NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER: 50-305

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DESCRIPTION: Ltr notarized 1-4-77 request for Proposed AMDT #23 to the Tech Specs& trans the following:

(2P)

PLANT NAME: Kewaunee

ENCLOSURE: Proposed Amdt #23 to the Tech Specs conisists of revised & addl pages to the surveillance testing requirements of the containment system.....

(40 cys encl rec'd)

(20P)

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ACKNOWLEDGED

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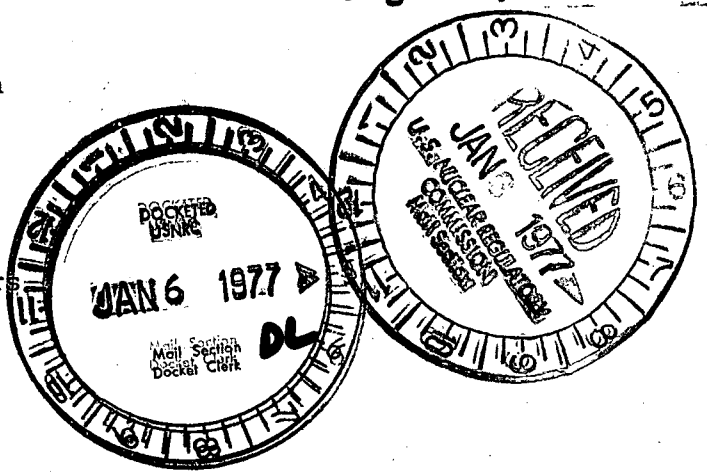
P.O. Box 1200, Green Bay, Wisconsin 54305

January 4, 1977

Regulatory Docket File



Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

ATTN: Mr. A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Gentlemen:

REF: Docket 50-305
Operating License DPR-43
10 CFR 50 Appendix J

On November 8, 1976, we stated in a letter to Mr. A. Schwencer that we would submit a request for amendment to the Operating License and the Technical Specifications plus a request for exemption to the requirements of 10 CFR 50 Appendix J.

Please find attached 40 copies of proposed Amendment No. 23 to the Technical Specifications and Operating License for the Kewaunee Plant. This proposed amendment modifies the surveillance testing requirements of the containment system by referencing 10 CFR 50 Appendix J and specifying the variations from requirements of 10 CFR 50 Appendix J which are applicable for the Kewaunee Plant.

The preparation of this proposed amendment required a review of 10 CFR 50 Appendix J requirements and an evaluation of the design of the Kewaunee Plant containment system in light of Appendix J. This evaluation and review indicated revision to 10 CFR 50 Appendix J would be of benefit to the health and safety of the public and also could reduce needless expenses which ultimately are passed on to the public while maintaining at least the same level of protection provided by the present Appendix J. It would be doubtful that a petition for rule making under the provisions of 10 CFR 50 2.802 would be resolved in the time frame which we desire resolution to containment surveillance listing requirement issue for the Kewaunee Plant. We, therefore, request that an exemption to 10 CFR 50 Appendix J requirements be granted as allowed by 10 CFR 50.12. The specific exemption issues are specified in Section TS 4.4.b.1 of the Proposed Amendment No. 23.

The "Evaluation of the Containment Leak Testing Program for the Kewaunee Nuclear Generating Plant" which was attached to your letter stated that a radiological analysis should be performed to demonstrate that the liquid leakage limit does not result in doses greater than the 10 CFR Part 100 guidelines. That analysis has been provided for the Residual Heat Removal System leakage in Section 14.3.7. As a result of that analysis the limit on RHR System leakage was established in the Technical Specification as 2 gallons per hour per train. The systems which will be subject to containment sump water and comparable to RHR leakage are the Safety Injection System and the Internal Containment Spray System, each of which would be allowed a 1 gph leak rate. The total leakage of containment sump water would then be 6 gph to the auxiliary building special ventilation zone area. The resultant increase in off site dose due to the increased assumed leakage would not exceed 10 CFR 100 guidelines.

