ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATIONS
MARK-UP

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.3.2 Reactor coolant system leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE.

b. 5 gpm UNIDENTIFIED LEAKAGE.

c. 25 gpm total leakage averaged over any 24-hour period.

d. 1 gpm leakage at a reactor coolant system pressure of 1040 ± 10 psig from any reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1.

ADD INSERT "A" →

~~e. 2 gpm increase in UNIDENTIFIED LEAKAGE within any 4-hour period.~~

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

b. With any reactor coolant system leakage greater than the limits in b and/or c, above, reduce the leakage rate to within the limits within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

c. With any reactor coolant system pressure isolation valve leakage greater than the above limit, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least one other closed manual, deactivated automatic, or check* valve, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

d. With one or more of the high/low pressure interface valve leakage pressure monitors shown in Table 3.4.3.2-2 inoperable, restore the inoperable monitor(s) to OPERABLE status within 7 days or verify the pressure to be less than the alarm setpoint at least once per 12 hours; restore the inoperable monitor(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

~~e. With any reactor coolant system UNIDENTIFIED LEAKAGE increase greater than 2 gpm within any 4-hour period, identify the source of leakage increase as not service sensitive Type 304 or 316 austenitic stainless steel within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.~~

ADD INSERT "B" →

*Which has been verified not to exceed the allowable leakage limit at the last refueling outage or after the last time the valve was disturbed, whichever is more recent.

Insert A

e. 2 gpm increase in UNIDENTIFIED LEAKAGE within any 24 hour period during OPERATIONAL CONDITION 1.

f. 2 gpm increase in UNIDENTIFIED LEAKAGE within any 4 hour period during OPERATIONAL CONDITIONS 2 and 3.

Insert B

e. In OPERATIONAL CONDITION 1, with any reactor coolant system UNIDENTIFIED LEAKAGE increase greater than 2 gpm within any 24 hour period, identify the source of leakage increase as not service sensitive Type 304 or 316 austenitic stainless steel within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

f. In OPERATIONAL CONDITIONS 2 and 3, with any reactor coolant system UNIDENTIFIED LEAKAGE increase greater than 2 gpm within any 4 hour period, identify the source of leakage increase as not service sensitive Type 304 or 316 austenitic stainless steel within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits by:

a. Monitoring the primary containment atmospheric gaseous radioactivity at least once per 4 hours,*

ADD INSERT "C"

~~b. Monitoring the primary containment sump flow rate at least once per 4 hours,~~

~~c. Monitoring the drywell floor drain sump level at least once per 4 hours, and~~

c. Monitoring the reactor vessel head flange leak detection system at least once per 24 hours.*

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1 shall be demonstrated OPERABLE by leak testing pursuant to Specification 4.0.5 and verifying the leakage of each valve to be within the specified limit:

a. At least once per 18 months, and

b. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3.

4.4.3.2.3 The high/low pressure interface valve leakage pressure monitors shall be demonstrated OPERABLE with alarm setpoints per Table 3.4.3.2-2 by performance of a:

a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and

b. CHANNEL CALIBRATION at least once per 18 months.

*Not a means of quantifying leakage.

** THE PROVISIONS of SPECIFICATION 4.0.2 ARE NOT APPLICABLE to the SURVEILLANCE REQUIREMENT IN OPERATIONAL CONDITION 1.

Insert C

b. Monitoring the primary containment sump flow rate at least once per 12 hours in OPERATIONAL CONDITION 1** and at least once per 4 hours in OPERATIONAL CONDITIONS 2 and 3,

c. Monitoring the drywell floor drain sump level at least once per 12 hours in OPERATIONAL CONDITION 1** and at least once per 4 hours in OPERATIONAL CONDITIONS 2 and 3, and

3/4.4.3 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.3.1 LEAKAGE DETECTION SYSTEMS

The RCS leakage detection systems required by this specification are provided to monitor and detect leakage from the reactor coolant pressure boundary. These detection systems are consistent with the recommendations of Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems", May 1973.

