE 6, no rods are withdrawn and the SDM is increased during refueling operations. The reactor vessel head is also removed or the closure bolts are detensioned preventing any pressure buildup.

b. [Unit 1 only] Power Range Neutron Flux—High Negative Rate

The Power Range Neutron Flux—High Negative Rate trip Function ensures that protection is provided for multiple rod drop accidents.

The LCO requires all four Power Range Neutron Flux—High Negative Rate channels to be OPERABLE. The channels are combined in a 2-out-of-4 trip Logic.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

b. [Unit 1 only] Power Range Neutron Flux—High Negative Rate (continued)

In MODE 1 or 2, when there is potential for a multiple rod drop accident to occur, the Power Range Neutron Flux—High Negative Rate trip must be OPERABLE. In MODE 3, 4, 5, or 6, the Power Range Neutron Flux—High Negative Rate trip Function does not have to be OPERABLE because the core is not critical and DNB is not a concern.

4. Intermediate Range Neutron Flux

The Intermediate Range Neutron Flux trip Function ensures that protection is provided against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This trip Function provides diverse protection to the Power Range Neutron Flux—Low Setpoint trip Function. The NIS intermediate range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS intermediate range channels also provide a control interlock signal to prevent automatic and manual rod withdrawal prior to initiating a reactor trip. Limiting further rod withdrawal may terminate the transient and eliminate the need to trip the reactor. No credit is taken in the safety analyses for this trip function.

The LCO requires two channels of Intermediate Range Neutron Flux to be OPERABLE. Two OPERABLE channels are sufficient to ensure no single random failure will disable this trip Function. The trip function is accomplished by a 1-out-of-2 trip Logic.

Because this trip Function is important only during startup, there is generally no need to disable channels for on-line testing while the Function is required to be OPERABLE. Therefore, a third channel is unnecessary.

In MODE 1 below the P-10 setpoint, and in MODE 2, when there is a potential for an uncontrolled RCCA bank rod withdrawal accident during reactor startup, the Intermediate Range Neutron Flux trip must be OPERABLE. Above the P-10 setpoint, the Power Range Neutron Flux—High Setpoint trip and the Power Range Neutron Flux—High Positive Rate trip provide core protection for a rod

(continued)