PROPOSED WORDING

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
13. Steam Generator Water Level-Low-Low	$\geq$ 12% of narrow range instrument span-each steam generator	$\geq$ 11% of narrow range instrument span-each steam generator
14. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	$\leq$ 40% of full steam flow at RATED THERMAL POWER coincident with steam generator water level $\geq$ 25% of narrow range instrument span-each steam generator	$\leq$ 42.5% of full steam flow at RATED THERMAL POWER coincident with steam generator water level $\geq$ 24% of narrow range instrument span-each steam generator
15. Undervoltage-Reactor Coolant Pumps	$\geq$ 2750 volts-each bus	$\geq$ 2725 volts-each bus
16. Underfrequency-Reactor Coolant Pumps	$\geq$ 57.5 Hz - each bus	$\geq$ 57.4 Hz - each bus
17. Turbine Trip		
A. Auto stop oil pressure	45 psig	$\pm$ 5 psig
B. Turbine Stop Valve	$\geq$ 1% open	$\geq$ 1% open
18. Safety Injection Input from ESF	Not Applicable	Not Applicable
19. Reactor Coolant Pump Breaker Position Trip	Not Applicable	Not Applicable
20. Reactor Trip System Interlocks (Based on ascending power)		
A. Intermediate Range Neutron Flux, P-6	$\geq 1 \times 10^{-10}$ Amps	$\geq 6 \times 10^{-11}$ Amps

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINT

20. (Continued)

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
B. Power Range Neutron Flux, P-8	≤ 30% RATED THERMAL POWER	≤ 31% RATED THERMAL POWER
C. Power Range Neutron Flux, P-9	≤ 49% RATED THERMAL POWER	≤ 51% RATED THERMAL POWER
D. Power Range Neutron Flux, P-10 (Input to P-7)	> 9% RATED THERMAL POWER	< 12% RATED THERMAL POWER
E. Turbine Impulse Chamber Pressure, P-13 (Input to P-7)	≤ 66 PSIG	≤ 72 PSIG

Safety Injection Input from ESF

If a reactor trip has not already been generated by the reactor protective instrumentation, the ESF automatic actuation logic channels will initiate a reactor trip upon any signal which initiates a safety injection. This trip is provided to protect the core in the event of a LOCA. The ESF instrumentation channels which initiate a safety injection signal are shown in Table 3.3-3.

Reactor Coolant Pump Breaker Position Trip

The Reactor Coolant Pump Breaker Position Trips are anticipatory trips which provide reactor core protection against DNB resulting from the opening of two or more pump breakers above P-7. These trips are blocked below P-7. The open/close position trips assure a reactor trip signal is generated before the low flow trip set point is reached. No credit was taken in the accident analyses for operation of these trips. Their functional capability at the open/close position settings is required to enhance the overall reliability of the Reactor Protection System.

Reactor Trip System Interlocks

The Reactor Trip System Interlocks perform the following functions:

P-6 Above the setpoint P-6 allows the manual block of the Source Range reactor trip and de-energizing of the high voltage to the detectors. Below the setpoint Source Range level trips are automatically reactivated and high voltage restored.

P-7 Above the setpoint P-7 automatically enables reactor trips on low flow or coolant pump breaker open in more than one primary coolant loop, reactor coolant pump bus undervoltage and underfrequency, pressurizer low pressure and pressurizer high level. Below the setpoint the above listed trips are automatically blocked.

P-8 Above the setpoint P-8 automatically enables reactor trip on low flow in one or more primary coolant loops. Below the setpoint P-8 automatically blocks the above listed trip.

P-9 Above the setpoint P-9 automatically enables a reactor trip on turbine trip. Below the setpoint P-9 automatically blocks a reactor trip on turbine trip.

P-10 Above the setpoint P-10 allows the manual block of the Intermediate Range reactor trip and the low setpoint Power Range reactor trip; and automatically blocks the Source Range reactor trip and de-energizes the Source Range high voltage power. Below the setpoint the Intermediate Range reactor trip and the low setpoint Power Range reactor trip are automatically reactivated. Provides input to P-7.

P-13 Provides input to P-7.

