

Enclosure to
NLS-91-334

ENCLOSURE 4

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
AUXILIARY FEEDWATER SYSTEM SURVEILLANCE CHANGES

TECHNICAL SPECIFICATION PAGES

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PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated flow paths shall be OPERABLE with:

- a. Two motor-driven auxiliary feedwater pumps, each capable of being powered from separate emergency buses, and
- b. One steam turbine-driven auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2, AND 3.

ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable, be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by:

INSERT 1 → a) ~~Verifying that each motor-driven pump develops a differential pressure that (when temperature-compensated to 70°F) is greater than or equal to 1558 psid at a recirculation flow of greater than or equal to 50 gpm~~

INSERT 2 → a) ~~Verifying that the steam turbine driven pump develops a discharge pressure of greater than or equal to 1510 psig on a recirculation flow of greater than or equal to 90 gpm when the secondary steam supply pressure is greater than 210 psig. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.~~

OR → that (when temperature-compensated to 70°F) is

(25 KPPH) OR 1514 (45 Kpph) 1433 psid at

differential

a. At lease once ...

①

1. Demonstrating that each motor-driven pump satisfies performance requirements by either:

a) Verifying ...

②

b) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1259 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH).

2. Demonstrating that the steam turbine - driven pump satisfies performance requirements by either:

NOTE: The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

③

b) Verifying the pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1400 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH) when the secondary steam supply pressure is greater than 280 psig.

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AUXILIARY FEEDWATER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying by flow or position check that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position; and
 4. Verifying that the isolation valves in the suction line from the CST are locked open.
- b. At least once per 18 months during shutdown by:

1. Verifying that each ^{motor driven} auxiliary feedwater pump starts ^{automatically} as designed ³ ~~automatically~~ upon receipt of an Auxiliary Feedwater Actuation test signal and that the respective pressure control valve and motor-operated recirculation isolation valve for ^{EACH} ~~the~~ motor-driven pump respond as required, ~~and~~ ;

INSERT 4 →

- 3/2. Verifying that the motor-operated auxiliary feedwater isolation valves and flow control valves close as required upon receipt of an appropriate test signal for steamline differential pressure high coincident with main steam isolation.

Inserts to Page 3/4 7-5

④

2. Verifying that the turbine-driven auxiliary feedwater pump starts automatically, as designed, upon receipt of a test signal. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3; and

PLANT SYSTEMS

BASES

AUXILIARY FEEDWATER SYSTEM

Each electric motor-driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 475 gpm at a pressure of 1217 psig to the entrance of the steam generators. The steam-driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 900 gpm at a pressure of 1110 psig to the entrance of the steam generators. This capacity is sufficient to ensure that adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 350°F when the Residual Heat Removal System may be placed into operation.

INSERT
⑤ →

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 12 hours with steam discharge to the atmosphere concurrent with total loss-of-offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics, and the value has also been adjusted in a manner similar to that for the RWST and BAT, as discussed on page B 3/4 1-3.

3/4.7.1.4 SPECIFIC ACTIVITY

The limitations on Secondary Coolant System specific activity ensure that the resultant offsite radiation dose will be limited to a small fraction of 10 CFR Part 100 dose guideline values in the event of a steam line rupture. This dose also includes the effects of a coincident 1 gpm reactor-to-secondary tube leak in the steam generator of the affected steam line. These values are consistent with the assumptions used in the safety analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to: (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses.

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 70°F and 200 psig are based on a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.

5

The auxiliary feedwater pumps are capable of delivering the 430 gpm feedwater flow rate required to mitigate the most limiting design basis accidents analyzed in SHNPP FSAR Chapter 15. The most limiting accident scenarios are the Loss of Normal Feedwater (LONF) and the Feedline Break (FLB). The accident analyses assume the pressure in the steam generators reaches the setpoint of the lowest set steam generator safety relief valve for at least a portion of the accident duration. Therefore, each of the AFW pumps (motor-driven and turbine-driven) must be capable of supplying at least 430 gpm total to at least two steam generators at a steam generator inlet pressure of 1217 psig. The 1217 psig pressure is based on the lowest safety relief valve setting plus margin for accumulation and setting error. Each AFW pump must be capable of supplying the full 430 gpm flow following all credible single failure scenarios. This capacity is sufficient to ensure adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 350°F so the Residual Heat Removal System may be placed into operation.

(215 KPPH) —

(215 KPPH) —

(215 KPPH) —

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

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SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days on a STAGGERED TEST BASIS by:
 1. Demonstrating that each motor-driven pump satisfies performance requirements by either:
 - a) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1514 psid at a recirculation flow of greater than or equal to 50 gpm (25 KPPH), or
 - b) Verifying each pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1259 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH).

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

2. Demonstrating that the steam turbine - driven pump satisfies performance requirements by either:

NOTE: The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

- a) Verifying the pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1433 psid at a recirculation flow of greater than or equal to 90 gpm (45 KPPH) when the secondary steam supply pressure is greater than 210 psig, or
 - b) Verifying the pump develops a differential pressure that (when temperature - compensated to 70°F) is greater than or equal to 1400 psid at a flow rate of greater than or equal to 430 gpm (215 KPPH) when the secondary steam supply pressure is greater than 280 psig.
3. Verifying by flow or position check that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position; and
 4. Verifying that the isolation valves in the suction line from the CST are locked open.
- b. At least once per 18 months during shutdown by:
1. Verifying that each motor-driven auxiliary feedwater pump starts automatically, as designed, upon receipt of a test signal and that the respective pressure control valve and motor-operated recirculation isolation valve for each motor-driven pump respond as required;
 2. Verifying that the turbine-driven auxiliary feedwater pump starts automatically, as designed, upon receipt of a test signal. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3; and
 3. Verifying that the motor-operated auxiliary feedwater isolation valves and flow control valves close as required upon receipt of an appropriate test signal for steamline differential pressure high coincident with main steam isolation.

AUXILIARY FEEDWATER SYSTEM

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