

FORT ST. VRAIN

INSERVICE INSPECTION AND TESTING

PROPOSED

TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

FOR THE

PRIMARY COOLANT SYSTEM

HELIUM CIRCULATORS

8004030131

5.2-15

Specification SR 5.2.17 - Helium Circulator Pelton Wheels

DELETE SPECIFICATION SR 5.2.17 IN ITS ENTIRETY

Specification SR 5.2.18 - Helium Circulators, Surveillance

At the time of the first main turbine generator overhaul, one helium circulator unit shall be removed in its entirety from the PCRV and thoroughly inspected for signs of abnormal wear or component degradation.

Such inspection shall include examination of bearing surfaces, seal surfaces, brake system, buffer seal system, and labyrinth seals.

The helium circulator compressor wheel rotor, turbine wheel, and Pelton wheel shall be inspected for both surface and subsurface defects in accordance with the appropriate methods, procedures, and associated acceptance criteria specified for Class I components in Article NB-2500, Section III, ASME Code.

Following the first complete helium circulator inspection, a previously uninspected helium circulator shall be removed and inspected as described below at approximately ten year intervals (allowing a \pm 25 percent variation of the interval), preferably in conjunction with a regularly scheduled turbine generator overhaul.

The helium circulator compressor wheel rotor, turbine wheel and Pelton wheel shall be inspected as specified above. Other helium circulator components, accessible without further disassembly than required to inspect these wheels, shall be visually examined.

5.2-16

Results of these examinations shall be submitted to the NRC staff for review and shall be evaluated to determine the need for scheduling additional future inspections.

Basis for Specification SR 5.2.18

Experience with the operation of single stage steam turbines as prime movers is common throughout industry.

Once such a machine is running satisfactorily, little or no wear occurs to it.

Unlike most designs of emergency systems of conventional nuclear power plants, the components of the Safe Shutdown System of the Fort St. Vrain plant are utilized and operated during normal operation of the plant. This includes the helium circulators.

The performance of the helium circulators is continuously monitored during operation, i.e. instruments are provided with the capability to measure compressor differential pressure and flow, bearing temperature, bearing water temperature and flow, buffer helium flow, and shaft speed and vibration.

Examination at the time of the first turbine generator overhaul, and at approximately 10-year intervals thereafter, is sufficient to monitor the condition of the helium circulator. The first turbine generator "tear-down" or overhaul usually occurs after one year running to check the total assembly. Only checks of components are performed during subsequent turbine generator overhauls.

The helium compressor and steam turbine blading should experience minimal wear in its running environment, and, with this

5.2-17

length of service before inspection, will have undergone sufficient stress cycling to accurately indicate service life.

Specification SR 5.2.19 - IACM Diesel-Driven Pumps, Surveillance

DELETE SPECIFICATION SR 5.2.19 IN ITS ENTIRETY

5.2-25

Specification SR 5.2.27 - Helium Shutoff Valves, Surveillance

Proper closure of the helium shutoff valves shall be monitored annually, or at the next scheduled plant shutdown if such monitoring has not been performed during the previous year.

Basis for Specification SR 5.2.27

The helium shutoff valves are self actuated check valves which close when the corresponding circulators are shutdown or tripped. Simultaneous long term failure of both the circulator and its helium shutoff valve, under very degraded conditions of remaining plant equipment, could lead to a situation analogous to a loss of forced circulation accident, due to the open recirculation path between circulator outlet and inlet plenums.

Verification that the helium shutoff valves close properly will provide assurance that the residual heat removal capability would not be degraded by the malfunction of a helium shutoff valve.