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1.	Manual Reactor Trip	2	1	2	1, 2, 3*, 4*, and 5*	12
2.	Power Range, Neutron Flux					
	a. High Setpoint	4	2	3	1, 2	2
	b. Low Setpoint	4	2	3	1(1), 2	2
3.	Power Range, Neutron Flux High Positive Rate	4	2	3	1, 2	2
4.	Power Range, Neutron Flux, High Negative Rate	4	2	3	1, 2	2
5.	Intermediate Range, Neutron Flux	2	1	2	1(1), 2, 3*, 4*, and 5*	3
6.	Source Range, Neutron Flux (Below P-10)					
	A. Startup	2	1	2	2(2), 3*, 4*, and 5*	4
	B. Shutdown	2	0	1	3, 4 and 5	5
7.	Overtemperature ΔT					
	Three Loop Operation	3	2	2	1, 2	2
	Two Loop Operation	3	1**	2	1, 2	9
8.	Overpower ΔT					
	Three Loop Operation	3	2	2	1, 2	2
	Two Loop Operation	3	1**	2	1, 2	9
9.	Pressurizer Pressure-Low (Above P-7)	3	2	2	1, 2	7

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
10.	Pressurizer Pressure-High	3	2	2	1, 2	7
11.	Pressurizer Water Level-High (Above P-7)	3	2	2	1, 2	7
12.	Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	7
13.	Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop each operating loop	1	7
14.	Steam Generator Water Level-Low-Low (Loop Stop Valves Open)	3/loop	2/loop	2/loop	1, 2	7
15.	Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1, 2	7
16.	Undervoltage-Reactor Coolant Pumps (Above P-7)	3-1/bus	2	2	1	7
17.	Underfrequency-Reactor Coolant Pumps (Above P-7)	3-1/bus	2	2	1	7

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
18.	Turbine Trip (Above P-9)					
	A. Auto Stop Oil Pressure	3	2	2	1	7
	B. Turbine Stop Valve Closure	4	4	4	1	8
19.	Safety Injection Input from ESF	2	1	2	1, 2	1
20.	Reactor Coolant Pump Breaker Position Trip (Above P-7)	1/breaker	2	1/breaker per operating loop	1	11
21.	Reactor Trip Breakers	2	1	2	1, 2, 3*, 4*, and 5*	1
22.	Automatic Trip Logic	2	1	2	1, 2, 3*, 4*, and 5*	1
23.	Reactor Trip System Interlocks					
	A. Intermediate Range Neutron Flux, P-6	2	1	1	2	3
	B. Power Range Neutron Flux, P-8	4	2	3	1	12
	C. Power Range Neutron Flux, P-9	4	2	3	1	12
	D. Power Range Neutron Flux, P-10	4	2	3	1	12
	E. Turbine Impulse Chamber Pressure, P-13	2	1	1	1	12

TABLE 3.3-1 (Continued)

TABLE NOTATION

* With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

** The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped condition.

(1) Trip function may be manually bypassed in this Mode above P-10.

(2) Trip function may be manually bypassed in this Mode above P-6.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirements, be in HOT STANDBY within 6 hours.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level:

a. Less than or equal to 5% of RATED THERMAL POWER, place the inoperable channel in the tripped condition within 1 hour and restore the inoperable channel to OPERABLE status within 24 hours after increasing THERMAL POWER above 5% of RATED THERMAL POWER; otherwise reduce thermal power to less than 5% RATED THERMAL POWER within the following 6 hours.

b. Above 5% of RATED THERMAL POWER, operation may continue provided all of the following conditions are satisfied:

1. The inoperable channel is placed in the tripped condition within 1 hour.

2. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

3. Either, THERMAL POWER is restricted to $\leq$ 75% of RATED THERMAL and the Power Range, Neutron Flux trip setpoint is reduced to $\leq$ 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours.

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

TABLE 3.3-1 (continued)

ACTION 9 With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT STANDBY within the next 6 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

ACTION 10 Not applicable.

