

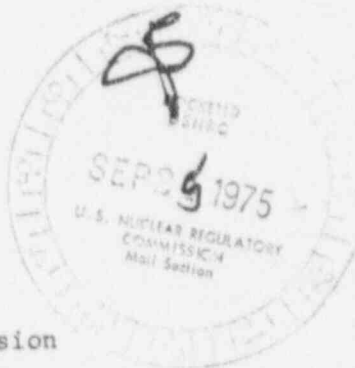
NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

September 19, 1975

Mr Karl R Goller
Assistant Director for
Operating Reactors
Division of Reactor Licensing
U S Nuclear Regulatory Commission
Washington, DC 20555



Dear Mr Goller:

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Monticello Compliance with the Requirements of 10CFR 50 Appendix J

In your letter of August 5, 1975 you requested us to determine if containment leakage testing at the Monticello Nuclear Generating Plant conforms to 10CFR50, Appendix J. We were asked to identify any design features that do not permit conformance with the requirements of Appendix J or any existing Technical Specifications which are less restrictive than Appendix J. In the event Monticello is not in full compliance with Appendix J, we were asked to identify planned actions and our schedule to attain conformance to the Regulation.

A preliminary study has been completed of the Monticello containment leakage testing program. A summary of a comparison of the existing program to the requirements of Appendix J is presented in Table 1. A number of deviations from Appendix J arise because of conflicts between the present Monticello Technical Specifications and the Regulation. The major deviation, however, involves a small number of containment isolation valves which may be construed to required periodic Type C tests, but have design features which preclude such tests. As noted in Table 1, departures from Appendix J include:

- a. Table 1, Item 1 - A conflict with the Technical Specifications exists in the retesting required after a Type A test failure.
- b. Table 1, Item 4 - Appendix J requires all fluid systems which are or may be open to the containment atmosphere following an accident to be drained and vented during Type A tests except for systems required to keep the plant in a safe condition and systems which are normally filled with water and in operation under post-accident conditions. During testing at Monticello, all required systems are drained and vented with the exception of:

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1. The CRD return line is not drained and vented. Lowering the water in the reactor vessel to expose this penetration would place the plant in an unsafe condition. All other vessel nozzles associated with fluid systems penetrating containment are exposed. One of the two check valves serving as containment isolation valves in the CRD return line is not testable, however.
2. The Reactor Building Closed Cooling Water System serving the drywell coolers is left in service during the Type A test as permitted by Appendix J. The drywell isolation valves are not testable, however.
- c. Table 1, Items 5, 11, and 18 - A conflict with the Technical Specifications exists in the frequency for conducting Type A tests. Under certain circumstances, the frequency required by the Technical Specifications is less restrictive than that required by Appendix J.
- d. Table 1, Item 13 - A conflict with the Technical Specifications exists in the permissible test pressure for air lock leakage tests. The Technical Specifications permit this testing to be accomplished at 10 psig.
- e. Table 1, Item 15 - Penetrations which may be construed as being subject to Type C tests in accordance with Section II.H of Appendix J are not testable. A list of all Monticello containment penetrations and the testing required by Appendix J is included in Table 2. Valves which cannot be tested due to system design features include:
 1. Instrument air isolation control valve
 2. Cooling water supply check valve
 3. Cooling water return isolation valve
 4. TIP ball valves (3)
 5. TIP purge supply isolation valves
 6. CRD hydraulic return inboard check valve
 7. Standby liquid control inboard check valve
 8. Torus spray isolation valves (6)

Differences in interpretation of Section II.H of Appendix J could affect this list, however.

- f. Table 1, Item 16 - A conflict with the Technical Specifications exists in the test pressure used in Type C tests of main steam isolation valves.

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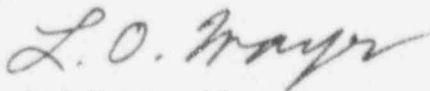
To fully conform to Appendix J will require a number of Technical Specification changes, possible design changes involving provisions for testing containment isolation valves, and possible requests for exemption from the requirements of Appendix J.

The following actions and schedule to attain conformance to the Regulation are planned:

- a. A License Amendment Request will be submitted prior to December 31, 1975 to revise the Monticello Technical Specifications to conform to Appendix J in those areas where plant design permits. Technical Specifications which have been recently issued to new BWR's and which conform to Appendix J will be used as a guide in preparing the change request.
- b. Systems containing containment isolation valves which may require Type C tests in accordance with the definition contained in Section II.H of Appendix J will be analyzed in detail and appropriate design changes will be initiated or a request for exemption from the requirements of Appendix J will be submitted to the Commission in conformance with the provisions of 10CFR50.12. If design changes are required as a result of these analyses, modifications will be accomplished in conformance with the provisions of 10CFR50.109. The results of these detailed analyses will be submitted to the Commission by March 31, 1976 and will include a schedule for completion of modifications that are deemed necessary. Requests for exemption from the requirements of Appendix J will also be submitted by March 31, 1976 in cases where they are deemed appropriate.

The Monticello containment leakage testing program is now conducted in accordance with the Technical Specifications. This testing program includes all of the essential features of Appendix J and provides a high degree of assurance that the Monticello containment system will perform as required in the event of an accident.

Yours very truly,



L O Mayer, PE
Manager of Nuclear Support Services

LOM/DMM/ak

cc: J G Keppler
G Charnoff
Minnesota Pollution Control Agency
Attn: J W Ferman

Attachments

Table 1 10CFR50 Appendix J Requirements

Item No.	Appendix J Section No.	Requirement	Compliance		Remarks
			Yes	No	
1	III.A.1 (a)	<p><i>A. Type A test—1. Prefest requirements.</i></p> <p>(a) Containment inspection in accordance with V.A. shall be performed as a prerequisite to the performance of Type A tests. During the period between the initiation of the containment inspection and the performance of the Type A test, no repairs or adjustments shall be made so that the containment can be tested in as close to the "as is" condition as practical. During the period between the completion of one Type A test and the initiation of the containment inspection for the subsequent Type A test, repairs or adjustments shall be made to components whose leakage exceeds that specified in the technical specification as soon as practical after identification. If during a Type A test, including the supplemental test specified in III.A.3 (b), potentially excessive leakage paths are identified which will interfere with satisfactory completion of the test, or which result in the Type A test not meeting the acceptance criteria III.A.4.(b) or III.A.5.(b), the Type A test shall be terminated and the leakage through such paths shall be measured using local leakage testing methods. Repairs and/or adjustments to equipment shall be made and a Type A test performed. The corrective action taken and the change in leakage rate determined from the tests and overall integrated leakage determined from the local leak and Type A tests shall be included in the report submitted to the Commission as specified in V.B.</p>		X	Procedures are in full compliance with III.A.1 (a) with the exception that Technical Specification 4.7.A.2 (c) states that if leak repairs are needed to meet the allowable operational leak rate, the Type A test need not be repeated provided Type B and Type C tests, when used to adjust the initial Type A test result, yield an acceptable leakage rate.

Table 1 10CFR50 Appendix J Requirements (contd)

Item No.	Appendix J Section No.	Requirement	Compliance		Remarks
			Yes	No	
5	III.A.2	2. Conduct of tests: Preoperational leakage rate tests at either reduced or at peak pressure, shall be conducted at the intervals specified in III.D.		X	The Type A test frequency contained in Technical Specification 4.7.A.2 (d) is in conflict with the frequency stated in Section III.D of Appendix J.
6	III.A.3 (a)	3. Test methods. (a) All Type A tests shall be conducted in accordance with the provisions of the American National Standard N45.4-1972, Leakage Rate Testing of Containment Structures for Nuclear Reactors, March 16 1972. The method chosen for the initial test shall normally be used for the periodic tests.	X		The test procedure fully complies with ANSI N45.4-1972.
7	III.A.3 (b)	(b) The accuracy of any Type A test shall be verified by a supplemental test. An acceptable method is described in Appendix C of ANSI N45.4-1972. The supplemental test method selected shall be conducted for sufficient duration to establish accurately the change in leakage rate between the Type A and supplemental test. Results from this supplemental test are acceptable provided the difference between the supplemental test data and the Type A test data is within 0.25 La (or 0.25 Lt). If results are not within 0.25 La (or 0.25 Lt), the reason shall be determined, corrective action taken, and a successful supplemental test performed.	X		The supplemental test specified in Appendix C of ANSI N45.4-1972 is conducted.
8	III.A.3 (c)	(c) Test leakage rates shall be calculated using absolute values corrected for instrument error.	X		Leakage rates are calculated using the reference vessel method specified in Section 7.10 of ANSI N45.4-1972.

Table 1 10CFR50 Appendix J Requirements (contd)

Item No.	Appendix J Section No.	Requirement	Compliance		Remarks
			Yes	No	
11	III.A.6	<p>6. Additional Requirements. (a) If any periodic Type A test fails to meet the applicable acceptance criteria in III.A.5(b), the test schedule applicable to subsequent Type A tests will be reviewed and approved by the Commission.</p> <p>(b) If two consecutive periodic Type A tests fail to meet the applicable acceptance criteria in III.A.5(b), notwithstanding the periodic retest schedule of III.D, a Type A test shall be performed at each plant shutdown for refueling or approximately every 18 months, whichever occurs first, until two consecutive Type A tests meet the acceptance criteria in III.A.5(b), after which time the retest schedule specified in III.D. may be resumed.</p>		X	Technical Specification 4.7.A.2 (d) is currently in conflict with Section III.A.6. This specification provides an alternate accelerated testing schedule in the event of a Type A test failure.
12	III.B.1	<p>B. Type B tests.</p> <p>1. Test methods. Acceptable means of performing a preoperational and periodic Type B tests include:</p> <p>(a) Examination by halide leak-detection method (or by other equivalent test methods such as mass spectrometer) of a test chamber, pressurized with air, nitrogen, or pneumatic fluid specified in the technical specifications or associated bases and constructed as part of individual containment penetrations.</p> <p>(b) Measurement of the rate of pressure loss of the test chamber of the containment penetration pressurized with air, nitrogen, or pneumatic fluid specified in the technical specifications or associated bases.</p> <p>(c) Leakage surveillance by means of a permanently installed system with provisions for continuous or intermittent pressurization of individual or groups of containment penetrations and measurement of rate of pressure loss of air, nitrogen, or pneumatic fluid specified in the technical specification or associated bases through the leak paths.</p>		X	All penetrations subject to Type B tests, as defined in Section II.G of Appendix J, are tested. The testing method complies with Section III.B.1.(b).

Table 1 10CFR50 Appendix J Requirement (contd)

Item No.	Appendix J Section No.	Requirement	Compliance		Remarks
			Yes	No	
16	III.C.2	<p>2. Test pressure. (a) Valves, unless pressurized with fluid (e.g., water, nitrogen) from a seal system, shall be pressurized with air or nitrogen at a pressure of Pa.</p> <p>(b) Valves, which are sealed with fluid from a seal system shall be pressurized with that fluid to a pressure not less than 1.10 Pa.</p>		X	Technical Specification 4.7.A.2.f (2) (c) permits main steam isolation valves to be tested at 25 psig. All other Type C tests are conducted at Pa.
17	III.C.3	<p>3. Acceptance criterion. The combined leakage rate for all penetrations and valves subject to Type B and C tests shall be less than 0.00 Ls. Leakage from containment isolation valves that are sealed with fluid from a seal system may be excluded when determining the combined leakage rate. Provide That:</p> <p>(a) Such valves have been demonstrated to have fluid leakage rates that do not exceed those specified in the technical specifications or associated bases, and</p> <p>(b) The installed isolation valve seal-water system fluid inventory is sufficient to assure the sealing function for at least 30 days at a pressure of 1.10 Pa.</p>		X	Technical Specification 4.7.A.2 (f) states the acceptance criteria for Monticello Type B and Type C tests. This criteria is currently more conservative than the criterion of Section III.C.3.
18	III.D.1	<p>D. Periodic retest schedule—1. Type A test. (a) After the preoperational leakage rate tests, a set of three Type A tests shall be performed, at approximately equal intervals during each 10-year service period. The third test of each set shall be conducted when the plant is shutdown for the 10-year plant in-service inspections.</p> <p>(b) Permissible periods for testing. The performance of Type A tests shall be limited to periods when the plant facility is non-operational and secured in the shutdown condition under the administrative control and in accordance with the safety procedures defined in the license.</p>		X	Technical Specification 4.7.A.2 (d) is currently in conflict with Section III.D.1. This specification provides a different schedule for Type A tests.

Table 1 10CFR50 Appendix J Requirements (contd)

Item No.	Appendix J Section No.	Requirement	Compliance		Remarks
			Yes	No	
22	IV.B	B. Multiple leakage barrier or subatmospheric containments. The primary reactor containment barrier of a multiple barrier or subatmospheric containment shall be subjected to Type A tests to verify that its leakage rate meets the requirements of this appendix. Other structures of multiple barrier or subatmospheric containments (e.g., secondary containments for boiling water reactors and shield buildings for pressurized water reactors that enclose the entire primary reactor containment or portions thereof) shall be subject to individual tests in accordance with the procedures specified in the technical specifications, or associated bases.	X		Secondary containment testing requirements are stated in Technical Specification 3/4.7.C.
23	V.A	A. Containment inspection. A general inspection of the accessible interior and exterior surfaces of the containment structures and components shall be performed prior to any Type A test to uncover any evidence of structural deterioration which may affect either the containment structural integrity or leak-tightness. If there is evidence of structural deterioration, Type A tests shall not be performed until corrective action is taken in accordance with repair procedures, nondestructive examinations, and tests as specified in the applicable code specified in § 50.86a at the commencement of repair work. Such structural deterioration and corrective actions taken shall be reported as part of the test report, submitted in accordance with V.B.	X		

Table 2 Monticello Containment Penetrations

Penetration Designation	Description	Applicable Appendix J Type Test	INNER BARRIER		Tested?	OUTER BARRIER		
			Designation	Type		Designation	Type	Tested?
-	Seismic Restraint Port A	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port B	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port C	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port D	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port E	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port F	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port G	B - Section II.G.1	-	1	Yes	-	-	-
-	Seismic Restraint Port H	B - Section II.G.1	-	1	Yes	-	-	-
-	Drywell Head	B - Section II.G.1	-	1	Yes	-	-	-

Table 2 Monticello Containment Penetrations

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Penetration Designation	Description	Applicable Appendix J Type Test	INNER BARRIER		OUTER BARRIER	
			Designation	Type	Designation	Type
X-9A	Bellows	B - Section II.G.1	-	-	-	2
	Feedwater Line	C - Section II.H.4	PW-97-2	5	PW-94-2	5
X-9B	Bellows	B - Section II.G.1	-	-	-	2
	Feedwater Line	C - Section II.H.4	PW-97-1	5	PW-94-1	5
X-10	Bellows	B - Section II.G.1	-	-	-	2
	Steam to RCIC	C - Section II.H.4	MO-2075	4	MO-2076	4
X-11	Bellows	B - Section II.G.1	-	-	-	2
	Steam to HPCI	C - Section II.H.4	MO-2034	4	MO-2035	4
X-12	Bellows	B - Section II.G.1	-	-	-	2
	RHR Supply	C - Section II.H.3	MO-2029	4	MO-2030	4
X-13A	Bellows	B - Section II.G.1	-	-	-	2
	RHR Return to B Loop	C - Section II.H.3	AO-10-46B	6	MO-2015	4
X-13B	Bellows	B - Section II.G.1	-	-	-	2
	RHR Return to A Loop	C - Section II.H.3	AO-10-46A	6	MO-2014	4
X-14	Bellows	B - Section II.G.1	-	-	-	2
	RWCU Supply	C - Section II.H.2	MO-2397	4	MO-2398	4
X-15	Spare Penetration	None	-	-	-	-

Table 2 Monticello Containment Penetrations

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Penetration Designation	Description	Applicable Appendix J Type Test	INNER BARRIER			OUTER BARRIER		
			Designation	Type	Tested?	Designation	Type	Tested?
X-25	Drywell Ventilation Exhaust	C - Section II.H.1	-	-	-	A0-2386	10	Yes
						A0-2387	10	Yes
						CV-2385	9	Yes
X-26	Drywell Ventilation Supply	C - Section II.H.1	-	-	-	A0-2377	10	Yes
						A0-2378	10	Yes
						A0-2382	10	Yes
						CV-3267	10	Yes
						CV-3268	9	Yes
						CV-3269	9	Yes
X-27A - 27C	Instrumentation	None (Note 3)	-	-	-	-	-	-
X-27D	Oxygen Analyzer Sample Point	C - Section II.H.1	-	-	-	CV-3305	9	Yes
						CV-3306	9	Yes
X-27E	Oxygen Analyzer Sample Point	C - Section II.H.1	-	-	-	CV-3307	9	Yes
						CV-3308	9	Yes
X-27F	Oxygen Analyzer Sample Point	C - Section II.H.1	-	-	-	CV-3309	9	Yes
						CV-3310	9	Yes

Table 2 Monticello Containment Penetrations

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Penetration Designation	Description	Applicable Appendix J Type Test	INNER BARRIER		OUTER BARRIER	
			Designation	Type	Designation	Type
X-36	CRD Hydraulic Return	C - Section II.H.2	CRD-34	5	CRD-31	5
X-37A - 37D	CRD Insert Lines (121)	None (Note 5)	-	-	-	-
X-38A - 38D	CRD Withdraw (121)	None (Note 5)	-	-	-	-
X-39A	Drywell Spray B	C - Section II.H.1	-	-	MO-2021	4
X-39B	Drywell Spray A	C - Section II.H.1	-	-	MO-2023	4
X-40A - 40D	Instrumentation	None (Note 3)	-	-	MO-2020	4
X-41	Recirc Loop B Sample	C - Section II.H.2	CV-2790	9	CV-2791	9
X-42	Standby Liquid Control	C - Section II.H.2	XP-7	5	XP-6	5
X-43 - 47	Spare Penetrations	None	-	-	-	-
X-48	Future #2 Pumpback System Connection	None (Note 6)	-	-	-	-
X-49A - 49F	Instrumentation	None (Note 3)	-	-	-	-
X-50A - 50F	Instrumentation	None (Note 3)	-	-	-	-
X-51A - 51F	Instrumentation	None (Note 3)	-	-	-	-
X-52A - 52F	Instrumentation	None (Note 3)	-	-	-	-
X-53 - X-99	Not Assigned	None	-	-	-	-

Table 2 Monticello Containment Penetrations

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Penetration Designation	Description	Applicable Appendix J Type Test	INNER BARRIER		OUTER BARRIER	
			Designation	Type	Designation	Type
X-218	Torus-Reactor Building Vacuum Breakers	C - Section II.H.1	-	-	AO-2379	10
					DMV-8-2	14
					AO-2380	10
					DMV-8-1	14
X-219	Spare Penetration	None	-	-	-	-
X-220	Oxygen Analyzer Sample Point	C - Section II.H.1	-	-	CV-3311	11
					CV-3312	11
X-221	HPCI Turbine Exhaust	None (Note 9)	-	-	HPCI-9	5
					HPCI-10	5
X-222	HPCI Steam Line Drains	None (Note 9)	-	-	HPCI-14	5
					HPCI-15	5
X-223	RCIC Steam Line Drains	None (Note 9)	-	-	RCIC-16	5
					RCIC-17	5
X-224A	RHR B Suction	None (Note 9)	-	-	MO-1987	4
X-224B	RHR A Suction	None (Note 9)	-	-	MO-1986	4
X-225	HPCI Suction	None (Note 9)	-	-	MO-2061	4
					MO-2062	4

Explanation of Notes:

1. Main steam isolation valves are currently tested at 25 psig in accordance with the Technical Specifications. This valves may be tested, however, at Pa.
2. Isolation is accomplished using manual valves in the containment supply line. These valves are opened only when containment integrity is not required. The valves are closed in accordance with valve lineup checklists which are completed prior to plant heatup.
3. One-inch instrumentation lines equipped with excess flow check valves. Subject to leakage testing in accordance with Technical Specification 4.7.D.1.b. Leakage can occur only through rupture of the line or its associated instrument outside of containment.
4. TIP probes are withdrawn on a containment isolation signal and the line is isolated by automatic closure of a ball valve. A shear valve can be manually actuated from the Control Room in the event a probe fails to retract. A solenoid valve in the purge supply line automatically closes on a containment isolation signal.
5. Containment isolation of the CRD hydraulic control lines is accomplished with a ball check valve internal to each drive mechanism and the normally closed hydraulic system control valve.
6. This penetration is equipped with manual isolation valves which will be shut until the N₂ pumpback system is placed into service. Automatic containment isolation valves are included in the design for the proposed system.
7. These are internal penetrations between the drywell and torus.
8. Torus instrument penetration. Leakage can occur only through rupture of the line or its associated instrument outside of the suppression chamber.
9. This penetration terminates at the bottom of the suppression pool. It is not exposed to the containment atmosphere.
10. These drains are installed at the bottom of the suppression pool.

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TO: Mr. Karl R. Goller		ORIG 1-signed	CC	OTHER	SENT NRC PDR SENT LOCAL PDR		
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DESCRIPTION:
Ltr our 8-5-75 requesting NSP to determine if containment leakage testing at the Monticello Nuclear Generating Plant conforms to 10CFR50, Appendix J trans the following:

ENCLOSURES:
Table 1 10CFR50 Appendix J Requirements
Table 2 Monticello Containment Penetrations
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PLANT NAME: Monticello

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