

4.3 REACTOR COOLANT

Applicability: Applies to the surveillance requirements for the reactor coolant system

Objective: To determine the condition of the reactor coolant system and the operation of the safety devices related to it.

Specification: A. Neutron flux monitors shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitors shall be removed and tested at the first refueling outage to experimentally verify the calculated values of integrated neutron flux that are used to determine the NDTT from Figure 3.3.1.

B. Inservice inspection of ASME Code Class 1, Class 2 and Class 3 systems and components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR, Section 50.55a(g), except where specific written relief has been granted by the NRC pursuant to 10 CFR, Section 50.55a(g)(6)(i).

C. Inservice testing of ASME Code Class 1, Class 2 and Class 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR, Section 50.55a(g), except where specific written relief has been granted by the NRC pursuant to 10 CFR, Section 50.55a(g)(6)(i).

D. A visual examination for leaks shall be made with the reactor coolant system at pressure during each scheduled refueling outage or after major repairs have been made to the reactor coolant system in accordance with Article 5000, Section XI. The requirements of specification 3.3.A shall be met during the test.

E. Each replacement safety valve or valve that has been repaired shall be tested in accordance with subsection IWV-3510 of Section XI of the ASME Boiler and Pressure Vessel Code. Setpoints shall be as follows:

<u>Number of Valves</u>	<u>Set Point (psig)</u>
4	1212 $\pm$ 12
4	1221 $\pm$ 12
4	1230 $\pm$ 12
4	1239 $\pm$ 12

F. A sample of reactor coolant shall be analyzed at least every 72 hours for the purpose of determining the content of the chloride ion and to check the conductivity.

G. Primary Coolant System Pressure Isolation Valves

Specification:

- i. Periodic leakage testing (a) on each valve listed in table 4.3.1 shall be accomplished prior to exceeding 600 psig reactor pressure every time the plant is placed in the cold shutdown condition for refueling, each time the plant is placed in a cold shutdown condition for 72 hours if testing has not been accomplished in the preceeding 9 months, and prior to returning the valve to service after maintenance, repair or replacement work is performed.

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- (a) To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if accomplished in accordance with approved procedures and supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.

Bases:

Numerous data are available relating integrated flux and the change in Nil-Ductility Transition Temperature (NDTT) in various steels. The base metal has been demonstrated to be relatively insensitive to neutron irradiation (see Expected NDTT changes in FDSAR Table IV-1-1, and Figures IV-2-9 and IV-2-10). The most conservative data has been used in Specification 3.3. The integrated flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. The measurements of the neutron flux at the vessel wall will be used to check and if necessary correct, the calculated data to determine an accurate flux. From this a conservative NDT temperature can be determined. Since no shift will occur until an integrated flux of  $10^{17}$  nvt is reached, the confirmation can be made long before an NDTT shift would occur.

The inspection program will reveal problem areas should they occur, before a leak develops. In addition, extensive visual inspection for leaks will be made on critical systems. Oyster Creek was designed and constructed prior to the existence of ASME Section XI. For this reason, the degree of access required by ASME Section XI is not generally available and will be addressed as "requests for relief" in accordance with 10 CFR 50.55a(g).

Experience in safety valve operation shows testing in accordance with Section XI of the ASME Boiler and Pressure Vessel Code is adequate to detect failures or deterioration. The tolerance value is specified in Section I of the ASME Code at +1% of design pressure. An analysis has been performed which shows that with all safety valves set 12 psig higher the safety limit of 1375 psig is not exceeded.

Conductivity instruments continuously monitor the reactor coolant. Experience indicates that a check of the conductivity instrumentation at least every 72 hours is adequate to ensure accurate readings. The reactor water sample will also be used to determine the chloride ion content to assure that the limits of 3.3.E are not exceeded. The chloride ion content will not change rapidly over a period of several days; therefore, the sampling frequency is adequate.

TABLE 4.3.1

PRIMARY COOLANT SYSTEM PRESSURE ISOLATION VALVES

<u>System</u>	<u>Valve No.</u>	<u>Maximum (a) Allowable Leakage</u>
Core Spray System 1	NZ02A	5.0 GPM
	NZ02C	5.0 GPM
Core Spray System 2	NZ02B	5.0 GPM
	NZ02D	5.0 GPM

Footnote:

- (a)
1. Leakage rates less than or equal to 1.0 gpm are considered acceptable.
  2. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered acceptable if the latest measured rate has not exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.
  3. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered unacceptable if the latest measured rate exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.
  4. Leakage rates greater than 5.0 gpm are considered unacceptable.
  5. Test differential pressure shall not be less than 150 psid.

NRC Order dated April 20, 1981