ACTION 11 With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 12 With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1.	Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.
2.	Power Range, Neutron Flux				
	a. High Setpoint	S	D(2), M(3) and Q(6)	M	1, 2
	b. Low Setpoint	S	N.A.	S/U(1)	2
3.	Power Range, Neutron Flux, High Positive Rate	N.A.	R	M	1, 2
4.	Power Range, Neutron Flux, High Negative Rate	N.A.	R	M	1, 2
5.	Intermediate Range, Neutron Flux	S	N.A.	S/U(1), M(7)	1, 2, 3*, 4*, 5*
6.	Source Range, Neutron Flux (Below P-10)	N.A.	N.A.	S/U(1), M(8)	2, 3*, 4* and 5*
7.	Overtemperature T	S	R	M	1, 2
8.	Overpower T	S	R	M	1, 2
9.	Pressurizer Pressure-Low (Above P-7)	S	R	M	1, 2
10.	Pressurizer Pressure-High	S	R	M	1, 2
11.	Pressurizer Water Level-High (Above P-7)	S	R	M	1, 2
12.	Loss of Flow - Single Loop	S	R	M	1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
13.	Loss of Flow - Two Loops	S	R	N.A.	1
14.	Steam/Generator Water Level-Low-Low	S	R	M	1, 2
15.	Steam Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	M	1, 2
16.	Undervoltage - Reactor Coolant Pumps (Above P-7)	N.A.	R	M	1
17.	Underfrequency - Reactor Coolant Pumps (Above P-7)	N.A.	R	M	1
18.	Turbine Trip (Above P-9)				
	A. Auto Stop Oil Pressure	N.A.	N.A.	S/U(1)	1, 2
	B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1, 2
19.	Safety Injection Input from ESF	N.A.	N.A.	M(4)	1, 2
20.	Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21.	Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, 5*
22.	Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, 5*
23.	Reactor Trip System Interlocks				
	A. P-6	N.A.	N.A.	M(9)	1, 2
	B. P-8	N.A.	N.A.	M(9)	1
	C. P-9	N.A.	N.A.	M(9)	1
	D. P-10	N.A.	N.A.	M(9)	1
	E. P-13	N.A.	R	M(9)	1

TABLE 4.3-1 (Continued)

NOTATION

* - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

(1) - If not performed in previous 7 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - Compare incore to excore axial imbalance above 15% of RATED THERMAL POWER. Recalibrate if absolute difference $\geq$ 3 percent.

(4) - Manual ESF functional input check every 18 months.

(5) - Each train tested every other month.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Below P-10

(8) - Below P-6.

(9) - Required only when below Interlock Trip Setpoint.

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13, 36
c. Containment Pressure-High	3	2	2	1, 2, 3	14
d. Pressurizer Pressure-Low	3	2	2	1, 2, 3#	14
e. Low Steamline Pressure					
Three Loops Operating	3/loop	2/loop any loop	2/loop any loop	1, 2, 3#	14
Two loops operating	3/loop	2/loop any operating loop	2/any operating loop	1, 2, 3#	15

BEAVER VALLEY - UNIT 1

3/4 3-15

PROPOSED WORDING

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. STEAM LINE ISOLATION					
a. Manual	2/steam line	1/steam line	2/operating steam line	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure Intermediate-High-High	3	2	3	1, 2, 3	14
d. Low Steamline Pressure Three Loops Operating (Loop Stop Valves Open)	3/loop	2/loop Any loop	2/loop Any loop	1, 2, 3#	14
Two Loops Operating	3/loop	2/loop any operating loop	2/any operating loop	1, 2, 3#	15
e. High Steam Pressure Rate	3/loop	2/loop any loop	2/operating loop	3##, 4	37

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water Level-- High-High, P-14	3/loop	2 loop in any operating loop	2/loop in each operating loop	1, 2, 3	14
6. LOSS OF POWER					
a. 4.16kv Bus	1/4.16kv Bus	1/4.16kv Bus	1/4kv Bus	1, 2, 3, 4	33
1. Loss of Voltage (trip feeder)					
2. Loss of Voltage (start diesel)	1/4.16kv Bus	1/4.16kv Bus	1/4kv Bus	1, 2, 3, 4	33
b. Grid Degraded Voltage (4.16kv Bus)	2/4.16kv Bus	2/Bus	2/Bus	1, 2, 3, 4	34
c. Grid Degraded Voltage (480v Bus)	2/480v Bus	2/Bus	2/Bus	1, 2, 3, 4	34

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. ESF INTERLOCKS					
a. Reactor Trip, P-4	2	1	2	1, 2, 3	38
b. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	38
c. Low-Low Tavg, P-12	3	2	2	1, 2, 3	38

TABLE NOTATION

Trip function may be bypassed in this MODE below P-11.