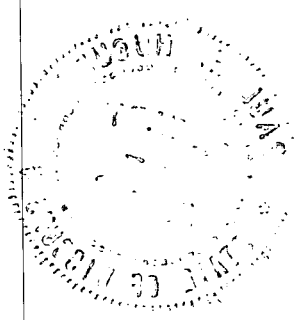
Very truly yours,

E. W. James
Senior Vice President
Power Supply & Engineering

EWJ:sna
Enc.
Subscribed and Sworn to
Before Me This 4TH Day
of JANUARY 1977

P.E. Hugnet
Notary Public, State of Wisconsin

My Commission Expires
9-13-79



The specific exemptions requested for the Kewaunee Plant in the attached Proposed Amendment to the Operating License and Technical Specifications are:

1. Safeguard systems which are designed to be operated post accident to maintain a safe condition should be subject to an integrate test which is consistent with the functional conditions of such system post accident. The present requirement of 10 CFR 50 Appendix J necessitates the performance of Type C test on safeguard system valves nearest the penetration when those valves will remain open post accident. Such testing is not meaningful and clearly does not provide for the protection of the public. Each of the safeguard systems which are designed to remain intact post accident and provide cooling to either the containment vessel or the reactor are extensions of the containment themselves and are designed for pressures well in excess (at least a factor of 3 and in certain cases a factor of 60) of the peak containment pressure. We propose that these systems be inspected at pressure at least equivalent to the conditions which would exist post accident in lieu of performance of Type C tests on valves which will not be closed post accident. The penetrations associated with these safeguard systems are noted on Table TS 4.4-1 and the inspection conditions are specified in proposed Specification 4.4.c.

2. Table TS 4.4-1 notes that the containment vacuum breakers with their "O" ring seals are tested with pressure applied in the opposite direction to the pressure which would exist post LOCA. All other penetrations which are subject to Type B or C tests have pressure applied in the same direction as that which would exist post LOCA.

3. The integrated leak rate test requires a number of days to perform the pressurization, stabilization and leak rate measurement. Appendix J requires that a Type "A" test be performed prior to any repairs or Type "B" or "C" tests. Then if the Type "A" leakage is excessive, repairs are required and possibly a rerun of the Type "A" test may be necessary. We believe the objective is to assure that the leak rate is within the limits of 10 CFR 50 Appendix J and the accident analysis and that leak paths requiring repair are identified and repaired. Our proposed specification 4.4.b.1.B would accomplish these objectives plus it would provide assurance that the type "A" test would not have to be performed twice during the same refueling outage. The pre-repair leak rate is determinable by the relationship provided in the proposed specification 4.4.b.1.B and would be employed to evaluate conformance to Appendix J in regards to L_{tm} limits. This proposed order of performing Appendix J tests would minimize cost to the public and provides the necessary information desired by Appendix J.

WISCONSIN PUBLIC SERVICE CORPORATION

P.O. Box 1200, Green Bay, Wisconsin 54305

January 4, 1977

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

ATTN: Mr. A. Schwencer, Chief
Operating Reactors Branch #1
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160

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Very truly yours,

E. W. James
Senior Vice President
Power Supply & Engineering

EWJ:sna
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Subscribed and Sworn to
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of JANUARY 1977

Notary Public, State of Wisconsin

My Commission Expires
9-13-79

4.4 CONTAINMENT SYSTEM TESTS

Applicability

Applies to integrity testing of the steel containment, shield building, auxiliary building special ventilation zone, and the associated systems including isolation valves.

Objective

To assure that potential leakage from containment to the environs following a hypothetical loss of coolant accident is held within values assumed in the accident analysis.

Specification

a. Containment Leakage Tests

Periodic and post-operational integrated leakage rate tests of the containment shall be performed in accordance with the requirements of 10CFR50, Appendix J. "Reactor Containment Leakage Testing for Water Cooled Power Reactors," except as modified by 4.4.b. 23

Specific parameters included in 10CFR50 Appendix J have the following values for the Kewaunee Plant:

1. The calculated peak containment internal pressure for the design basis accident is 42.2 psig. The pre-operational integrated leak test was performed at 46 psig. The value of 46 psig shall be used for P_a.
2. The containment vessel reduced test pressure for periodic Type A tests, P_t, is 23 psig.
3. The design basis accident leakage rate at pressure P_a, L_d, is 1.0 weight percent of contained air per 24 hours.

4. The maximum allowable leakage rate at pressure P_a in weight percent per 24 hours, L_a, is 0.5.

5. The maximum allowed leakage rate, L_t, at test pressure, P_t, as a result of the Pre-operational Type A test is 0.07025% per day.

b. Variations from 10CFR50 Appendix J

1. Specific exemptions to 10CFR50 Appendix J requirements.

A. Table TS 4.4-1 lists all penetrations of the containment, the penetration category, the type of leak test required and the method of test.

