

FORT ST. VRAIN

INSERVICE INSPECTION AND TESTING

PROPOSED

TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

FOR THE

SECONDARY COOLANT SYSTEM

8004030133

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5.3 SECONDARY COOLANT SYSTEM - SURVEILLANCE REQUIREMENTSApplicability

Applies to the surveillance of the secondary (steam) coolant system including the steam generators and turbine plant.

Objective

To ensure the core cooling capability of the components of the steam plant system.

Specification SR 5.3.1 - Steam/Water Dump System, Surveillance

The steam/water dump valves shall be tested individually every three months.

The steam/water dump tank level indicators shall be checked daily, and functionally tested every three months.

The steam/water dump tank level, pressure and temperature instruments (including indicators, alarms, and interlocks - where applicable) shall be functionally tested and calibrated annually, or at the next scheduled plant shutdown if such surveillance has not been performed during the previous year.

Basis for Specification SR 5.3.1

The steam/water dump system is provided to minimize water inleakage into the core as a result of a steam generator tube rupture (FSAR Section 6.3). Satisfactory operation of the dump valves, as is sufficiently demonstrated by testing every three months, will minimize core damage and primary coolant system pressure rise in the event of a steam generator tube rupture.

The dump valve test will be accomplished by closing the (normally locked open) block valve downstream of the dump valve

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to be tested. After operation of the dump valve, the block valve will again be locked open, returning the dump valve to service.

The specified frequency for instrumentation functional test and calibration is adequate to assure that the water level in the steam/water dump tank does not exceed the limits of LCO 4.3.3, and, in case of dump, to confirm that the proper superheater has been dumped, and to prevent venting and draining of the tank to the radioactive gaseous and liquid systems before the contents have been adequately cooled.

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Specification SR 5.3.2 - Main and Hot Reheat Steam Stop Check Valves, Surveillance

The main steam and hot reheat steam stop check valves shall be full stroke tested in accordance with specification SR 5.3.4 and partial stroke tested once per week.

Basis for Specification SR 5.3.2

The main steam stop check and hot reheat stop check valves will be partially stroked once a week during plant operation. Full stroking tests are impractical because complete closure of any one valve would automatically shut down one or more circulators. Therefore, the valves will be stroked during power operation by means of special electrical circuitry in the hydraulic control system which limits closure to ten percent without interfering with emergency closure action called for by the plant protective system. This test will demonstrate that the valves are free to close when required, without causing severe pressure, temperature, flow, or power generation transients.

Specification SR 5.3.3 - Bypass and Pressure Relief Valves, Surveillance

The main steam and hot reheat steam power operated (electromatic) pressure relief valves, and the six hot reheat steam bypass valves shall be tested once per year, or at the next scheduled plant shutdown if the valves have not been tested during the previous year. The main steam bypass valves shall be tested in accordance with specification SR 5.3.4.

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Basis for Specification SR 5.3.3

The specified secondary (steam) coolant system bypass valves and pressure relief valves will be tested during plant shutdown as follows:

- a) The main steam and hot reheat steam power operated pressure relief valves will be tested by exercising the relief.
- b) The six hot reheat steam bypass valves will be tested by exercising each valve to ensure freedom of movement.
- c) The main steam bypass valves will be tested for operability by cycling the valves.

The main steam bypass valves divert up to 77% steam flow (via desuperheaters) to the bypass flash tank on turbine trip or loop isolation, so that the steam is available for driving helium circulators, boiler feed pump turbines, etc. The main steam power operated relief valves divert the remaining steam flow to atmosphere.

The six hot reheat steam bypass valves and the power operated pressure relief valve ensure a continuous steam flow path from the helium circulators for decay heat removal.

The tests required on the above valves will demonstrate that each valve will function properly. Test frequency is considered adequate for assuring valve operability at all times .

