TABLE 4.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| | FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL FUNCTIONAL TEST | CHANNEL CALIBRATION (a) | OPERATING MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|---|
| 1. | Intermediate Range Monitors: | | | | |
| | a. Neutron Flux - High | S/U(b), Once/Shift | S/U(c),W(1) | Controlled Shutdown | 2 |
| | | Once/Shift | W(1) | Controlled Shutdown | 3,4,5 |
| | b. Inoperative | NA | S/U(c),W | NA | 2,3,4,5 |
| 2. | Average Power Range Monitor (f): | | | | |
| | a. Neutron Flux - Upscale in STARTUP | S/U(b), Once/Shift | S/U(c),W(1) | SA | 2 |
| | | Once/Shift | W(1) | SA | 3,4,5 |
| | b. Neutron Flux - Upscale | Once/Shift | Q(1) | D(d),R(e) | 1 |
| | c. Inoperative | NA | Q | NA | 1,2,3,4,5 |
| 3. | Reactor Vessel Steam Dome Pressure - High | Once/Shift | Q | Q | 1,2(h) |
| 4. | Reactor Water Level - Low | Once/Shift | Q | Q | 1,2 |
| 5. | Main Steam Line Isolation Valve - Closure | NA | Q | R(g) | 1 |
| 6. | Drywell Pressure - High | NA | Q | Q | 1,2 |
| 7. | Scram Discharge Volume Water Level - High | NA | Q | R(j) | 1,2,5(i) |
| 8. | Turbine Stop Valve - Closure | NA | Q | R(g) | 1 |

TABLE 4.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL FUNCTIONAL TEST | CHANNEL CALIBRATION (a) | OPERATING MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 9. Turbine Control Valve Fast Closure, Valve Trip System Oil Pressure - Low | NA | Q | R(k) | 1 |
| 10. Turbine First Stage Pressure Permissive | NA | Q | SA | 1 |
| 11. Reactor Mode Switch Shutdown Position | NA | R | NA | 1,2,3,4,5 |
| 12. Manual Scram | NA | W | NA | 1,2,3,4,5 |

Table 3.2-A (Continued)

ISOLATION ACTUATION INSTRUMENTATION

ACTION

ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
ACTION 21 - Be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
ACTION 22 - Be in at least STARTUP within 6 hours.
ACTION 23 - Close the affected system isolation valves within one hour and declare the affected system inoperable.
ACTION 24 - Not Used
ACTION 25 Restore the manual initiation function to OPERABLE status within 8 hours or close the affected system isolation valves within the next hour and declare the affected system inoperable.
ACTION 26 - Establish SECONDARY CONTAINMENT INTEGRITY with the Standby Gas Treatment System operating within one hour.

NOTES

* When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.
** When any turbine stop valve is greater than 90% open and/or when the key-locked bypass switch is in the NORM position.
(a) When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required Actions may be delayed as follows: (1) for up to 6 hours for RWCU Differential Flow-High, RCIC Manual Initiation, HPCI Manual Initiation; and (2) for up to 6 hours for the remaining Trip Functions provided the associated Trip Function maintains isolation capability.
(b) Operates Group 1 valves except Main Steam Isolation Valves. Also trips Mechanical Vacuum Pump which results in a subsequent isolation of the Mechanical Vacuum Pump suction valves.
(c) Also starts the Standby Gas Treatment System.
(d) Actual setpoint shall be 14°F above the 100% operation ambient temperature conditions as determined by DAEC plant test procedure.
(e) Closes MO-2701 and MO-2740 only.
(f) Requires system steam supply pressure-low coincident with drywell pressure-high to close HPCI/RCIC exhaust vacuum breaker valves.
(g) Manual isolation closes MO-2401 only, if RCIC initiation signal present.
(h) Manual isolation closes MO-2239 only, if HPCI initiation signal present.
(i) When the Standby Liquid Control System is required to be OPERABLE per Specification 3.4.A.
(j) Within 24 hours prior to the planned start of the hydrogen injection test with the reactor power at greater than 20% rated power, the normal full-power radiation background level and associated trip setpoints may be changed based on a calculated value of the radiation level expected during the test. The background radiation level and associated trip setpoints may be adjusted during the test program based on either calculations or measurements of actual radiation levels resulting from hydrogen injection. The background radiation level shall be determined and associated trip setpoints shall be set within 24 hours of reestablishing normal radiation levels after completion of the hydrogen injection test or within 12 hours of establishing reactor power levels below 20% rated power, while these functions are required to be operable.

TABLE 3.2-B (Continued)

CORE AND CONTAINMENT COOLING SYSTEMS INITIATION/CONTROL INSTRUMENTATION

| Trip Function | Trip Level Setting | Minimum Operable Channels per Trip Function[a] | Applicable Operating Mode | Action |
|---|---|---|---|---|
| LOSS OF POWER | | | | |
| 4.16 kv Emergency Bus Undervoltage (Loss of Voltage) | 20 ≤ V ≤ 28 volts | 2 | 1,2,3,4**,5** | 33 |
| 4.16 kv Emergency Bus Degraded Voltage | a. 108 ≤ V ≤ 111 volts<br>b. 8.0 ≤ t ≤ 8.5 sec time delay | 8 | 1,2,3,4**,5** | 36 |
| 4.16 kv Emergency Transformer Supply - Undervoltage | 65% of Rated Voltage | 4 | 1,2,3,4**,5** | 36 |
| 4.16 kv Emergency Bus Sequential Loading Relay | 65% of Rated Voltage | 2 | 1,2,3,4**,5** | 36 |

NOTES

(a) When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required Actions may be delayed as follows: (1) for up to 6 hours for HPCI Reactor Water Level-High, HPCI Condensate Storage Tank Level-Low, HPCI Suppression Pool Water Level-High, RCIC Reactor Water Level-High, RCIC Condensate Storage Tank Level-Low; and (2) for up to 6 hours for the remaining Trip Functions provided the associated Trip Function maintains initiation/trip capability.

(b) Also actuates the associated emergency diesel generators.

(c) One trip system. Provides signal to the pump suction valves only.

(d) Provides signal to trip pump turbine only.

* When the system is required to be OPERABLE per Specification 3.5.A.
** Required OPERABLE when ESF equipment is required to be OPERABLE.
\# Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 150 psig.
## Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 100 psig.

TABLE 3.2-B (Continued)

CORE AND CONTAINMENT COOLING SYSTEMS INITIATION/CONTROL INSTRUMENTATION

ACTION

ACTION 30 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. With one channel inoperable, place the inoperable channel in the tripped condition within 24 hours or declare the associated system inoperable.

b. With more than one channel inoperable, declare the associated system inoperable.

ACTION 31 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. With one channel inoperable, declare the associated ECCS inoperable within 24 hours.

b. With more than one channel inoperable, declare the associated ECCS inoperable within 1 hour.

ACTION 32 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. With one channel inoperable, place the inoperable channel in the tripped condition within 24 hours.

b. With more than one channel inoperable, declare the associated ECCS inoperable within 1 hour.

ACTION 33 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, declare the associated emergency diesel generator inoperable and take the action required by Specification 3.5.G.1.

ACTION 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. For one channel inoperable, place the inoperable channel in the tripped condition within 24 hours or declare the HPCI system inoperable.

b. With more than one channel inoperable, declare the HPCI system inoperable.

ACTION 35 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within 24 hours or declare the associated system inoperable.

ACTION 36 - With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip Function, place the inoperable channel in the tripped condition within 1 hour; operation may then continue until performance of the next required CHANNEL FUNCTIONAL TEST.