3/4.4.3.2 OPERATIONAL LEAKAGE

The allowable leakage rates from the reactor coolant system have been based on the predicted and experimentally observed behavior of cracks in pipes. The normally expected background leakage due to equipment design and the detection capability of the instrumentation for determining system leakage was also considered. The evidence obtained from experiments suggests that for leakage somewhat greater than that specified for UNIDENTIFIED LEAKAGE the probability is small that the imperfection or crack associated with such leakage would grow rapidly. However, in all cases, if the leakage rates exceed the values specified or the leakage is located and known to be PRESSURE BOUNDARY LEAKAGE, the reactor will be shutdown to allow further investigation and corrective action. Service sensitive reactor coolant system Type 304 and 316 austenitic stainless steel piping; i.e., those that are subject to high stress or that contain relatively stagnant, intermittent, or low flow fluids, requires additional surveillance and leakage limits. ← ADD INSERT "D"

The purpose of the RCS interface valves leakage pressure monitors (LPMs) is to provide assurance of the integrity of the Reactor Coolant System pressure isolation valves which form a high/low pressure boundary. The LPM is designed to alarm on increasing pressure on the low pressure side of the high/low pressure interface to provide indication to the operator of abnormal interface valve leakage.

The Surveillance Requirements for RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

3/4.4.4 CHEMISTRY

The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus the 0.2 ppm limit on chlorides is permitted during POWER OPERATION. During shutdown and refueling operations, the temperature necessary for stress corrosion to occur is not present so a 0.5 ppm concentration of chlorides is not considered harmful during these periods.

Insert D

The additional limit placed upon the rate of increase in UNIDENTIFIED LEAKAGE in OPERATIONAL CONDITION 1 meets the NRC Staff guidance in Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping". The applicability of the Generic Letter 88-01 limit to OPERATIONAL CONDITION 1 only ensures that the expected increases in UNIDENTIFIED LEAKAGE experienced during reactor vessel heatup and pressurization during startup do not cause unwarranted entries into the applicable ACTION statement. The rate of increase in UNIDENTIFIED LEAKAGE limit in OPERATIONAL CONDITIONS 2 and 3 ensures that the above service sensitive reactor coolant system Type 304 and 316 austenitic stainless steel piping is monitored during reactor startup prior to reactor vessel heatup and pressurization. The surveillance interval for determination of UNIDENTIFIED LEAKAGE in OPERATIONAL CONDITION 1 meets the guidance in Supplement 1 to Generic Letter 88-01.

ENCLOSURE 3

TECHNICAL SPECIFICATION
CHANGE PAGES

Insert/Remove Summary

The following is an insert/remove summary for the proposed TS amendment. Pages marked with a asterisk (*) are overleaf pages.

Remove	Insert
3/4 4-9*	3/4 4-9*
3/4 4-10	3/4 4-10
3/4 4-11	3/4 4-11
3/4 4-12*	3/4 4-11a
B 3/4 4-2	3/4 4-11b*
B 3/4 4-2a*	3/4 4-12*
	B 3/4 4-2
	B 3/4 4-2a*

REACTOR COOLANT SYSTEM

3/4.4.3 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.3.1 The following reactor coolant system leakage detection systems shall be OPERABLE:

a. The primary containment atmosphere gaseous radioactivity monitoring system channel.

b. The primary containment sump flow monitoring system consisting of:

1. The drywell floor drain sump level, flow and pump-run-time system, and

2. The drywell equipment drain sump level, flow and pump-run-time system.

c. The drywell floor drain sump level monitoring system.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With only two of the above required leakage detection systems OPERABLE, restore at least one inoperable detection system to OPERABLE status within 30 days; when the required gaseous radioactive monitoring system is inoperable, operation may continue for up to 30 days provided grab samples of the containment atmosphere are obtained and analyzed at least once per 24 hours, otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.1 The reactor coolant system leakage detection systems shall be demonstrated OPERABLE by:

a. Primary containment atmosphere gaseous monitoring systems-performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

b. Primary containment sump flow and drywell floor drain sump level monitoring systems-performance of a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION TEST at least once per 18 months.