Trip function automatically bypassed above P-11, and is bypassed below P-11 when Safety Injection on low steam pressure is not manually bypassed.

The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped mode.

ACTION STATEMENTS

ACTION 13 With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within six hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to two hours for surveillance testing per Specification 4.3.2.1.1., provided the other channel is operable.

ACTION 14 With the number of OPERABLE Channels one less than the Total Number of Channels:

a. Below P-11 or P-12, place the inoperable channel in the tripped condition within 1 hour; restore the inoperable channel to OPERABLE status within 24 hours after exceeding P-11 or P-12; otherwise be in at least HOT STANDBY within the following six hours.

b. Above P-11 and P-12, place the inoperable channel in the tripped condition within 1 hour; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.

ACTION 15 With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 16 With the number of OPERABLE Channels one less than the Total Number of Channels:

a. Below P-11 or P-12, place the inoperable channel in the bypass condition; restore the inoperable channel to OPERABLE status within 24 hours after exceeding P11 or P-12; otherwise be in at least HOT SHUTDOWN within the following 12 hours.

b. Above P-11 or P-12, demonstrate that the Minimum Channels OPERABLE requirement is met within 1 hour; operation may continue with the inoperable channel bypassed and one channel may be bypassed for up to 2 hours for testing per Specification 4.3.2.1.

ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and cold shutdown within the following 30 hours.

ACTION 33 - With the number of OPERABLE Channels one less than the Total Number of Channels, the Emergency Diesel Generator associated with the 4kv Bus shall be declared inoperable and the ACTION Statements for Specifications 3.8.1.1 or 3.8.1.2, as appropriate shall apply.

ACTION 34 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until the performance of the next required Channel Functional Test provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 36 - The block of the automatic actuation logic introduced by a reset of safety injection shall be removed by resetting (closure) of the reactor trip breakers within one hour of an inadvertent initiation of safety injection providing that all trip input signals have reset due to stable plant conditions. Manual block permitted after Safety Injection System and P-4 reset. Otherwise, the requirements of action statement 13 shall have been met.

ACTION 37 - With the number of OPERABLE channels one less than the Total Number of channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisified.

a. The inoperable channel is placed in a tripped condition within one hour.

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per specification 4.3.2.1.1.

ACTION 38 - With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) (bistable status lights or computer checks) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
8. ESF INTERLOCKS		
a. P-4	N/A	N/A
b. P-11	$\leq$ 2000 PSIG	$\leq$ 2010 PSIG
c. P-12	$\geq$ 541°F	$\geq$ 539°F

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. ESF INTERLOCKS				
a. P-4	N/A	N/A	R	1, 2, 3
b. P-11	N/A	R	M	1, 2, 3
c. P-12	N/A	R	M	1, 2, 3

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

The Engineered Safety Feature Actuation System interlocks perform the following functions:

P-4 Reactor tripped - Actuates turbine trip, closes main feedwater valves on T_{avg} below setpoint, prevents the opening of the main feedwater valves which were closed by a safety injection or high steam generator water level signal, allows safety injection block so that components can be reset or tripped.

Reactor not tripped - prevents manual block of safety injection.

P-11 Above the setpoint P-11 automatically reinstates safety injection actuation on Low pressurizer pressure, automatically blocks steamline isolation on high steam pressure rate, enables safety injection and steamline isolation on (Loop Stop Valve Open) with low steamline pressure, and enables auto actuation of the pressurizer PORVS.

P-11, Continued

Below the setpoint P-11 allows the manual block of safety injection actuation on low pressurizer pressure, allows manual block of safety injection and steamline isolation on (Loop Stop Valve Open) with Low steamline pressure and enabling steamline isolation on high steam pressure rate, automatically disables auto actuation of the pressurizer PORV's unless the Reactor Vessel Over Pressure Protection System is in service.