B. Type B and C tests may be performed prior to performance of Type A periodic tests. Leak rate measurements prior to and following any repair work on penetrations accomplished in preparation for a Type A test shall be employed in the evaluation of total measured leakage from containment, L_{tm}, conformance to the allowed maximum leakage limits of Specification 4.4.a.5. The leakage reduction due to repairs to the penetrations, $L_{\Delta t}$, shall be added to the measured leakage at P_t to determine L_{tm} for the purpose of evaluating conformance to 10CFR50 Appendix J Section III.4.b. 23

Where:

$L_{\Delta t} = L_{\Delta BC} \ (P_t/P_a)$

$L_{\Delta BC}$ = Leakage prior to any repairs to penetrations - Leakage following repairs (both leakages are measured at a pressure in excess of P_a).

C. Testing of the personnel airlocks may be accomplished by either:

i. pressurization between the air lock doors, or

ii. pressurization between the double seals

2. Requirements in excess of 10 CFR 50 Appendix J

A. The equipment hatch and the fuel transfer tube flange shall also be tested following each closure.

B. Penetrations which extend beyond the Special Ventilation Zone of the Auxiliary Building or Annulus as denoted on Table TS 4.4-1 as to the exterior bypass the second containment. If the combined leak rate from tests of these penetrations, as determined by the sum of the most recent results for each penetration, exceeds 0.01 L_a, repairs and retest shall be performed to demonstrate reduction of the combined leak rate to this value.

C. Penetration which extend to the Special Ventilation Zone of the Auxiliary Building as denoted on Table TS 4.4-1 as P-ABSVZ or E-ABSVZ will leak to the SV Zone. If the combined leak rate from tests of these penetrations, as determined by the sum of the most recent results of each penetration, exceeds 0.10 L_a, repair and retest shall be performed to demonstrate reduction of the combined leak rate to this value. 23

c. Safeguard Systems Operating Post Accident

Table TS 4.4-1 denotes the penetrations associated with safeguard systems which will be operated during and following an accident. These systems will be used to cool the containment and the reactor core post accident. These systems are designed to remain intact post accident and in effect are an extension of the containment. The following surveillance will assure leak tightness of these systems.

1. Residual Heat Removal

A. Those portions of the Residual Heat Removal System external to the isolation valves at the Reactor Coolant System shall be hydrostatically tested in excess of 350 psig at each major refueling outage, or they shall be tested during their use in normal operation at least once between successive major refueling outages.

B. The total leakage from either train's piping shall not exceed two gallons per hour. Leakage shall be determined by visual inspection. Visible leakage that cannot be stopped at test conditions shall be suitably measured to demonstrate compliance with this Specification.

C. Any repairs necessary to meet the specified leak rate shall be accomplished within seven days of resumption of power operation.

2. Safety Injection System (High Head)

A. Those portions of the Safety Injection System in service accident shall be hydrostatically tested by closure of the motor operated valves nearest the Reactor Coolant System and operation of the pumps on the minimum flow test line to refueling water storage tank. This test shall be performed during each major refueling outage.

B. The total leakage from the system piping shall not exceed one gallon per hour. Leakage shall be determined by visual inspection. Visible leakage that cannot be stopped at test conditions shall be suitably measured to demonstrate compliance with this Specification.

C. Any repairs necessary to meet the specified leak rate shall be accomplished prior to resumption of power operation. 23

3. Internal Containment Spray System

A. Those portions of the Internal Containment Spray System in service post accident shall be hydrostatically tested by closure of the manual isolation valves nearest the spray ring assembly and operation of the pumps on the 2" test line to the refueling water storage tank. This test shall be performed during each major refueling outage.

B. The total leakage from the system piping shall not exceed one gallon per hour. Leakage shall be determined by visual inspection. Visible leakage that cannot be stopped at test conditions shall be suitably measured to demonstrate compliance with this Specification.

C. Any repairs necessary to meet the specified leak rate shall be accomplished prior to resumption of power operation.

4. Chemical and Volume Control Charging System

A. The Chemical and Volume Control Charging System piping from the charging pump discharge to the Reactor Coolant System shall be inspected for leakage during the startup following each major refueling outage when the charging system is in service and the Reactor Coolant System is at normal temperature and pressure.