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.3.2 Reactor coolant system leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE.

b. 5 gpm UNIDENTIFIED LEAKAGE.

c. 25 gpm total leakage averaged over any 24-hour period.

d. 1 gpm leakage at a reactor coolant system pressure of 1040 ± 10 psig from any reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1.

e. 2 gpm increase in UNIDENTIFIED LEAKAGE within any 24 hour period during OPERATIONAL CONDITION 1.

f. 2 gpm increase in UNIDENTIFIED LEAKAGE within any 4 hour period during OPERATIONAL CONDITIONS 2 and 3.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

b. With any reactor coolant system leakage greater than the limits in b and/or c, above, reduce the leakage rate to within the limits within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

c. With any reactor coolant system pressure isolation valve leakage greater than the above limit, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least one other closed manual, deactivated automatic, or check* valve or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

d. With one or more of the high/low pressure interface valve leakage pressure monitors shown in Table 3.4.3.2-2 inoperable, restore the inoperable monitor(s) to OPERABLE status within 7 days or verify the pressure to be less than the alarm setpoint at least once per 12 hours, restore the inoperable monitor(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

*Which has been verified not to exceed the allowable leakage limit at the last refueling outage or after the last time the valve was disturbed, whichever is more recent.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

e. In OPERATIONAL CONDITION 1, with any reactor coolant system UNIDENTIFIED LEAKAGE increase greater than 2 gpm within any 24 hour period, identify the source of leakage increase as not service sensitive Type 304 or 316 austenitic stainless steel within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

f. In OPERATIONAL CONDITIONS 2 and 3, with any reactor coolant system UNIDENTIFIED LEAKAGE increase greater than 2 gpm within any 4 hour period, identify the source of leakage increase as not service sensitive Type 304 or 316 austenitic stainless steel within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits by:

a. Monitoring the primary containment atmospheric gaseous radioactivity at least once per 4 hours,*

b. Monitoring the primary containment sump flow rate at least once per 12 hours in OPERATIONAL CONDITION 1** and at least once per 4 hours in OPERATIONAL CONDITIONS 2 and 3.

c. Monitoring the drywell floor drain sump level at least once per 12 hours**, in OPERATIONAL CONDITION 1** and at least once per 4 hours in OPERATIONAL CONDITIONS 2 and 3. and

d. Monitoring the reactor vessel head flange leak detection system at least once per 24 hours.*

*Not a means of quantifying leakage.
**The provisions of Specification 4.0.2 are not applicable to the surveillance requirement in OPERATIONAL CONDITION 1.

SURVEILLANCE REQUIREMENTS (Continued)

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1 shall be demonstrated OPERABLE by leak testing pursuant to Specification 4.0.5 and verifying the leakage of each valve to be within the specified limit:

a. At least once per 18 months, and

b. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3.

4.4.3.2.3 The high/low pressure interface valve leakage pressure monitors shall be demonstrated OPERABLE with alarm setpoints per Table 3.4.3.2-2 by performance of a:

a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and

b. CHANNEL CALIBRATION at least once per 18 months.

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TABLE 3.4.3.2-1
REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

	VALVE NUMBER	VALVE DESCRIPTION
1.	RHR System	
	E11-F015A	LPCI Loop A Injection Isolation Valve
	E11-F015B	LPCI Loop B Injection Isolation Valve
	E11-F050A	LPCI Loop A Injection Line Testable Check Valve
	E11-F050B	LPCI Loop B Injection Line Testable Check Valve
	E11-F008	Shutdown Cooling RPV Suction Outboard Isolation Valve
	E11-F009	Shutdown Cooling RPV Suction Inboard Isolation Valve
	E11-F608	Shutdown Cooling Suction Isolation Valve
2.	Core Spray System	
	E21-F005A	Loop A Inboard Isolation Valve
	E21-F005B	Loop B Inboard Isolation Valve
	E21-F006A	Loop A Containment Check Valve
	E21-F006B	Loop B Containment Check Valve
3.	High Pressure Coolant Injection System	
	E41-F007	Pump Discharge Outboard Isolation Valve
	E41-F006	Pump Discharge Inboard Isolation Valve
4.	Reactor Core Isolation Cooling System	
	E51-F012	Pump Discharge Isolation Valve
	E51-F013	Pump Discharge to Feedwater Header Isolation Valve

