

Table 3.3.1-1 (page 1 of 6)  
Reactor Trip System Instrumentation

| FUNCTION                           | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS  | ALLOWABLE VALUE (a)                   |
|------------------------------------|--|-------------------|------------|--|---------------------------------------|
| 1. Manual Reactor Trip             | 1,2  | 2                 | B          | SR 3.3.1.14  | NA                                    |
|                                    | 3(b), 4(b), 5(b)                               | 2                 | C          | SR 3.3.1.14  | NA                                    |
| 2. Power Range Neutron Flux        |  |                   |            |  |                                       |
| a. High                            | 1,2  | 4                 | D          | SR 3.3.1.1<br>SR 3.3.1.2<br>SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16 | ≤ 112.3% RTP                          |
| b. Low                             | 1(c),2   | 4                 | E          | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11<br>SR 3.3.1.16               | ≤ 28.3% RTP                           |
| 3. Power Range Neutron Flux Rate   |  |                   |            |  |                                       |
| a. High Positive Rate              | 1,2  | 4                 | E          | SR 3.3.1.7<br>SR 3.3.1.11  | ≤ 6.3% RTP with time constant ≥ 2 sec |
| b. High Negative Rate              | 1,2  | 4                 | E          | SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16                             | ≤ 6.3% RTP with time constant ≥ 2 sec |
| 4. Intermediate Range Neutron Flux | 1(c), 2(d)                                     | 2                 | F,G        | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11                              | ≤ 35.3% RTP                           |
| 5. Source Range Neutron Flux       | 2(e)   | 2                 | I,J        | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11                              | ≤ 1.6 E5 cps                          |
|                                    | 3(b), 4(b), 5(b)                               | 2                 | J,K        | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.11                              | ≤ 1.6 E5 cps                          |

(continued)

- (a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.
- (b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
- (c) Below the P-10 (Power Range Neutron Flux) interlock.
- (d) Above the P-6 (Intermediate Range Neutron Flux) interlock.
- (e) Below the P-6 (Intermediate Range Neutron Flux) interlock.

Table 3.3.1-1 (page 2 of 6)  
Reactor Trip System Instrumentation

| FUNCTION                          | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS  | ALLOWABLE VALUE (a)              |
|-----------------------------------|--|-------------------|------------|--|----------------------------------|
| 6. Overtemperature $\Delta T$     | 1,2  | 4                 | E          | SR 3.3.1.1<br>SR 3.3.1.3<br>SR 3.3.1.6<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 | Refer to Note 1<br>(Page 3.3-19) |
| 7. Overpower $\Delta T$           | 1,2  | 4                 | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16                             | Refer to Note 2<br>(Page 3.3-20) |
| 8. Pressurizer Pressure           |  |                   |            |  |                                  |
| a. Low                            | 1(g)   | 4                 | M          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16                             | $\geq 1930$ psig                 |
| b. High                           | 1,2  | 4                 | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16                             | $\leq 2395$ psig                 |
| 9. Pressurizer Water Level - High | 1(g)   | 3                 | M          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10  | $\leq 93.9\%$ of instrument span |
| 10. Reactor Coolant Flow - Low    | 1(g)   | 3 per loop        | M          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16                             | $\geq 88.9\%$ (m)                |
| 11. Not Used.                     |  |                   |            |  |                                  |
| 12. Undervoltage RCPs             | 1(g)   | 2/bus             | M          | SR 3.3.1.9<br>SR 3.3.1.10<br>SR 3.3.1.16   | $\geq 10355$ Vac                 |

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.  
(g) Above the P-7 (Low Power Reactor Trips Block) interlock.  
(m) % of design flow - 90,324 gpm.

Table 3.3.2-1 (page 1 of 5)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS     | CONDITIONS | SURVEILLANCE REQUIREMENTS                             | ALLOWABLE VALUE (a)       |
|---|--|-----------------------|------------|---|---------------------------|
| 1. Safety Injection                               |  |                       |            |   |                           |
| a. Manual Initiation                              | 1,2,3,4  | 2                     | B          | SR 3.3.2.8  | NA                        |
| b. Automatic Actuation Logic and Actuation Relays | 1,2,3,4  | 2 trains              | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6<br>SR 3.3.2.13 | NA                        |
| c. Containment Pressure - High 1                  | 1,2,3  | 3                     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≤ 4.5 psig                |
| d. Pressurizer Pressure - Low                     | 1,2,3 <sup>(b)</sup>                           | 4                     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ 1820 psig               |
| e. Steam Line Pressure Low                        | 1,2,3 <sup>(b)</sup>                           | 3 per steam line      | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≥ 571 psig <sup>(c)</sup> |
| 2. Containment Spray                              |  |                       |            |   |                           |
| a. Manual Initiation                              | 1,2,3,4  | 2 per train, 2 trains | B          | SR 3.3.2.8  | NA                        |
| b. Automatic Actuation Logic and Actuation Relays | 1,2,3,4  | 2 trains              | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                | NA                        |
| c. Containment Pressure High - 3                  | 1,2,3  | 4                     | E          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≤ 28.3 psig               |

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.

(b) Above the P-11 (Pressurizer Pressure) interlock and below P-11 unless the Function is blocked.

(c) Time constants used in the lead/lag controller are  $t_1 \geq 50$  seconds and  $t_2 \leq 5$  seconds.

Table 3.3.2-1 (page 2 of 5)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION   | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS  | REQUIRED CHANNELS        | CONDITIONS | SURVEILLANCE REQUIREMENTS                             | ALLOWABLE VALUE (a) |
|--|---|--------------------------|------------|---|---------------------|
| 3. Containment Isolation                           |   |                          |            |   |                     |
| a. Phase A Isolation                               |   |                          |            |   |                     |
| (1) Manual Initiation                              | 1,2,3,4   | 2                        | B          | SR 3.3.2.8  | NA                  |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4   | 2 trains                 | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6<br>SR 3.3.2.13 | NA                  |
| (3) Safety Injection                               | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                          |            |   |                     |
| b. Phase B Isolation                               |   |                          |            |   |                     |
| (1) Manual Initiation                              | 1,2,3,4   | 2 per train,<br>2 trains | B          | SR 3.3.2.8  | NA                  |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4   | 2 trains                 | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                | NA                  |
| (3) Containment Pressure - High 3                  | 1,2,3   | 4                        | E          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≤ 28.3 psig         |
| 4. Steam Line Isolation                            |   |                          |            |   |                     |
| a. Manual Initiation                               | 1,2 <sup>(i)</sup> , 3 <sup>(i)</sup>   | 2                        | F          | SR 3.3.2.8  | NA                  |
| b. Automatic Actuation Logic and Actuation Relays  | 1,2 <sup>(i)</sup> , 3 <sup>(i)</sup>   | 2 trains                 | G          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                | NA                  |
| c. Containment Pressure - High 2                   | 1,2 <sup>(i)</sup> , 3 <sup>(i)</sup>   | 3                        | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 | ≤ 18.3 psig         |
|  |   |                          |            |   |                     |

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.  
(i) Except when all MSIVs are closed.