B. The total leakage from the system piping shall not exceed one gallon per hour. Leakage shall be determined by visual inspection. Visible leakage that cannot be stopped at test conditions shall be suitably measured to demonstrate compliance with this Specification.

C. Any repairs necessary to meet this specified leak rate shall be accomplished prior to resumption of power operation.

5. Component Cooling System

A. The Component Cooling System piping shall be inspected for leakage at each major refueling outage.

B. The total leakage from the system piping shall not exceed one gallon per hour. Leakage shall be determined by visual inspection. Conformance to the leakage limit shall be demonstrated by suitable measurement. 23

C. Any repair necessary to meet the specified leak rate shall be accomplished prior to resumption of power operation.

6. Service Water - Fan Coil Cooling System

A. The Service Water System piping for the fan coil coolers which are located within containment shall be inspected for leakage during each major refueling outage. The inspections shall be performed by closure of the fan coil cooler outlet isolation valve during normal operation of the service water supply system and visually inspecting the piping within containment.

B. The total leakage from the system piping within containment shall not exceed one gallon per hour.

C. Any repairs necessary to meet this specified leak rate shall be accomplished prior to resumption of power operation.

d. Shield Building Ventilation System

1. Periodic tests of the Shield Building Ventilation System shall be performed at every major refueling outage or at other times with a minimum frequency of once between successive major refueling outages.

2. Each redundant train shall be activated separately during these periodic tests to demonstrate its operability.

3. Each train shall be determined to be operable at the time of its periodic test if it produces measurable indicated vacuum in the annulus within two minutes after initiation of a simulated safety injection signal and obtains equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits.

4. Periodic surveillance and testing of the filter units of the system shall include the following:

A. At each major refueling outage filter units shall be visually inspected and shall be tested to demonstrate appropriate pressure drop and adequacy of heater output.

B. At intervals not to exceed the time between successive major refueling outages by more than six months, the efficiency of the absolute filters shall be demonstrated by a DOP test to be 99 percent or greater for particles larger than 0.3 microns, and the efficiency of the charcoal filters shall be demonstrated to be 97 percent or greater by a freon test.

C. One charcoal filter element or sample shall be removed after each five years of service and laboratory tested to demonstrate continued absorption capability.

e. Auxiliary Building Special Ventilation System

1. Periodic tests of the Auxiliary Building Special Ventilation System, including the door interlocks, shall be performed at each major refueling outage, or at other times with a minimum frequency of once between successive major refueling outages.

2. Each redundant train shall be tested separately during these periodic tests to demonstrate its operability. Test initiation shall be by simulated normal actuation signals.

3. Each system shall be determined to be operable at the time of periodic test if it starts with coincident isolation of the normal ventilation ducts and produces a measurable vacuum throughout the Special Ventilation Zone with respect to the outside atmosphere.

4. Periodic surveillance and testing of the filter units of the system shall be in accordance with Specification 4.4.d.4.

f. Containment Vacuum Breaker System

The power operated valve in each vent line shall be tested during each refueling outage to demonstrate that a simulated containment vacuum of 0.5 psi will open the valve and a simulated accident signal will close the valve. The check and butterfly valves will be leak tested in accordance with specification 4.4.b during each refueling.

Basis

The Containment System consists of a steel Reactor Containment Vessel within a concrete Shield Building and a Shield Building Ventilation System which, in the event of a loss-of-coolant accident, will produce a vacuum in the Shield Building annulus and will cause all leakage from the Reactor Containment Vessel to be mixed in the annulus volume and recirculated through a filter system before its deferred release to the environment through the exhaust fan that maintains vacuum in the annulus. Potential leakage from the RHRS or from the majority of lines that span the Shield Building annulus is collected in a special ventilation zone of the Auxiliary Building and filtered before its release.

The free-standing Reactor Containment Vessel is designed to accommodate the maximum internal pressure that would result from the Design Basis Accident.(1) For initial conditions typical of normal operation, 120°F and 15 psia, an instantaneous double-ended break with minimum safety features results in a peak pressure of 42.2 psig at 268°F.

The containment has been successfully strength-tested at 51.8 psig and leak tested at 46.0 psig to meet acceptance specifications prior to installation of penetrations.