TABLE 3.4.3.2-2
REACTOR COOLANT SYSTEM INTERFACE VALVES
LEAKAGE PRESSURE MONITORS

VALVE NUMBER	SYSTEM	ALARM SETPOINT (psig)
E11-F015A & B, E11-F050A & B	RHR LPCI	≤ 449
E11-F008, F009, F608	RHR Shutdown Cooling	≤ 135
E21-F005A & B, E21-F006A & B	Core Spray	≤ 452
E41-F006, F007	HPCI	≤ 71
E51-F012, F013	RCIC	≤ 71

3/4.4.3 REACTOR COOLANT SYSTEM LEAKAGE

3/4.4.3.1 LEAKAGE DETECTION SYSTEMS

The RCS leakage detection systems required by this specification are provided to monitor and detect leakage from the reactor coolant pressure boundary. These detection systems are consistent with the recommendations of Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems", May 1973.

3/4.4.3.2 OPERATIONAL LEAKAGE

The allowable leakage rates from the reactor coolant system have been based on the predicted and experimentally observed behavior of cracks in pipes. The normally expected background leakage due to equipment design and the detection capability of the instrumentation for determining system leakage was also considered. The evidence obtained from experiments suggests that for leakage somewhat greater than that specified for UNIDENTIFIED LEAKAGE the probability is small that the imperfection or crack associated with such leakage would grow rapidly. However, in all cases, if the leakage rates exceed the values specified or the leakage is located and known to be PRESSURE BOUNDARY LEAKAGE, the reactor will be shutdown to allow further investigation and corrective action. Service sensitive reactor coolant system Type 304 and 316 austenitic stainless steel piping; i.e., those that are subject to high stress or that contain relatively stagnant, intermittent, or low flow fluids, requires additional surveillance and leakage limits. The additional limit placed upon the rate of increase in UNIDENTIFIED LEAKAGE in OPERATIONAL CONDITION 1 meets the NRC Staff guidance in Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping". The applicability of the Generic Letter 88-01 limit to OPERATIONAL CONDITION 1 only ensures that the expected increases in UNIDENTIFIED LEAKAGE experienced during reactor vessel heatup and pressurization during startup do not cause unwarranted entries into the applicable ACTION statement. The rate of increase in UNIDENTIFIED LFAKAGE limit in OPERATIONAL CONDITIONS 2 and 3 ensures that the above service sensitive reactor coolant system Type 304 and 316 austenitic stainless steel piping is monitored during reactor startup prior to reactor vessel heatup and pressurization. The surveillance interval for determination of UNIDENTIFIED LEAKAGE in OPERATIONAL CONDITION 1 meets the guidance in Supplement 1 to Generic Letter 88-01.

The purpose of the RCS interface valves leakage pressure monitors (LPMs) is to provide assurance of the integrity of the Reactor Coolant System pressure isolation valves which form a high/low pressure boundary. The LPM is designed to alarm on increasing pressure on the low pressure side of the high/low pressure interface to provide indication to the operator of abnormal interface valve leakage.

The Surveillance Requirements for RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

3/4.4.4 CHEMISTRY

The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the

CHEMISTRY (Continued)

stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus the 0.2 ppm limit on chlorides is permitted during POWER OPERATION. During shutdown and refueling operations, the temperature necessary for stress corrosion to occur is not present so a 0.5 ppm concentration of chlorides is not considered harmful during these periods. Conductivity measurements are required on a continuous basis since changes in this parameter are an indication of abnormal conditions. When the conductivity is within limits, the pH, chlorides and other impurities affecting conductivity must also be within their acceptable limits. With the conductivity meter inoperable, additional samples must be analyzed to ensure that the chlorides are not exceeding the limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.