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INSTRUMENTATION

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.2 The Steam and Feedwater Rupture Control System (SFRCS) instrumentation channels shown in Table 3.3-11 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-12 and with RESPONSE TIMES as shown in Table 3.3-13.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With a SFRCS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-12, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-11, until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With a SFRCS instrumentation channel inoperable, take the action shown in Table 3.3-11.

SURVEILLANCE REQUIREMENTS

4.3.2.2.1 Each SFRCS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-11.

4.3.2.2.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.2.2.3 The STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM RESPONSE TIME of each SFRCS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific SFRCS function as shown in the "Total No. of Channels" Column of Table 3.3-11.

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TABLE 3.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

| <u>FUNCTIONAL UNIT</u>                                                           | <u>TOTAL NO.<br/>OF CHANNELS</u> | <u>CHANNELS<br/>TO TRIP</u> | <u>MINIMUM<br/>CHANNELS<br/>OPERABLE</u> | <u>ACTION</u> |
|----------------------------------------------------------------------------------|----------------------------------|-----------------------------|------------------------------------------|---------------|
| 1. Main Steam Pressure<br>Low Instrument Channels*                               | 2                                | 1                           | 2                                        | 13#           |
| a. <del>PS 3689A Steam Line 1 Channel 1</del><br>PS 3689B Steam Line 1 Channel 1 |                                  |                             |                                          |               |
| b. <del>PS 3689C Steam Line 2 Channel 1</del><br>PS 3689D Steam Line 2 Channel 1 |                                  |                             |                                          |               |
| c. <del>PS 3689E Steam Line 1 Channel 1</del><br>PS 3689F Steam Line 1 Channel 1 |                                  |                             |                                          |               |
| d. <del>PS 3689G Steam Line 2 Channel 1</del><br>PS 3689H Steam Line 2 Channel 1 |                                  |                             |                                          |               |
| e. PS 3687A Steam Line 2 Channel 2<br><del>PS 3687B Steam Line 2 Channel 2</del> |                                  |                             |                                          |               |
| f. PS 3687C Steam Line 1 Channel 2<br><del>PS 3687D Steam Line 1 Channel 2</del> |                                  |                             |                                          |               |
| g. PS 3687E Steam Line 2 Channel 2<br><del>PS 3687F Steam Line 2 Channel 2</del> |                                  |                             |                                          |               |
| h. PS 3687G Steam Line 1 Channel 2<br><del>PS 3687H Steam Line 1 Channel 2</del> |                                  |                             |                                          |               |

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TABLE 3.3-11 (Continued)

## TABLE NOTATION

- \* May be bypassed when steam pressure is below 650 psig. Bypass shall be automatically removed when the steam pressure exceeds 650 psig.
- # The provisions of Specification 3.0.4 are not applicable.

## ACTION STATEMENTS

- ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, startup and/or power operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable section of the channel is placed in the tripped condition within 1 hour.
- ACTION 14 - 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 in COLD SHUTDOWN within the following 30 hours.

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TABLE 4.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM  
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| <u>FUNCTIONAL UNIT</u>                                    | <u>CHANNEL CHECK</u> | <u>CHANNEL CALIBRATION</u> | <u>CHANNEL FUNCTIONAL TEST</u> |
|-----------------------------------------------------------|----------------------|----------------------------|--------------------------------|
| 1. Instrument Channel                                     |                      |                            |                                |
| a. Steam Line Pressure - Low                              | S                    | R                          | M+                             |
| b. Steam Generator Level - Low                            | S                    | R                          | M                              |
| c. Steam Generator - Feedwater Differential Pressure-High | S                    | R                          | M                              |
| d. Reactor Coolant Pumps-Loss of                          | S                    | R                          | M                              |
| 2. Manual Actuation                                       | NA                   | NA                         | R                              |

†The surveillance period for Steam Line Pressure-Low Instrument is extended to 2400 hours, September 16, 1982.

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BASES

NO. 25  
11381  
43/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND  
SAFETY SYSTEM INSTRUMENTATION

The OPERABILITY of the RPS, SFAS and SFRCS instrumentation systems ensure that 1) the associated action and/or 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 RPS, SFAS and SFRCS 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 RPS, SFAS, and SFRCS action function associated with each channel is completed within the time limit assumed in the safety 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 test 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.

An SFRCS channel consists of 1) the sensing device(s), 2) associated logic and output relays (including Isolation of Main Feedwater Non Essential Valves and Turbine Trip), and 3) power sources.

Safety-grade anticipatory reactor trip is initiated by a turbine trip (above 25 percent of RATED THERMAL POWER) or trip of both main feedwater pump turbines. This anticipatory trip will operate in advance of the reactor coolant system high pressure reactor trip to reduce the peak reactor coolant system pressure and thus reduce challenges to the power operated relief valve. This anticipatory reactor trip system was installed to satisfy Item II.K.2.10 of NUREG-0737.