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3/4.3.3.2 (This Specification number is not used.)

TABLE 3.3-9

REMOTE SHUTDOWN PANEL MONITORING INSTRUMENTATION

	INSTRUMENT	MINIMUM CHANNELS OPERABLE
1.	Intermediate Range Nuclear Flux	1
2.	Intermediate Range Startup Rate	1
3.	Source Range Nuclear Flux	1
4.	Source Range Startup Rate	1
5.	Reactor Coolant Temperature - Hot Leg	1
6.	Reactor Coolant Temperature - Cold Leg	1
7.	Pressurizer Pressure	1
8.	Pressurizer Level	1
9.	Steam Generator Pressure	1/steam generator
10.	Steam Generator Level	1/steam generator
11.	RHR Temperature - HX Outlet	1
12.	Auxiliary Feedwater Flow Rate	1/steam generator

3/4.3.3.7 (This Specification number is not used.)

3/4.7.7 CONTROL ROOM EMERGENCY HABITABILITY SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.7.1 The control room emergency habitability system is OPERABLE when:

a. Two out of three emergency ventilation subsystems, fans, associated filters and dampers are OPERABLE, and

b. Five bottled air pressurization subsystems consisting of two bottles per subsystem are OPERABLE**, and

c. The series normal air intake and exhaust isolation dampers for both units are OPERABLE, and capable of automatic closure on a CIB and Control Room High Radiation isolation signal, or closed.

d. The control room air temperature is maintained ≤ 88°F.

APPLICABILITY: a. With either unit* in MODES 1, 2, 3 and 4, or

b. During irradiated fuel movement or movement of loads over irradiated fuel at either unit and a. above, or

c. Refer to T.S. 3.9.15 when both units are in either MODES 5 or 6.

ACTION:

a. With less than two emergency ventilation subsystems, fans, and associated filters OPERABLE, restore at least two subsystems to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.1 With an emergency ventilation subsystem inlet isolation damper open and not capable of being closed, the requirements of 3.0.3 are applicable.

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* Emergency power for one train of dampers of the Unit in MODES 5 or 6 need not be available.

** The air bottles may be isolated for up to 8 hours for performance of instrumentation and control systems testing.

LIMITING CONDITION FOR OPERATION (continued)

b. With one bottled air pressurization subsystem inoperable, restore five bottled air pressurization subsystems to OPERABLE within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b.1 With less than four bottled air pressurization subsystems OPERABLE, the requirements of 3.0.3 are applicable and movement of irradiated fuel shall be suspended.

c. With one open series normal air intake or exhaust isolation damper inoperable and not capable of closing, restore all series dampers to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c.1 With both series normal air intake or exhaust isolation dampers inoperable and not capable of being closed, the requirements of 3.0.3 are applicable and movement of irradiated fuel or movement of loads over irradiated fuel shall be suspended.

d. With the control room air temperature > 88°F but ≤ 105°F, return the temperature to ≤ 88°F in 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d.1 With the control room air temperature > 105°F, be in at least HOT STANDBY within the next 4 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS (continued)

2. Subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 99% for radioactive methyl iodine at an air flow velocity of 0.70 ft/sec ± 20% with an inlet methyl iodine concentration of 1.5 to 2.0 mg/m^3, ≥ 70% relative humidity, and 30°C ± 1/2°C; other test conditions shall be in accordance with ANSI N510-1980. The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Removing a longitudinal sample from an adsorber tray using a slotted-tube sampler, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with a length equal to the thickness of the bed.

3. Verifying a system flow rate of 800 to 1000 cfm during system operation.

d. At least once per 18 months by:

1. Verifying that the pressure drop for the combined HEPA filters and charcoal adsorber banks is less than 5.6 inches Water Gauge while operating the ventilation system at a flow rate of 800 to 1000 cfm.

2. Verifying that on a Containment Isolation Phase B/ Control Room High Radiation test signal from either Unit, the system automatically closes all the series isolation ventilation system dampers which isolate the combined control room from the outside atmosphere and the system automatically starts 60 minutes later and supplies air to the control room through the HEPA filters and charcoal adsorber banks.

3. Deleted

SURVEILLANCE REQUIREMENTS (continued)

3. Verifying a system flow rate of 800 - 1000 cfm during system operation.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the ventilation system at a flow rate of 800 - 1000 cfm .

2. Verifying that on a control room high radiation/ containment phase B isolation test signal from either Unit, the system automatically closes all the series isolation ventilation system dampers which isolate the combined control room from the outside atmosphere.

3. Verifying that one emergency ventilation subsystem maintains the combined control room at a positive pressure of ≥ 1/8 inch Water Gauge relative to the outside atmosphere during system operation.

4. Verifying that the heaters dissipate 5 ± 0.5 kw when tested in accordance with ANSI N510-1980.

4.7.7.1.2 The BV-2 emergency ventilation subsystems shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is ≤ 88°F.

b. At least once per 31 days by initiating flow through each HEPA filter and charcoal adsorber train and by verifying that each train operates for 15 minutes.

c. At least once per 18 months, or after every 720 hours of system operation and (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank, or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (3) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the filtration system satisfies the in-place penetration and by-pass leakage testing acceptance criteria of less than 1% when tested in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 800-1000 cfm.

SURVEILLANCE REQUIREMENTS (continued)

4. Verifying that one emergency ventilation subsystem maintains the control room at a positive pressure of ≥ 1/8 inch Water Gauge relative to the outside atmosphere during system operation.

5. Verifying that the heaters dissipate 5 ± 0.5 kw when tested in accordance with ANSI N510-1980.

4.7.7.2 The bottled air pressurization system shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that the system contains a minimum of 10 bottles of air each pressurized to at least 1825 psig and by verifying that the system solenoid operated valves are powered from an operable emergency bus.

b. At least once per 18 months by verifying that:

1. A control room high radiation/containment phase B isolation test signal from either Unit will initiate system operation.

2. Upon a partial discharge test using four out of five bottled air subsystems the system will supply ≤ 1000 cfm of air and pressurize the control room to ≥ 1/8 inch Water Gauge relative to the outside atmosphere during system operation.

3/4.9.7 (This Specification number is not used.)

3/4.9.15 CONTROL ROOM EMERGENCY HABITABILITY SYSTEMS

LIMITING CONDITION FOR OPERATION

3.9.15.1 The control room emergency habitability system is OPERABLE when:

a. Two out of three emergency ventilation subsystems, fans and associated filters and dampers are OPERABLE, and

b. Five bottled air pressurization subsystems consisting of two bottles per subsystem are OPERABLE, and

c. The series normal air intake and exhaust isolation dampers for both units are OPERABLE, and capable of automatic closure on a Control Room High Radiation isolation signal*, or closed.

APPLICABILITY: When both units are in either MODE 5 or 6.

ACTION:

a. With less than two emergency ventilation subsystems, fans and associated filters OPERABLE and irradiated fuel being moved or movement of loads over irradiated fuel, restore at least two subsystems to OPERABLE status within 7 days or close at least one series normal air intake and exhaust isolation damper on each intake and exhaust to the control room.

b. With one bottled air pressurization subsystem inoperable, restore five bottled air pressurization subsystems to OPERABLE within 7 days or suspend all operations involving movement of irradiated fuel or movement of loads over irradiated fuel.

b.1 With less than four bottled air pressurization subsystems OPERABLE or no emergency ventilation subsystems OPERABLE, suspend all operations involving movement of irradiated fuel or movement of loads over irradiated fuel.

c. With one open series normal air intake or exhaust isolation damper inoperable# and not capable of closing and irradiated fuel being moved or movement of loads over irradiated fuel, restore all series dampers to OPERABLE status within 7 days or close at least one series normal air intake and exhaust isolation damper on each intake and exhaust to the control room.

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* Not applicable when output relay fuses are removed to prevent inadvertent ESF actuation for a single unit.

\# Emergency backup power not required for any 1 of 2 series dampers.

BASES

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 and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Protection and Engineered Safety Features instrumentation, and 3) 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.

OPERABILITY of the following trips in Table 3.3-1 provides additional diverse or anticipatory protection features and is not credited in the accident analyses:

Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level; Undervoltage - Reactor Coolant Pumps (Above P-7); Underfrequency Reactor Coolant Pumps (Above P-7); Turbine Trip (Above P-9); Reactor Coolant Pump Breaker Position Trip (Above P-7); Turbine Impulse Chamber Pressure, P-13.

Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and supplements to that report as approved by the NRC and documented in the SER (letter to J. J. Sheppard from Cecil O. Thomas dated February 21, 1985). Jumpers and lifted leads are not an acceptable method for placing equipment in bypass as documented in the NRC safety evaluation report for this WCAP.

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

The surveillance requirements for the Manual Trip Function, Reactor Trip Breakers and Reactor Trip Bypass Breakers are provided to reduce the possibility of an Anticipated Transient Without Scram (ATWS) event by ensuring OPERABILITY of the diverse trip features (Reference: Generic Letter 85-09).

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.

ESF response times which include sequential operation of the RWST and VCT valves are based on values assumed in the Non-LOCA safety analyses and are provided in Section 3 of the Licensing Requirements Manual. These analyses take credit for injection of borated water. Initial borated water is supplied by the BIT, however, injection of borated water from the RWST is assumed not to occur until the VCT charging pump suction valves are closed following opening of the RWST charging pump suction valves. When sequential operation of the RWST and VCT valves is not included in the response times, the values specified are based on the LOCA analyses. The LOCA analyses take credit for injection flow regardless of the source. Verification of the response times will assure that the assumptions used for the LOCA and Non-LOCA analyses with respect to operation of the VCT and RWST valves are valid.

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 Tavg 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.

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

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 low steamline pressure (with Loop Stop Valves Open), and enables auto actuation of the pressurizer PORVs.

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 low steamline pressure (with Loop Stop Valves Open) and enabling steamline isolation on high steam pressure rate, automatically disables auto actuation of the pressurizer PORVs 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.

Table 3.3-1 Action 2 has been modified by two notes. Note (4) allows placing the inoperable channel in the bypass condition for up to 4 hours while performing: a) routine surveillance testing of other channels, and b) setpoint adjustments of other channels when required to reduce the setpoint in accordance with other technical specifications. The 4 hour time limit is justified in accordance with WCAP-10271-P-A, Supplement 2, Revision 1, June 1990. Note (5) only requires SR 4.2.4 to be performed if a Power Range High Neutron Flux channel input to QPTR becomes inoperable. Failure of a component in the Power Range High Neutron Flux channel which renders the High Neutron Flux trip function inoperable may not affect the capability to monitor QPTR. As such, determining QPTR using the movable incore detectors once per 12 hours may not be necessary.

The following discussion pertains to Table 3.3-3, Functional Units 6.b and 6.c and the associated ACTION 34. The degraded voltage protection instrumentation system will automatically initiate the separation of the offsite power sources from the emergency buses. This action results in an automatic diesel generator start signal being generated as a direct result of the supply breakers opening between the normal and emergency buses. The failure of the degraded voltage protection system results in a loss of one of the automatic start signals for the diesel generator. Therefore, the ACTION statement requires the affected diesel generator to be declared inoperable if the required actions cannot be met within the specified time period.

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

The instrumentation functions that receive input from neutron detectors are modified by a note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detectors consists of a normalization of the detectors based on a power calorimetric and flux map performed above 15% RATED THERMAL POWER. The power range neutron detector CHANNEL CALIBRATION is performed every 18 months but is not required for entry into MODE 2 or 1 on unit startup because the unit must be in at least MODE 1 to perform the test. The neutron detector CHANNEL CALIBRATION for the source range and intermediate range detectors consists of obtaining detector characteristics and performing an engineering evaluation of those characteristics. The intermediate range neutron detector CHANNEL CALIBRATION is performed every 18 months but is not required for entry into MODE 2 on unit startup because the unit must be in at least MODE 2 to perform the test. The source range neutron detector CHANNEL CALIBRATION is performed every 18 months but is not required for entry into MODE 2 or 3 on unit shutdown because the unit must be in at least MODE 3 to perform the test. The P-6 permissive neutron detector CHANNEL CALIBRATION is performed in conjunction with the intermediate range neutron detectors. The overtemperature ΔT, P-8, P-9 and P-10 permissive neutron detector CHANNEL CALIBRATIONS are performed in conjunction with the power range neutron detectors.

Source Range Neutron Flux

The limiting condition for operation (LCO) requirement for the source range neutron flux trip function ensures that protection is provided against an uncontrolled rod cluster control assembly (RCCA) bank rod withdrawal accident from a subcritical condition during startup with the reactor trip breakers (RTBs) closed. This trip function provides redundant protection to the Power Range Neutron Flux-Low Setpoint and Intermediate Range Neutron Flux trip functions (See UFSAR Section 14.1.1 and Specification 2.2.1 Bases). In MODES 3, 4, and 5, with the RTBs closed, administrative controls also prevent the uncontrolled withdrawal of rods. The nuclear instrumentation system (NIS) source range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS source range detectors do not provide any inputs to control systems. In Modes 3, 4, and 5, with the reactor trip breakers closed, the source range detectors provide an automatic trip function with a setpoint in the shutdown range and the intermediate range detectors provide an automatic trip function with a setpoint in the power range. Therefore, the functional capability at the specified trip setpoint is assumed to be available.

BASES

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that: 1) the radiation levels are continually measured in the areas served by the individual channels; 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded; and 3) sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. This capability is consistent with the recommendations of NUREG-0737, "Clarification of TMI Action Plan Requirements," October, 1980.

3/4.3.3.2 (This Specification number is not used.)

3/4.3.3.3 (This Specification number is not used.)

3/4.3.3.4 (This Specification number is not used.)

BASES

3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criteria 19 of 10 CFR 50.

3/4.3.3.7 (This Specification number is not used.)

3/4.3.3.8 ACCIDENT MONITORING INSTRUMENTATION

The OPERABILITY of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Plants to Assess Plant Conditions During and Following an Accident," December 1975 and NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS (Continued)

system HEPA filters and charcoal adsorbers and the resulting iodine removal capacity are consistent with the assumptions of the accident analysis.

All containment penetrations, except for the containment purge and exhaust penetrations, that provide direct access from containment atmosphere to outside atmosphere must be isolated on at least one side. Penetration closure may be achieved by an isolation valve, blind flange, manual valve, or functional equivalent. Functional equivalent isolation ensures releases from the containment are prevented for credible accident scenarios. The isolation techniques must be approved by an engineering evaluation and may include use of a material that can provide a temporary, pressure tight seal capable of maintaining the integrity of the penetration to restrict the release of radioactive material from a fuel element rupture.

3/4.9.5 COMMUNICATIONS

The requirements for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity conditions during CORE ALTERATIONS.

3/4.9.6 MANIPULATOR CRANE OPERABILITY

The OPERABILITY requirements for the manipulator cranes ensure that: 1) manipulator cranes will be used for movement of control rods and fuel assemblies; 2) each crane has sufficient load capacity to lift a control rod or fuel assembly; and 3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 (This Specification number is not used.)

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that 1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE,