The following are page changes which represent this amendment to the application which was made regarding single recirculation loop operation on October 17, 1980.

AFFECTED PAGES

1.1-1
1.1-2
1.1-3
1.1-5
3.2-16
3.6-6*
3.6-7
3.12-1
3.12-3
3.12-9
3.12-9a**

* Now contains paragraph E.1.b which was previously on the following page

** Deleted. Information contained on Page 3.12-9a was moved to page 3.12-9.

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SAFETY LIMIT

1.1 FUEL CLADDING INTEGRITY

Applicability:

Applies to the inter-related variables associated with fuel thermal behavior.

Objective:

To establish limits which ensure the integrity of the fuel cladding.

Specifications:

A. Reactor Pressure > 785 psig and Core Flow > 10% of Rated.

The existance of a minimum critical power ratio (MCPR) less than 1.07 for two recirculation loop operation (1.10 for single loop operation) shall constitute violation of the fuel cladding integrity safety limit.

B. Core Thermal Power Limit (Reactor Pressure < 785 psig or Core Flow < 10% of Rated

When the reactor pressure is $\leq$ 785 psig or core flow is less than 10% of rated, the core thermal power shall not exceed 25 percent of rated thermal power.

LIMITING SAFETY SYSTEM SETTING

2.1 FUEL CLADDING INTEGRITY

Applicability:

Applies to trip settings of the instruments and devices which are provided to prevent the reactor system safety limits from being exceeded.

Objective:

To define the level of the process variables at which automatic protective action is initiated to prevent the fuel cladding integrity safety limits from being exceeded.

Specifications:

The limiting saftey system settings shall be as specified below:

A. Neutron Flux Trips

1. APRM High Flux Scram When in Run Mode.

For operation with the fraction of rated power (FRP) greater than or equal to the maximum fraction of limiting power density (MFLPD), the APRM scram trip setpoint shall be as shown on Fig. 2.1-1 and shall be:

$S \leq (0.66W + 54)$

with a maximum setpoint of 120% rated power at 100% rated recirculation flow or greater.

SAFETY LIMIT

C. Power Transient

To ensure that the Safety Limits established in Specification 1.1.A and 1.1.B are not exceeded, each required scram shall be initiated by its primary source signal. A Safety Limit shall be assumed to be exceeded when scram is accomplished by a means other than the Primary Source Signal.

D. With irradiated fuel in the reactor vessel, the water level shall not be less than 12 in. above the top of the normal active fuel zone. Top of the active fuel zone is defined to be 344.5 inches above vessel zero (see Bases 3.2).

LIMITING SAFETY SYSTEM SETTING

Where: S = Setting in percent of rated power (1,593 MWt)

W = Recirculation loop flow in percent of rated flow. Rated recirculation loop flow is that recirculation loop flow which corresponds to 49×10^6 lb/hr core flow.

For a MFLPD greater than FRP, the APRM scram setpoint shall be:

$$S \leq (0.66\ W + 54)\ \frac{FRP}{MFLPD}$$ for two recirculation loop operation, and

$$S \leq (0.66\ W + 50.5)\ \frac{FRP}{MFLPD}$$

for one recirculation loop operation.

NOTE: These settings assume operation within the basic thermal design criteria. These criteria are LHGR $\leq$ 18.5 KW/ft (7x7 array) or 13.4 KW/ft (8x8 array) and MCPR $\geq$ values as indicated in Table 3.12-2 times K_f, where K_f is defined by Figure 3.12-1. Therefore, at full power, operation is not allowed with MFLPD greater than unity even if the scram setting is reduced. If it is determined that either of these design criteria is being violated during operation, action must be taken immediately to return to operation within these criteria.

2. APRM High Flux Scram

When in the REFUEL or STARTUP and HOT STANDBY MODE, the APRM scram shall be set at less than or equal to 15 percent of rated power.

SAFETY LIMIT	LIMITING SAFETY SYSTEM SETTING
	2a. For one recirculation loop operation APRM flux noise will be measured once per shift and the recirculation pump speed will be reduced if the flux noise averaged over 1/2 hour exceeds 8% peak to peak, as measured on the APRM chart recorder.
	3. APRM Rod Block when in Run Mode. For operation with MFLPD less than or equal to FRP the APRM Control Rod Block setpoint shall be as shown on Fig. 2.1-1 and shall be: $S \leq (0.66\ W + 42)$ The definitions used above for the APRM scram trip apply. For a MFLPD greater than FRP, the APRM Control Rod Block setpoint shall be: $S \leq (0.66\ W + 42)\ \frac{FRP}{MFLPD}$ for two recirculation loop operation, and $S \leq (0.66\ W + 38.5)\ \frac{FRP}{MFLPD}$ for one recirculation loop operation.
	4. IRM - The IRM scram shall be set at less than or equal to 120/125 of full scale.
	B. Scram and Isolation on reactor low water level — $\geq$ 514.5 inches above vessel zone (+12" on level instruments)
	C. Scram - turbine stop valve closure — $\leq$ 10 percent valve closure
	D. Turbine control valve fast closure shall occur within 30 milliseconds of the start of turbine control valve fast closure.