The safety analysis(2) is based on a conservatively chosen reference set of assumptions regarding the sequence of events relating to activity release and attainment of vacuum in the Shield Building annulus, the effectiveness of filtering, and the leak rate of the Reactor Containment Vessel as a function

of time. The effects of variation in these assumptions, including that for leak rate, have been investigated thoroughly. A summary of the items of conservatism involved in the reference calculation and the magnitude of their effect upon off-site dose demonstrates the collective effect of conservatism in these assumptions. (Refer to Appendix H, FSAR)

The reference initial leak rate in this analysis is 1.0 weight percent of air per 24 hours at the peak pressure of the Design Basis Accident. The resulting two-hour doses at the nearest site boundary are significantly less than the guidelines presented in 10CFR100. 23

The pre-operational integrated leak rate tests are specified at both full design pressure and at reduced pressure, with later periodic tests performed only at reduced pressure, as suggested in the relevant AEC guide(3), and at the frequency indicated in the guide for the design and leak rate test pressures. The operational limit on leak rate $L_{tm} = 0.75\ L_t$, provides a 25 percent allowance for possible leakage deterioration between integrated leak rate tests. The six-month allowance on test schedule provides flexibility necessary to permit tests to be performed at times of scheduled or unscheduled plant outage.

The frequent leak-testing of isolation valves and other penetrations, (areas which may reasonably be expected to be responsible for any excess leakage, rather than the containment shell itself) will provide reassurance, approximately annually, that the allowable leak rate limit is met. These tests will also indicate specific areas of deterioration that may warrant repair before their leakage is excessive.

The Safeguard Systems which operate post accident to cool the containment and maintain the reactor core is in a safe condition become part of the containment system during the post accident period. These safeguard fluid systems are designed to remain intact during and post accident at which time they will be flooded and in operation. These safeguard fluid systems are designed for pressures well in excess of the peak containment pressure. The protection of the health and safety of the public is assured by limiting the leakage from these systems rather than limiting the leakage through their isolation valves located at the containment vessel penetration since these isolation valves will not be shut and their leak rate is immaterial. The refueling interval 23

inspection specified for the piping of these systems will ensure the leak tightness of these systems at pressures comparable to those pressures which would exist post accident.

23

The Technical Specification relative to containment integrity incorporates exemption to 10CFR50 Appendix J requirements as allowed by 10CFR50.12 and granted by the Commission for the Kewaunee Plant.

The Shield Building Ventilation System consists of two independent systems that have only a discharge point in common, the Containment System Vent. Both systems are normally activated and one alone must be capable of accomplishing the design function of the system. The periodic tests will demonstrate the capability of both the separate and combined systems.

Reliable simulation of the transient effects of accident-related heat flow from the Reactor Containment Vessel to the annulus appears to be difficult as well as inconvenient, and the necessary differences between any test conditions and predicted accident conditions would still require supporting analysis. Only the heat input to the annulus could be test-simulated, and not the heat transfer which determines the heat input. However, analysis supported by the results of actual tests without heat addition will provide reliable means of determining system performance with heat addition. The major uncertainties in system performance relate to such "as-built" considerations as Shield Building in-leakage, actual system losses, and overall transient response. These areas can be directly refined in the analysis model from the results of the tests specified. The effects of heat addition are readily incorporated, in a conservative manner where necessary, by considering extreme variations of heat transfer coefficients and transient containment temperature conditions. Such analysis performed during final design has demonstrated, for example, that a slight increase in the capacity of the fans was sufficient to accommodate more sever assumptions regarding heat transfer through the shell. It is expected that nearly any deviation in system behavior discovered during initial testing can be similarly offset by increases in the capacity of these fans, which have minimal power requirements (12 hp and 1 hp for the recirculation and discharge fans, respectively).

Several penetrations of the Reactor Containment Vessel and the Shield Building could, in the event of leakage past their isolation valves, result in leakage being conveyed across the annulus by the penetrations themselves, thus bypassing the function of the Shield Building Ventilation System.(4) Such leakage is estimated not to exceed eleven percent at most of the Containment Vessel leakage; however, an entire area of the Auxiliary Building has medium leakage construction and controlled access, and is designated as the Special Ventilation Zone where such leakage would be collected by either of two redundant trains of the Auxiliary Building Special Ventilation System. This system, when activated, will replace the normal ventilation and draw a vacuum throughout the zone such that all out-leakage will be through particulate and charcoal filters which exhaust to the Auxiliary Building Vent.