P-12 Above the setpoint P-12 automatically reinstates an arming signal to the steam dump system. Below the setpoint P-12 blocks steam dump and allows manual bypass of the steam dump block to cooldown condenser dump valves.

ATTACHMENT B
Safety Evaluation

Proposed Change Request No. 86, Revision 3 amends the Beaver Valley Power Station, Unit No. 1 Technical Specifications, Appendix A to address the NRC comments identified by letter dated March 13, 1984.

Description and Purpose of Change

This proposed change is intended to provide further clarification of both the Limiting Conditions for Operation and Surveillance Requirements by incorporating the appropriate interlocks into the Reactor Trip and Engineered Safety Feature (ESF) Instrumentation tables.

1. Table 2.2-1
   page 2-7 revised in accordance with Enclosure A
   Functional Unit 20, Reactor Trip System Interlocks, this was added in response to NRC staff recommendation 1, and a note was added in parentheses to denote that the trip setpoints and allowable values are based on ascending power.

   page B 2-8 The Bases have been revised to define the functions of the Reactor Trip System Interlocks.

2. Table 3.3-1
   page 3/4 3-2 revised in accordance with Enclosure B

   a. Functional Unit 1, Manual Reactor Trip, Change Applicable Modes from 1, 2 and * to 1, 2, 3*, 4*, 5* in accordance with NRC staff recommendation 15.b.

   b. Functional Unit 2, Power Range Neutron Flux;

      1. delete note (1) added by our previous submittal
      2. add the Low Setpoint and a new note (1), Trip function may be manually bypassed in this MODE above P-10, denoted on page 3/4 3-5. This is in accordance with NRC staff recommendation 3.

   c. Functional Unit 5, Intermediate Range Neutron Flux;

      1. delete note (2) added by our previous submittal
      2. change Applicable Modes from 1, 2 and * to $1^{(1)}$, 2, 3*, 4*, 5* and add note (1), Trip function may be manually bypassed in this MODE above P-10, denoted on page 3/4 3-5. This is in accordance with NRC staff recommendation 4.

   d. Functional Unit 6, Source Range Neutron Flux;

      1 delete note (3) added by our previous submittal and replace with (Below P-10). This change is in accordance with NRC staff recommendation 2.

d. Continued

2. change Applicable Modes from 2# and * to 2(2), 3*, 4*, 5* and add note (2), Trip function may be manually bypassed in this MODE above P-6, denoted on page 3/4 3-5.

3. delete # note, High voltage to detector may be de-energized above P-6, since the note (2) added above specifies the applicable permissive. This is in accordance with NRC staff recommendation 4.

page 3/4 3-3, revised in accordance with Enclosure B

a. Functional Unit 14, Steam Generator Water Level-Low-Low:

1. delete note 4 added by our previous submittal and add (Loop Stop Valve Closed) as specified by NRC staff recommendation 6 and to be consistent with the method used in identifying permissives.

2. delete "in any operating loops" under the column Channels to Trip and delete "in each operating loop" under the column Minimum Channels Operable, since the notation in parenthesis added by 1 above specifies the permissive condition for the Steam Generator Water Level-Low-Low trip as shown and does not need to be further defined as those in an operating loop. This is in accordance with NRC staff recommendation 15.C.

page 3/4 3-4, revised in accordance with Enclosure B

a. Functional Unit 18, Turbine Trip, delete note (5) added by our previous submittal and add (Above P-9) to define the applicable permissive in accordance with NRC staff recommendation 2.

b. Functional Unit 19, Safety Injection Input from ESF, delete note (6) added by our previous submittal, in response to NRC staff recommendation 8.

c. Functional Unit 21, Reactor Trip Breakers, change Applicable Modes from 1, 2* to 1, 2, 3*, 4*, 5* in accordance with NRC staff recommendation 15.a.

d. Functional Unit 22, Automatic Trip Logic, change Applicable Modes from 1, 2* to 1, 2, 3*, 4*, 5* in accordance with NRC staff recommendation 15.a.

e. Functional Unit 23, Reactor Trip System Interlocks, has been added to define the permissives and reflect the change to Table 2.2-1 in accordance with NRC staff recommendation 1.

page 3/4 3-5 revised in accordance with Enclosure B such that note (1) encompasses the recommended table notation # and note (2) encompasses the recommended table notation ## to denote when the applicable trip functions may be manually bypassed.

page 3/4 3-7 and 3/4 3-8 delete the Reactor Trip System Interlocks as presently described in accordance with NRC staff recommendation 1, since the interlocks have been incorporated into the applicable tables and now more appropriately indicate the conditions under which protective function may be manually bypassed as well as those under which manual bypasses are automatically removed.

