OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 1 GPM total primary-to-secondary leakage through all steam generators not isolated from the Reactor Coolant System and 500 gallons per day through any one steam generator not isolated from the Reactor Coolant System,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 30 GPM CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. Leakage from any Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the above limit, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours.

b. Monitoring the containment sump inventory and discharge at least once per 12 hours.

c. Measurement of the CONTROLLED LEAKAGE to the reactor coolant pump seals when the Reactor Coolant System pressure is 2235 ± 20 psig at least once per 31 days with the modulating valve fully open. The provisions of Specification 4.0.4 are not applicable for entry into MODE 4.

d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours.

e. Monitoring the reactor head flange leak off temperature at least once per 24 hours.

4.4.6.2.2 Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be individually demonstrated OPERABLE by verifying leakage* to be within its limit:

a. Prior to entering MODE 2 after each refueling.

b. Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 72 hours or more and if leakage testing has not been performed in the previous 9 months, and

c. Prior to returning the valve to service following maintenance, repair or replacement work on the valve.

*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.

TABLE 3.4.1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

System	Valve No.	Maximum (a)(b) Allowable Leakage
Low Head Safety Injection to Cold Legs		
Loop 1	2-SI-92	≤ 5 gpm
	2-SI-91	≤ 5 gpm
Loop 2	2-SI-100	≤ 5 gpm
	2-SI-99	≤ 5 gpm
Loop 3	2-SI-106	≤ 5 gpm
	2-SI-105	≤ 5 gpm

Footnotes:

(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.

(b) Minimum differential test pressure shall not be less than 150 psid.

ATTACHMENT 2

DISCUSSION OF PROPOSED TECHNICAL SPECIFICATION CHANGES

On April 20, 1981, Vepco received an "Order for Modification of License Concerning Primary Coolant System Pressure Isolation Valves" which revised the Technical Specification 3.4.6.2 for North Anna Unit 1. This change was issued by the NRC Staff to require surveillance of valves with WASH 1400 Event V valve configurations. As a result of this Licensing Action, North Anna Unit 2 Specification 3.4.6.2 for Reactor Coolant System Pressure Valves which was issued August 21, 1980 now becomes more extensive than required for the Event V concern.

The valves identified as being of major concern in the NRC Safety Evaluation Report of April 20, 1981 are on the Low Pressure Safety Injection system (LPSI) to the cold legs. The LPSI is connected to the cold leg side of each of the three primary coolant loops. Each cold leg branch of the LPSI has two check valves in a series configuration of concern with all three branches leading to parallel MOV's outside containment. The high pressure/low pressure interface is on the upstream side of the MOV's. No other valve configurations of concern were identified as existing in the plant in this evaluation. North Anna Unit 2 valve configurations are identical to the North Anna Unit 1 valve configurations, therefore, only the LPSI to the cold legs should be of concern for North Anna Unit 2.

Additional justification for only testing LPSI to the cold leg valves:

The high pressure safety injection flow paths (isolation valves 2-SI-85, 2-SI-93, 2-SI-107, 2-SI-119, MOV-2836, MOV-2869A and MOV-2869B) are protected from a intersystem LOCA by high pressure piping back to the source of the high pressure (charging pumps). These flow paths have a lower probability of overpressurization and less severe consequences if a intersystem LOCA were to occur. These valves are Type C tested in accordance with 10 CFR 50, Appendix J.

Leakage through the Boron Injection Tank outlet valves (MOV-2867C and MOV-2867D) is not of consequence to the intersystem LOCA concern because there is no high/low pressure interface. These valves are Type C tested in accordance with 10 CFR 50, Appendix J.

Leakage from the low pressure safety injection from the hot legs (isolation valves 2-SI-126 and 2-SI-128) is not of intersystem LOCA concern. Isolation valves 2-SI-126 and 2-SI-128 are the third check valves in series in the low head safety injection line to the hot legs. Only two check valves are required for redundancy in containment. In addition to these valves being the third check valves in series, the two MOV's outside containment (MOV 2890A and MOV 2890B) are administratively kept closed. These check valves and the MOV's are Type C tested in accordance with 10 CFR 50, Appendix J.

Leakage past the accumulator discharge isolation valves (2-SI-151, 2-SI-153, 2-SI-168, 2-SI-170, 2-SI-185 and 2-SI-187), would result in an increase in accumulator level which would be alarmed and rapidly identified in the control room. This system is inside containment and does not create a LOCA outside containment. This flow path has a lower probability of overpressurization and less severe consequences if a intersystem LOCA were to occur. These valves are functionally tested each refueling in accordance with approved Station Procedures.

The residual heat removal isolation valves (MOV-2720A and MOV-2720B) which are located in the containment should not be in Table 3.4-1. Interlocks are not provided or required on the isolation valves in the RHR discharge lines to the RCS. The valves are under administrative control to be shut whenever the RCS pressure is greater than the RHR design pressure. In addition, check valves are provided downstream of the MOV's to provide further isolation of the RHR system from the RCS. Periodic tests of these check valves ensure their operability. Also, there are pressure transmitters in the RHR System and if there was leakage through these valves, it would be indicated by a increase in RHR system pressure. Isolation valves MOV-2700 and MOV-2701 also are located inside containment and thus do not create a LOCA outside containment.

Isolation valves MOV-2890A and MOV-2890B from low pressure safety injection to hot legs are administratively kept closed. Following a LOCA these valves would be opened after 16 hours into the LOCA. By this time the RCS would be at shutdown pressure.

In addition, all the RCS pressure isolation valves presently in Table 3.4-1 are Type C tested as per Technical Specification 3/4.6.3, Table 3.6-1 except for the accumulator discharge check valves and the residual heat removal isolation valves. The Accumulator discharge check valves are periodically leak checked prior to going above Mode 5. This ensures these valves are periodically leak tested.

The probability of occurrence or the consequences of a malfunction of equipment important to safety and previously evaluated in the FSAR is not increased because two check valves in series between the high pressure primary coolant system and the low pressure injection system piping is sufficient to meet the requirements for Category I Containment Isolation Valves as specified in the UFSAR.

The possibility of a different type of accident or malfunction than was previously evaluated in the UFSAR has not been created because periodic leakage testing of the check valves in these lines will be an effective measure for preventing an intersystem LOCA.

The margin of safety as described in the BASES section of any part of the Technical Specifications is not reduced because the check valves in these lines satisfy the seismic design criteria for safety related systems and continue to provide containment integrity. Making North Anna Unit 2 Technical Specification 3.4.6.2 identical to the North Anna Unit 1 specification does not reduce any margin of safety because North Anna Units 1 and 2 are of identical design, therefore, they should have the same Event V concerns.