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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

BASES

MAIN FEEDWATER CONTROL VALVES AND STARTUP FEEDWATER CONTROL VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.8 The Main Feedwater Control Valves (MFCVs) and associated Startup Feedwater Control Valves (SFCVs) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With one or more MFCVs or SFCVs inoperable, isolate the affected flowpath within 72 hours and verify the flowpath is isolated once per 7 days, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.8 Each MFCV and SFCV shall be demonstrated OPERABLE by performance of Surveillance Requirement 4.3.2.2.3.

PLANT SYSTEMS

TURBINE STOP VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.9 Four Turbine Stop Valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With one or more Turbine Stop Valves inoperable, close the inoperable valve(s) within 8 hours and verify the valve(s) is closed once per 7 days, or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.9 Each Turbine Stop Valve shall be demonstrated OPERABLE by performance of Surveillance Requirement 4.3.2.2.3.

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION (Continued)

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.

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 SFRCS RESPONSE TIME for the turbine stop valve closure is based on the combined response times of main steam line low pressure sensors, logic cabinet delay for main steam line low pressure signals and closure time of the turbine stop valves. This SFRCS RESPONSE TIME ensures that the auxiliary feedwater to the unaffected steam generator will not be isolated due to a SFRCS low pressure trip during a main steam line break accident.

Surveillance Requirement 4.3.2.2.3 requires demonstration that each SFRCS function can be performed within the applicable SFRCS RESPONSE TIME. When this surveillance requirement can not be met due to an inoperable SFRCS-actuated component, the LCO ACTION associated with the inoperable actuated component should be entered. When the SFRCS RESPONSE TIME surveillance requirement can not be met due to inoperable components within the SFRCS, ACTION 16 of Table 3.3-11 should be followed.

The actuation logic for Functional Units 4.a., 4.b., and 4.c. of Table 3.3-3, Safety Features Actuation System Instrumentation, is designed to provide protection and actuation of a single train of safety features equipment, essential bus or emergency diesel generator. Collectively, Functional Units 4.a., 4.b., and 4.c. function to detect a degraded voltage condition on either of the two 4160 volt essential buses, shed connected loads, disconnect the affected bus(es) from the offsite power source and start the associated emergency diesel generator. In addition, if an SFAS actuation signal is present under these conditions, the sequencer channels for the two SFAS channels which actuate the train of safety features equipment powered by the affected bus will automatically sequence these loads onto the bus to prevent overloading of the emergency diesel generator. Functional Unit 4.a. has a total of four units, one associated with each SFAS channel (i.e., two for each essential bus). Functional Units 4.b. and 4.c. each have a total of four units, (two associated with each essential bus); each unit consisting of two undervoltage relays and an auxiliary relay.

An SFRCS channel consists of 1) the sensing device(s), 2) associated logic and output relays, and 3) power sources. The SFRCS output signals that close the Main Feedwater Block Valves (FW-779 and FW-780) and trip the Anticipatory Reactor Trip System (ARTS) are not required to mitigate any accident and are not credited in any safety analysis. Therefore, LCO 3.3.2.2 does not apply to these functions.

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION (Continued)

Safety-grade anticipatory reactor trip is initiated by a turbine trip (above 45 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 pilot operated relief valve. This anticipatory reactor trip system was installed to satisfy Item II.K.2.10 of NUREG-0737. The justification for the ARTS turbine trip arming level of 45% is given in BAW-1893, October, 1985.

within the closure times of the surveillance requirements are consistent with the assumptions used in the safety analyses.

3/4.7.1.6 SECONDARY WATER CHEMISTRY - Deleted

3/4.7.1.7 MOTOR DRIVEN FEEDWATER PUMP SYSTEM

The OPERABILITY of the Motor Driven Feedwater Pump System ensures that the Reactor Coolant System can be cooled down from normal operating conditions in the event of the total loss of Main Feedwater and Auxiliary Feedwater Pumps.

The Motor Driven Feedwater Pump System must be capable of providing feedwater flow to each steam generator in order to be OPERABLE.

The Motor Driven Feedwater Pump flow capability ensures that adequate feedwater flow is available to remove Decay Heat and reduce the Reactor Coolant System temperature to where the Decay Heat System may be placed into operation.

When conducting tests of the Motor Driven Feedwater Pump System in MODE 1 at greater than 40% RATED THERMAL POWER which requires local manual realignment of valves which make the system inoperable, a dedicated individual shall be stationed at the realigned train's valves, in communication with the control room, able to restore the valves to normal system OPERABLE status. However, it is not required to have this dedicated individual stationed if both trains of the Auxiliary Feedwater System are OPERABLE pursuant to Technical Specification 3/4.7.1.2 because two sources of auxiliary feedwater to the steam generators are OPERABLE. In either situation, the Motor Driven Feedwater Pump System with the local manual realigned valves is inoperable and the Limiting Condition for Operation ACTION must be followed.