3. Table 4.3-1
page 3/4 3-11 revised in accordance with Enclosure C

a. Functional Unit 2, Power Range Neutron Flux, has been revised to include the Low Setpoint to define the separate channel operability and surveillance requirements for these functions to reflect the addition of the low setpoint channel to Table 3.3-1.

b. Functional Unit 5, Intermediate Range Neutron Flux;

1. add M(7) under the column Channel Functional Test to include a requirement for monthly testing when below P-10 in accordance with Table Notation (7) added to page 3/4 3-13.

2. Change Applicable Modes from 1, 2 and * to 1, 2, 3*, 4*, 5* in accordance with NRC staff recommendation 4.

c. Functional Unit 6, Source Range Neutron Flux;

1. add (Below P-10) to specify permissive applicability in accordance with NRC staff recommendation 2.

2. add M(8) under the column Channel Functional Test to include a requirement for monthly testing when below P-6 in accordance with Table Notation (8) added to page 3/4 3-13.

3. change Applicable Modes from 2, 3, 4 and 5 to 2, 3*, 4* and 5* in accordance with NRC staff recommendation 15.a.

d. Functional Unit 9, Pressurizer Pressure - Low, add (Above P-7) to specify the applicable permissive in accordance with NRC staff recommendation 2.

e. Functional Unit 11, Pressurizer Water Level-High, add (Above P-7) to specify the applicable permissive in accordance with NRC staff recommendation 2.

page 3/4 3-12 revised in accordance with Enclosure C;

a. Functional Unit 16, Undervoltage - Reactor Coolant Pumps, add (Above P-7) to specify the applicable permissive in accordance with NRC staff recommendation 2.

b. Functional Unit 17, Underfrequency - Reactor Coolant Pumps, add (Above P-7) to specify the applicable permissive in accordance with NRC staff recommendation 2.

c. Functional Unit 18, Reactor Trip, add (Above P-9) to specify the applicable permissive in accordance with NRC staff recommendation 2.

d. Functional Unit 21, Reactor Trip Breakers, change Modes from 1, 2* to 1, 2, 5* in accordance with NRC staff recommendation 15.a.

e. Functional Unit 22, Automatic Trip Logic, Change Modes from 1, 2* to 1, 2, 5* in accordance with NRC staff recommendation 15.a.

f. Functional Unit 23, Reactor Trip System Interlocks, has been added to identify surveillance requirements consistent with Table 3.3-1, note M(9) - identified on page 3/4 3-13, requires monthly Channel Functional testing of these interlock channels when below the interlock trip setpoint.

page 3/4 3-13 revised in accordance with Enclosure C by adding Table Notation notes (7), (8) and (9) to reflect the addition of these notes to Table 4.3-1.

4. Table 3.3-3
page 3/4 3-15

a. Functional Unit 1, Safety Injection and Feedwater Isolation item b. Automatic Actuation Logic

1. delete note (1) added by our previous submittal

2. add Action 36, in response to NRC staff recommendation 9, requiring SI reset within one hour of an inadvertent safety injection actuation; providing stable plant conditions are attained. An additional sentence was added to this action statement, Manual Block permitted after Safety Injection System and P-4 reset, this was done to identify the block applicable to this plant condition.

page 3/4 3-18

a. Functional Unit 4, Steamline Isolation item e. High Steam Pressure Rate, change Action 18 to Action 37 in accordance with NRC staff recommendation 10. Since the coincidence is 2/3 logic, this action statement requires the failed channel to be placed in trip and allows the inoperable channel to be bypassed for up to 2 hours for surveillance testing of the other channels.