The testing requirements for the filter units of the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System will ensure removal of radioactivity consistent with the assumptions made in the analysis of the Design Basis Accident.(2)

References:

(1) FSAR Section 5

(2) FSAR Section 14.3.3

(3) Proposed 10 CFR 50, Appendix J (Revised)

(4) FSAR Section 5.5

TABLE TS 4.4-1

(Page 1 of 6)

PENETRATION DESIGNATION FOR LEAKAGE TESTS

Penetration No.	Penetration	Penetration Category	Type of Test Required	Test Method
1	Pressurizer Relief Tank Sample to Gas Analyzer	P-ABSVZ	C	Pneumatic
2	Pressurizer Relief Tank Nitrogen Supply	Exterior	C	Pneumatic
3	Instrumentation	Exterior	B	Pneumatic
	Sensors	Exterior	B	Pneumatic
	Isolation Valves	Exterior	C	Pneumatic
4	Primary System Vent Heater	P-ABSVZ	C	Pneumatic
5	Reactor Coolant Drain Tank Pump Discharge	P-ABSVZ	C	Pneumatic
6E & 6W	Main Steam			
	Isolation Valves	Exterior	A	Overall Integrated Leak Test (OILT)
	Expansion Bellows	Annulus	B	Pneumatic
7E & 7W	Feedwater			
	Isolation Valves	Exterior	A	OILT
	Expansion Bellows	Annulus	B	Pneumatic
8S & 8N	Steam Generator Blowdown			
	Isolation Valves	Exterior	A	OILT
	Expansion Bellows	Annulus	B	Pneumatic
9	Residual Heat Removal Loop Outlet			
	Isolation Valves	SGOPA	I (5)	System Inspection During Operational Hydro (SIOH)
	Expansion Bellows	Annulus	B	Pneumatic
10	Residual Heat Removal Loop Inlet			
	Isolation Valves	SGOPA	I	SIOH
	Expansion Bellows	Annulus	B	Pneumatic
11	Letdown Line			
	Isolation Valve	P-ABSVZ	C	Pneumatic
	Expansion Bellows	Annulus	B	Pneumatic
12	Charging Line	SGOPA	I	SIOH

TABLE TS 4.4-1

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Penetration No.	Penetration	Penetration Category	Type of Test Required	Test Method
13N & 13E	RC Pump Seal Water Supply	P-ABSVZ	C	Pneumatic
14	RC Pump Seal Water Return	P-ABSVZ	C	Pneumatic
15-SS	Pressurizer Steam Sample	P-ABSVZ	C	Pneumatic
15-LS	Pressurizer Liquid Sample	P-ABSVZ	C	Pneumatic
15-HLS	Loop B Hot Leg Sample	P-ABSVZ	C	Pneumatic
18	Fuel Transfer Tube			
	Expansion Bellows	Annulus	B	Pneumatic
	"O" Ring Seal	Exterior	B	Pneumatic
19	Service Air	Exterior	C	Pneumatic
20	Instrument Air	Exterior	C	Pneumatic
21	Reactor Coolant Drain Tank Gas Analyzer	P-ABSVZ	C	Pneumatic
22	Containment Air Sample In	P-ABSVZ	C	Pneumatic
23	Contaiment Air Sample Out	P-ABSVZ	C	Pneumatic
24	Service Water Non Safeguard	Exterior	C	Pneumatic
25N	Containment Purge Exhaust Duct	P-ABSVZ	C	Pneumatic
25S	Containment Vent and Purge Supply Duct	P-ABSVZ	C	Pneumatic
26	Containment Sump "A" Discharge	P-ABSVZ	C	Pneumatic
27N-XI	Instrumentation			
	Transmitter	P-ABSVZ	B	Pneumatic
	Isolation Valves	P-ABSVZ	C	Pneumatic

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Penetration No.	Penetration	Penetration Category	Type of Test Required	Test Method
27N-X2 27N-SW 27NE-XI 27NE-X2 27NE-X3	Instrumentation Transmitters Isolation Valves	 Exterior Exterior	 B C	 Pneumatic Pneumatic
27EN	Test Line Plug	P-ABSVZ	B	Pneumatic
27EN-X	Instrumentation Transmitter Isolation Valves	 Exterior Exterior	 B C	 Pneumatic Pneumatic
27E	Steam Generator Blowdown Samples	Exterior	A	OILT
28N	Cold Leg Safety Injection	SGOPA	I	SIOH
28E	Hot Leg Safety Injection	SGOPA	I	SIOH
29N & 29E	Internal Containment Spray	SGOPA	I	SIOH
30E & 30W	Containment Sump Recirculation Lines	SGOPA	I	SIOH
31	Nitrogen to Accumulator	Exterior	C	Pneumatic
32N & 32E	Component Cooling Supply to RCP Motors	SGOPA	I	SIOH
33N & 33E	Component Cooling Return from RCP Motors	SGOPA	I	SIOH
35	Safety Injection & Accumulator Test	SGOPA	I	SIOH
36N-X2 36N-SW	Instrumentation Transmitter Isolation Valves	 Exterior Exterior	 B C	 Pneumatic Pneumatic
36S 36N 36SE 36NW	Hydrogen Control System	P-ABSVZ	C	Pneumatic

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Penetration No.	Penetration	Penetration Category	Type of Test Required	Test Method
37NW	Service Water to Containment Fan Coil Unit 1A (SWCFC)	SGOPA	I	SIOH
37NE	SWCFC 1B	SGOPA	I	SIOH
37ES	SWCFC 1C	SGOPA	I	SIOH
37EN	SWCFC 1D	SGOPA	I	SIOH
38NW	SWCFC 1A	SGOPA	I	SIOH
38NE	SWCFC 1B	SGOPA	I	SIOH
38ES	SWCFC 1C	SGOPA	I	SIOH
38EN	SWCFC 1D	SGOPA	I	SIOH
39	Component Cooling to Excess Letdown HX	SGOPA	I	SIOH
40	Component Cooling from Excess Letdown HX	SGOPA	I	SIOH
41E	Containment Vacuum Breaker			
	Valve	Annulus	C	Pneumatic (4)
	"O" Ring Seal	Annulus	B	Pneumatic (4)
41S/S	Containment Vacuum Breaker			
	Valve	Annulus	C	Pneumatic (4)
	"O"Ring Seal	Annulus	B	Pneumatic (4)
42N	Containment Vessel Test Pressurization Flange	Annulus	B	Pneumatic
45	Reactor Makeup Water to PRT	P-ABSV[illegible]	C	Pneumatic
46E	Auxiliary Feedwater	SGOPA	A	OILT
46W	Auxiliary Feedwater	SGOPA	A	OILT
48	Low Head Safety Injection to Reactor Vessel	SGOPA	I	SIOH

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Penetration No.	Penetration	Penetration Category	Type of Test Required	Test Method
A	Electrical Penetration Manifold "A"	Annulus	B	Pneumatic
B	Electrical Penetration Manifold "B"	Annulus	B	Pneumatic
C	Electrical Penetration Manifold "C"	Annulus	B	Pneumatic
D	Electrical Penetration Manifold "D"	Annulus	B	Pneumatic
E	Electrical Penetration Manifold "E"	Annulus	B	Pneumatic
F	Electrical Penetration Manifold "F"	Annulus	B	Pneumatic
--	Equipment Door	Annulus	B	Pneumatic
--	Personnel Airlock	Annulus	B	Pneumatic
--	Personnel Airlock Inner Door	Annulus	B	Pneumatic
--	Personnel Airlock Outer Door	Annulus	B	Pneumtaic
--	Emergency Airlock	Annulus	B	Pneumatic
--	Emergency Personnel Airlock Inner Door	Annulus	B	Pneumatic
--	Emergency Personnel Airlock Outer Door	Annulus	B	Pneumatic
AL1	Personnel Airlock Electrical Penetration	Annulus	B	Pneumatic
AL2	Personnel Airlock Electrical Penetration	Annulus	B	Pneumatic
	Personnel Airlock Emergency Air Opening Seal	Annulus	B	Pneumatic

Note 1
Penetration numbers and description identify the penetration. Additional information is included in Table 5.2-2 of the FSAR.

Note 2

Penetration Category

P-ABSVZ - Piping penetration to systems located within the auxiliary building special ventilation zone.
E-ABSVZ - Electrical penetration to within the auxiliary building special ventilation zone.
Exterior - Penetrations which are exterior to the shield building or the auxiliary building special ventilation zone.
Annulus - Penetration to within the shield building annulus.
SGOPA - Safeguard system operating post LOCA and is designed for pressures in excess of peak containment pressure for DBA.

Note 3
Blind Flange Penetration

Note 4
Test pressure is applied in the opposite direction to the pressure which would exist when the valve is required to perform its safety function.

Note 5
Test required is specified in Specification 4.4.c for all penetrations identified by I in the Type of Test Required column.