1.1 BASES: FUEL CLADDING INTEGRITY

A. Fuel Cladding Integrity Limit at Reactor Pressure $\geq$ 785 psig and Core Flow $\geq$ 10% of Rated

The fuel cladding integrity safety limit is set such that no fuel damage is calculated to occur if the limit is not violated. Since the parameters which result in fuel damage are not directly observable during reactor operation the thermal and hydraulic conditions resulting in a departure from nucleate boiling have been used to mark the beginning of the region where fuel damage could occur. Although it is recognized that a departure from nucleate boiling would not necessarily result in damage to BWR fuel rods, the critical power at which boiling transition is calculated to occur has been adopted as a convenient limit. However, the uncertainties in monitoring the core operating state and in the procedure used to calculate the critical power result in an uncertainity in the value of the cirtical power. Therefore the fuel cladding integrity safety limit is defined as the critical power ratio in the limiting fuel assembly for which more than 99.9% of the fuel rods in the core are expected to avoid boiling transition considering the power distribution within the core and all uncertainties.

The Safety Limit MCPR is generically determined in Reference 1, for two recirculation loop operation. This safety limit MCPR is increased by 0.03 for single-loop operation.

Instrumentation That Initiates Control Rod Blocks

TABLE 3.2-C

Minimum No. of Operable Instrument Channels Per Trip System	Instrument	Trip Level Setting	Number of Instrument Channels Provided by Design	Action
2	APRM Upscale (Flow Biased)	for 2 recirc loop operation $\leq (0.66\ W + 42)\ (\frac{FRP}{MFLPD})^{(2)}$	6 Inst. Channels	(1)
		for 1 recirc loop operation $\leq (0.66\ W + 38.5)(\frac{FRP}{MFLPD})^{(2)}$		
2	APRM Upscale (Not in Run Mode)	$\leq$ 12 indicated on scale	6 Inst. Channels	(1)
2	APRM Downscale	$\geq$ 5 indicated on scale	6 Inst. Channels	(1)
1 (7)	Rod Block Monitor (Flow Biased)	for 2 recirc loop operation $\leq (0.66\ W + 39)(\frac{FRP}{MFLPD})^{(2)}$	2 Inst. Channels	(1)
		for 1 recirc loop operation $\leq (0.66\ W + 35.5)(\frac{FRP}{MFLPD})^{(2)}$		
1 (7)	Rod Block Monitor Downscale	$\geq$ 5 indicated on scale	2 Inst. Channels	(1)
2	IRM Downscale (3)	$\geq$ 5/125 full scale	6 Inst. Channels	(1)
2	IRM Detector not in Startup Position	(8)	6 Inst. Channels	(1)
2	IRM Upscale	$\leq$ 108/125	6 Inst. Channels	(1)
2 (5)	SRM Detector not in Startup Position	(4)	4 Inst. Channels	(1)
2 (5)(6)	SRM Upscale	$\leq 10^5$ counts/sec.	4 Inst. Channels	(1)

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
2.	2. At least one of the relief valves shall be disassembled and inspected each refueling outage.
a. From and after the date that the safety valve function of one relief valve is made or found to be inoperable, continued reactor operation is permissible only during the succeeding thirty days unless such valve function is sooner made operable.	
b. From and after the date that the safety valve function of two relief valves is made or found to be inoperable, continued reactor operation is permissible only during the succeeding seven days unless such valve function is sooner made operable.	
3. If Specification 3.6.D.1 is not met, an orderly shutdown shall be initiated and the reactor coolant pressure shall be reduced to atmospheric within 24 hours.	3. With the reactor pressure $\geq$ 100 psig and turbine bypass flow to the main condenser, each relief valve shall be manually opened and verified open by turbine bypass valve position decrease and pressure switches and thermocouple readings downstream of the relief valve to indicate steam flow from the valve once per operating cycle.
E. <u>Jet Pumps</u>	E. <u>Jet Pumps</u>
1. Whenever the reactor is in the startup or run modes, all jet pumps shall be operable. If it is determined that a jet pump is inoperable, an orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown Condition within 24 hours.	1. Whenever there is recirculation flow with the reactor in the startup or run modes, jet pump operability shall be checked daily by verifying that the following conditions do not occur simultaneously:
	a. The two recirculation loops have a flow imbalance of 15% or more when the pumps are operated at the same speed.
	b. The indicated value of core flow rate varies from the value derived from loop flow measurements by more than 10%.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
	c. The diffuser to lower plenum differential pressure reading on an individual jet pump varies from the mean of all jet pump differential pressures by more than 10%.
	2. Whenever there is recirculation flow from the reactor in the Startup or Run mode, and one recirculation pump is operating, the diffuser to lower plenum differential pressure shall be checked daily and the differential pressure of an individual jet pump in a loop shall not vary from the mean of all jet pump differential pressures in that loop by more than 10%.
F. Jet Pump Flow Mismatch	F. Jet Pump Flow Mismatch
1. When both recirculation pumps are in steady state operation, the speed of the faster pump may not exceed 122% of the speed of the slower pump when core power is 80% or more of rated power or 135% of the speed of the slower pump when core power is below 80% of rated power.	1. Recirculation pump speeds shall be checked and logged at least once per day.
2. If specification 3.6.F.1 cannot be met, one recirculation pump shall be tripped. The reactor may be started and operated, or operated with one recirculation loop out of service provided that: a. MAPLHGR multipliers as indicated in section 3.12A are applied. b. The power level is limited to maximum of 50% of rated power. c. The idle loop is isolated prior to startup, or if disabled during reactor operation, within 24 hours (suction valve closed and electrically disconnected). Refer to specification 3.6.A for startup of the idle recirculation loop.	2. For one recirculation loop out of service the core plate delta p noise will be measured once per shift and the recirculation pump speed will be reduced if the noise exceeds 1 psi peak to peak.

LIMITING CONDITION FOR OPERATION

3.12 CORE THERMAL LIMITS

Applicability

The Limiting Conditions for Operation associated with the fuel rods apply to those parameters which monitor the fuel rod operating conditions.

Objective

The Objective of the Limiting Conditions for Operation is to assure the performance of the fuel rods.

Specifications

A. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)

During reactor power operation, the actual MAPLHGR for each type of fuel as a function of average planar exposure shall not exceed the limiting value shown in Figs. 3.12-2, -3, -4, -5, -6 and 7. For single-loop operation, the values in these curves are reduced by multiplying by 0.7. If at any time during reactor power operation (one or two loop) it is determined by normal surveillance that the limiting value for MAPLHGR (LAPLHGR) is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the MAPLHGR (LAPLHGR) is not returned to within the prescribed limits within 2 hours, reduce reactor power to < 25% of rated thermal power within the next 4 hours.

If the reactor is being operated with one recirculation loop out of service and cannot be returned to within prescribed limits within this 4 hour period, the reactor shall be brought to the cold shutdown condition within 36 hours.

For either the one or two loop operating condition surveillance and corresponding action shall continue until the prescribed limits are again being met.

SURVEILLANCE REQUIREMENT

4.12 CORE THERMAL LIMITS

Applicability

The Surveillance Requirements apply to the parameters which monitor the fuel rod operating conditions.

Objective

The Objective of the Surveillance Requirements is to specify the type and frequency of surveillance to be applied to the fuel rods.

Specifications

A. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)

The MAPLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at ≥ 25% rated thermal power and any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for specification 3.3.2. During operation with a limiting control rod pattern, the MAPLHGR (LAPLHGR) shall be determined at least once per 12 hours.

LIMITING CONDITIONS FOR OPERATION

C. Minimum Critical Power Ratio (MCPR)

During reactor power operation MCPR for one or two recirculation loop operation shall be $\geq$ values as indicated in Table 3.12-2. These values are multiplied by K_f which is shown in figure 3.12-1. Note that for one recirculation loop operation the MCPR limits at rated flow are 0.03 higher than the comparable two-loop values. If at any time during reactor power operation (one or two loop) it is determined by normal surveillance that the limiting value for MCPR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the operating MCPR is not returned to within the prescribed limits within two hours, reduce reactor power to $\leq$ 25% of rated thermal power within the next 4 hours.

If the reactor is being operated with one recirculation loop out of service, and cannot be returned to within prescribed limits within this 4 hour period the reactor shall be brought to cold shutdown condition within 36 hours.

For either the one or two loop operating condition surveillance and corresponding action shall continue until the prescribed limits are again being met.

D. Reporting Requirements

If any of the limiting values identified in Specifications 3.12.A, B or C are exceeded, a Reportable Occurrence report shall be submitted. If the corrective action is taken, as described, a thirty-day written report will meet the requirements of this specification.

SURVEILLANCE REQUIREMENTS

C. Minimum Critical Power Ratio (MCPR)

MCPR shall be determined daily during reactor power operation at $\geq$ 25% rated thermal power and following any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for Specification 3.3.2. During operation with a limiting control rod pattern, the MCPR shall be determined at least once per 12 hours.

TABLE 3.12-2

MCPR LIMITS

Fuel Type	For two recirculation loop operation	For one recirculation loop operation
7 x 7	1.25	1.28
8 x 8	1.24	1.27
8 x 8R	1.26	1.29