page 3/4 3-19 Functional Unit 5, Turbine Trip and Feedwater Isolation, item a. Steam Generator Water Level: delete note (2) added by our previous submittal, since NRC staff recommendation 11 states that N-1 loop operation changes should not be considered in this response. Add P-14, since this permissive is defined by this function.

page 3/4 3-19b Functional Unit 8, ESF Interlocks, was added in response to NRC staff recommendation 14 and Enclosure E. Action 38 applicable to these interlocks is identical to Action 12 in Table 3.3-1.

page 3/4 3-21 Delete the Engineered Safety Feature Interlocks in accordance with NRC staff recommendation 1, since the interlocks have been incorporated into the applicable tables and now more appropriately indicate the conditions under which protective functions may be bypassed as well as those under which manual bypasses are automatically removed. Action 36, 37, and 38 have been added to reflect the changes to Table 3.3-3.

5. Table 3.3-4
page 3/4 3-24b has been added to incorporate Functional Unit 8, ESF Interlocks, and specify the applicable trip setpoints and allowable valves for P-11 an P-12 in accordance with Enclosure D. P-4 was omitted from this table since no trip setpoint or allowable value is applicable.

6. Table 4.3-2
page 3/4 3-31b has been added to incorporate Functional Unit 8, ESF Interlocks in accordance with Enclosure F. The Channel Functional Test for P-4 cannot be performed at power, therefore, the test will be performed at R frequency.

7. page B 3/4 3-1 The Bases have been revised to define the functions of the Engineered Safety Feature Actuation System interlocks.

8. Section 4.1.1.1.1.g and 4.1.1.2.c changes described in NRC staff recommendation 14.b and identified in Enclosures B and G were not included in this change request. It is felt that the present location of the Source Range Neutron Flux requirements during plant shutdown conditions is appropriate and the change could cause confusion for plant operators.

Basis

1. Is the probability of an occurence or the consequence of an accident or malfunction of equipment important to safety as previously evaluated in the UFSAR increased? No.

Reason

The proposed revisions are administrative in nature and do not physically change plant safety-related systems, components or structures. The changes are being made to identify conditions under which operating bypasses will block reactor trip or engineered-safety feature actuation

Basis, (Continued)

channels and will not affect the function of any equipment or systems important to safety as addressed in the UFSAR Section 7.2, Reactor Trip System or Section 7.3, Engineered Safety Features System. The changes provide further clarification of both limiting conditions for operation and surveillance requirements consistent with the UFSAR equipment design and operating requirements. The interlock trip setpoints have been revised in accordance with standard technical specification format to specify the interlock trip setpoints and allowable values to more clearly define the setpoints in a conservative direction by taking into account the applicable errors associated with the instrumentation channels.

2. Is the probability for an accident or malfunction of a different type than previously evaluated in the UFSAR created? No

Reason

The proposed changes are administrative in nature and do not physically change plant safety-related systems, components or structures, therefore, the changes will not create the possibility for a new type of accident or malfunction of a different type than any previously evaluated in the UFSAR sections addressed above or the accident analysis of Section 14.

3. Is the margin of safety as defined in the basis for any Technical Specification reduced? No

Reason

The Technical Specification BASES for the revisions addressed above will not be affected by the proposed changes, as none of the systems or components will be physically changed or their function altered in any way. The changes provide additional clarification to enhance the effectiveness of the specification and provides consistency between the Reactor Trip and ESF requirements. Therefore, the margin of safety inherent in the applicable bases will not be reduced.

4. Based on the above, is an unreviewed safety question involved? No

Conclusion

The proposed changes provide further clarification of both Limiting Conditions for Operation and Surveillance Requirements consistent with the equipment design and operating requirements as described in the UFSAR. The changes are administrative in nature and do not involve physical changes to any plant safety-related systems, components or structures, will not increase the likelihood of a malfunction of safety-related equipment, increase the consequences of an accident previously analyzed, nor create the possibility of a malfunction different than previously evaluated in the UFSAR. These changes are being made to address the NRC comments and recommendations provided by letter dated March 13, 1984.

Based on the considerations above, the proposed changes have been determined to be safe and do not involve an unreviewed safety question.