Specification SR 5.3.4 - Safe Shutdown Cooling Valves,Surveillance

Those valves that are pneumatically, hydraulically, or electrically operated, that are required for actuation of the Safe Shutdown Cooling mode of operation, shall be tested

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annually, or at the next scheduled plant shutdown if these valves have not been tested during the previous year.

In addition, the above test shall include the normally closed check valves which are required to open for actuation of the Safe Shutdown Cooling mode of operation, when such testing is practical.

Basis for Specification SR 5.3.4

The Safe Shutdown Cooling mode of operation utilizes systems or portions of systems that are in use during normal plant operation. In many cases, those valves required to initiate Safe Shutdown Cooling are not called upon to function during normal operation of the plant, except to stand fully closed or open.

Testing of these valves will assure their operation if called upon to initiate the Safe Shutdown Cooling mode of operation.

During reactor operation, the instrumentation required to monitor and control the Safe-Shutdown mode of cooling is normally in use and any malfunction would be immediately brought to the attention of the operator. That instrumentation not normally in use is tested at intervals specified by other surveillance requirements in this Technical Specification.

Safe Shutdown Cooling, the systems or portions of systems involved, are discussed in Sections 10.3.9 and 10.3.10 of the FSAR and are represented in FSAR Figure 10.3-4.

Valve testing will include, as applicable, full stroking each valve, or an observation that the valve disc travels from the valve normal operating position to the position required

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to perform the safety function, an observation that the remote position indicators accurately reflect actual valve position, and a measurement of the full stroke time for the hydraulically actuated automatic valves.

* Specification SR 5.3.5 - Hydraulic Power System Surveillance Requirements

The pressure indicators and low pressure alarms on the hydraulic oil accumulators pressurizing gas and on the hydraulic power supply lines shall be functionally tested once every three months and calibrated once per year.

Basis for Specification SR 5.3.5

The hydraulic power system is a normally operating system. Malfunctions in this system will normally be detected by failure of the hydraulic oil pumps or hydraulic oil accumulators to maintain a supply of hydraulic oil at or above 2500 psig. Functional tests and calibrations of the pressure indicators and low pressure alarms on the above basis will assure the actuation of these alarms upon a malfunction of the hydraulic power system which may compromise the capability of operating critical valves.

* Specification SR 5.3.6 - Instrument Air System - Surveillance Requirements

The pressure indicators and low pressure alarms on the instrument air receiver tanks and headers shall be functionally tested monthly and calibrated annually.

* NOT REVIEWED AS PART OF THIS SUBMITTAL.

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Specification SR 5.3.9 - Safety Valves, Surveillance

The steam generator superheater and reheater safety valves and the steam/water dump tank safety valves shall be tested at least once every five years to verify their set point.

Basis for Specification SR 5.3.9

The safety valves protect the integrity of the steam generators, which are part of the reactor coolant boundary, and of the dump tank, which may contain radioactive fluids. Testing the safety valve set points will assure that the pressure within the equipment remains within design limits.

When practical, testing of the safety valves will be scheduled during the surveillance interval so that testing of one (or more) safety valve(s) of similar type and operating conditions several times during the interval will provide additional confidence in safety valve reliability and adequate overpressure protection.

Specification SR 5.3.10 - Secondary Coolant System Instrumentation, Surveillance

The secondary coolant reheat steam instrumentation used

- a) for control and indication of emergency condensate flow to the reheaters and reheater backpressure, in case of safe shutdown cooling,
- b) to automatically open the reheater discharge bypass on high pressure, and
- c) to monitor reheater discharge bypass temperature, reheater inlet temperature and strainer pressure drop, and circulator

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protective screen pressure drop, shall be functionally tested and calibrated annually, or at the next scheduled plant shutdown if such surveillance was not performed during the previous year.

Basis for Specification SR 5.3.10

The frequency specified for surveillance of the above instrumentation will assure that they perform their expected automatic actions, and that the operator will be provided with accurate information which he can use for safe shutdown cooling or to avoid abnormal operation of the steam generator reheaters, the circulator steam turbine or the reheater discharge bypass.