When at 40% RATED THERMAL POWER or less and in MODES 1, 2, or 3, the Motor Driven Feedwater Pump System may be aligned to provide a flow path from the Deaerator Storage Tank through the Motor Driven Feedwater Pump to the Main Feedwater System. During this Motor Driven Feedwater Pump mode of operation, a flow path from the Condensate Storage Tanks through the Motor Driven Feedwater Pump to the Auxiliary Feedwater System shall be maintained with the ability for manual positioning of valves such that the flow path can be established. The ability for local, manual operation is demonstrated by verifying the presence of the handwheels for all manual valves and the presence of either handwheels or available power supply for motor operated valves.

3/4.7.1.8 MAIN FEEDWATER CONTROL VALVES AND STARTUP FEEDWATER CONTROL VALVES

The OPERABILITY of the main feedwater control valves (MFCVs) and startup feedwater control valves (SFCVs) ensures that feedwater flow to the steam generators can be isolated following an SFRCS actuation. The MFCVs and SFCVs support the Main Feedwater Stop Valves (MFSVs) in performing the main feedwater isolation function. OPERABILITY of the MFSVs is addressed by TS 3/4.6.3. The main feedwater isolation function limits the overcooling of the RCS following feedwater line breaks, main steam line breaks, and excess feedwater events. The isolation function also limits the mass and energy released to containment during a main feedwater line break or a Main Steam Line Break (MSLB) event. The ACTION requires isolating any inoperable flowpath through the MFCVs and SFCVs. In the context of this specification, a flowpath consists of the primary flowpath through the MFCVs or the bypass flowpath through the SFCVs. Isolating a flowpath requires closing the inoperable valve or closing a valve in the same flowpath. This ACTION ensures that the isolation function of the valves will be performed. When a flowpath can not be isolated within the appropriate time, the plant must be placed in a condition where the MFCVs and SFCVs are no longer required to perform their isolation function. The OPERABILITY of the MFCVs and SFCVs is met by ensuring that they meet the SFRCS RESPONSE TIME requirements.

3/4.7.1.9 TURBINE STOP VALVES

The OPERABILITY of the turbine stop valves (TSVs) ensures that both steam generators will not blowdown during a Main Steam Line Break (MSLB). The TSVs provide a backup to the isolation function of the main steam isolation valves (MSIVs) for a MSLB downstream of the MSIVs. The ACTION requires closing the inoperable TSVs. This action ensures that the isolation function of the valves will be performed. When a valve or valves can not be closed within the appropriate time, the plant must be placed in a condition where the TSVs are no longer required to perform their isolation function. The OPERABILITY of the TSVs is met by ensuring that they meet the SFRCS RESPONSE TIME requirements.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 110°F and 237 psig are based on a steam generator RT_{NDT} of 40°F and are sufficient to prevent brittle fracture.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.4 SERVICE WATER SYSTEM

The OPERABILITY of the service water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.5 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink level and temperature ensure that sufficient cooling capacity is available to either 1) provide normal cooldown of the facility, or 2) to mitigate the effects of accident conditions within acceptable limits.

The limitations on minimum water level and maximum temperature are based on providing a 30 day cooling water supply to safety related equipment without exceeding their design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants" March 1974.

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the control room emergency ventilation system ensures that 1) the ambient air temperature does not exceed the allowable temperature for continuous duty rating for the equipment and instrumentation cooled by this system and 2) the control room will remain habitable for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criterion 19 of Appendix "A", 10 CFR 50.

The Station Vent Normal Range Radiation Monitoring isolation function provides that under the required conditions, an isolation signal will be given. The Station Vent Normal Range Radiation Monitors provide isolation and shutdown of the control room normal ventilation system.

With one or both channels of Station Vent Normal Range Radiation Monitoring instrumentation inoperable, the provisions of Action statements b or c, respectively, are applicable. The provisions of Action statement a are not applicable.

Under the Action statements for inoperable Station Vent Normal Range Radiation Monitoring instrumentation, should the control room normal ventilation system be isolated and at least one train of the control room emergency ventilation system be placed in operation, these systems would be in a state equivalent to that which they would be in following an actual high radiation condition. Plant operation can continue indefinitely in this state, provided that control room temperature can be maintained in an acceptable range, with the control room emergency ventilation system obtaining fresh-air makeup as described in the Updated Safety Analysis Report Section 9.4.1, "Control Room."

Surveillance Requirement 4.7.6.1.e.2 requires verification that the control room normal ventilation system can be isolated by a Station Vent Normal Range Radiation Monitoring test signal.

Additional testing requirements for the Station Vent Normal Range Radiation Monitoring instrumentation are provided in the ODCM for gaseous effluent releases.

The required control room emergency ventilation system testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal.