PDR

NOV 12 1976

DOCKET NO.: 50-263

FACILITY: MONTICELLO NUCLEAR GENERATING PLANT

LICENSEE: NORTHERN STATES POWER COMPANY (NSP)

SUMMARY OF MEETING TO DISCUSS MONTICELLO 10 CFR §50 APPENDIX J EXEMPTION REQUEST

On October 29, 1976, the NRC staff met with representatives of NSP and their consultant, Bechtel Power Corporation. Representatives of other interested utilities were also present, as indicated on the attached attendance list.

The attached document from Northern States Power, which was presented during the meeting, discusses in detail the NSP proposed exemptions from the requirements of 10 CFR §50 Appendix J. The specific exemption requests and the resolutions of the requests are as follows:

1. Request to exempt testable check valves in the LPCI and Core Spray Lines from Type C testing - NSP requested that a second motor operated valve outside containment be designated the redundant isolation valve. NSP will consider a Technical Specification change which would establish a maximum allowable liquid leakage from the piping and components outside the outboard isolation valves. The liquid leakage limit would be used to demonstrate that there is a sufficient period of time, prior to system depressurization, to manually close either motor operated valve such that the check valves will not become containment leakage barriers at any time.

2. Request to exempt torus and drywell spray motor operated valves from Type C testing - NSP will determine if the RHR system pressure can be maintained following a postulated loss-of-coolant accident, considering potential single active failures and post-accident, maintenance functions. If a system pressure, greater than containment pressure, can be maintained under such circumstances

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then the valves in question would not serve as containment leakage barriers.

3. Acceptance criteria for drywell airlock leakage test - The NRC staff indicated that the six-month tests shall be performed at Pa using strongback or other devices to permit proper testing. However, tests to be performed at 3-day intervals when the airlock is in use may be performed at 10 psig. The HSP proposed acceptance criterion of .025 La for the reduced pressure test will be reviewed by the NRC staff.

4. Request to exempt certain containment isolation valves from testing with pressure on the containment side of the valve - The NRC staff indicated that an exemption for "reverse direction" testing is not required when the licensee can determine that such test will provide equivalent or conservative results. Documentation of this determination, for each valve, shall be kept on file at the plant site. For those valves for which this determination cannot be made, HSP will modify the valves or request specific exemptions.

5. Manner in which HSP has applied Appendix J, Section II.C and Section II.H, to determine which containment penetrations require local leakage testing - HSP presented tables which identified the applicable section of Appendix J to determine whether local leak rate testing is required. The applicability of Section II.H to those lines which terminate below the surface of the suppression pool was discussed. The NRC staff will review the tables presented by HSP to determine conformance.

6. Proposed increase in value of La for Monticello - the NRC staff will review and evaluate the proposal.

NSP will submit revised Technical Specifications which take into account all plant modifications to meet 10 CFR §50 Appendix J requirements, and all approved exemptions.

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Enclosure:
1. List of Attendees
2. Document

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DATE ▶	11/10/76	11/9/76	11/12/76			

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MONTICELLO - APPENDIX J EXEMPTIONS

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October 28, 1976

1. REQUEST TO EXEMPT TESTABLE CHECK VALVES IN LPCI AND CORE SPRAY LINES FROM TYPE C TESTING

Testable check valves are installed in each core spray and low pressure coolant injection (LPCI) line (Figures 1, 2, and 3). Table 5.2.3 of the Monticello FSAR lists these valves as as the inner isolation valve in each line. Each line has two motor operated valves immediately outside the containment vessel which serve as the outside isolation valves. These motor operated valves are either normally open or open following a safeguards actuation signal. They may be closed manually by an operator in the control room.

The testable check valves in each core spray and LPCI line have been included in the Monticello Type C test program. They have consistently failed to meet the Technical Specification limit on maximum air leakage for any penetration or isolation valve of 17.2 scfh at 41 psig. The valves have been disassembled for maintenance on the following occassions to enable them to meet this criterion:

	Date of Type C Test				
Core Spray Testable Check Valves	1970	1973	1974	1975-1	1975-2
AO-14-13A	NT	x	x	x	x
AO-14-13B	NT	x	x	x	x
LPCI Testable Check Valves					
AO-10-46A	NT	x	x	x	-
AO-10-46B	NT	-	-	-	-

NT - not tested

x - maintenance required

Approximately 30 manhours have been required each time a testable check valve has required maintenance. Half of this time is spent in the drywell working in an area with radiation levels of 100 to 300 mR/hour (with temporary shielding in place these levels have been reduced slightly).

Even though these valves were originally classified as containment isolation valves in the FSAR, they were never intended to meet gas leakage acceptance criteria. Such criteria were not included in the design specifications for these valves. In their normal mode of operation (normal operating pressure and temperature with water as the operating fluid) they function as designed with little or no maintenance required.

Three alternative solutions have been suggested to resolve this problem. They are:

a. Continue to utilize the existing valves. Attempt to improve their ability to seal air at low pressure by

improving maintenance techniques and by attempting minor modifications (i. e. better lapping procedures, new seats).

b. Replace the valves with a power operated ball or globe valve which is built to meet containment leakage criteria. The valve would be provided with circuitry to open it on receipt of a safeguards actuation signal combined with line pressurization.

c. Redefine the containment isolation barriers in each line to include only the two motor operated valves located immediately outside containment. These valves, which have good air sealing ability, would both be subjected to periodic Type C tests and maintained in a state of good leak tightness through periodic maintenance.

Alternative (a) is the path we have followed to date. No improvement in the performance of these valves as containment isolation valves has resulted. In our judgement, they cannot be made to satisfy containment leakage acceptance criteria.

Alternative (b) would replace each check valve with a power operated valve and associated control circuitry. This has been studied in detail. The modification would cost approximately $120,000 - $150,000 and would require an extended shutdown to accomplish. Evaluation of the effect of this modification on overall reliability of the core spray and LPCI systems indicates it would decrease the reliability of each system to some extent since a relatively simple check valve is being replaced by a power operated valve and control logic. This would be, in our judgement, a case where a modification made to correct a relatively minor problem can lead directly to a major problem (i.e. inoperability of once circuit of a safety related system).

Alternative (c) was proposed by NSP in a letter dated May 5, 1978 from Mr. L. O. Mayer, to Mr. Victor Stello, USNRC, "Request for Exemption from Certain Requirements of 10CFR50, Appendix J." This exemption request proposed a redefinition of which valves in the lines in question should be considered the containment isolation valves.

Alternative (c) is a valid solution for the following reasons:

a. It is not uncommon to locate both isolation valves outside containment in BWR design. In this case, the motor operated valves and lines outside containment are not subject to pipe whip or missile damage. The valves, and all parts of their associated systems, are designed to withstand the design basis earthquake. Locating one valve inside containment in each of these lines offers no advantage.

b. Automatic closure of isolation valves in these lines is not required. The post-accident function of the valves is to open and remain open. A core spray or LPCI line becomes a significant leakage path only if 1) a pump fails to start - 2 pumps in the case of a LPCI circuit, and 2) the associated line breaks outside containment, and 3) the testable check valve inside containment fails to seal.

c. In the event of an inoperable core spray or LPCI circuit, the two motor operated valves in the affected line can be closed to permit maintenance during the period following an accident.

Approval of alternative (c) by the Commission would significantly reduce the radiation dose received by maintenance personnel at Monticello by eliminating unnecessary work on the core spray and LPCI testable check valves.

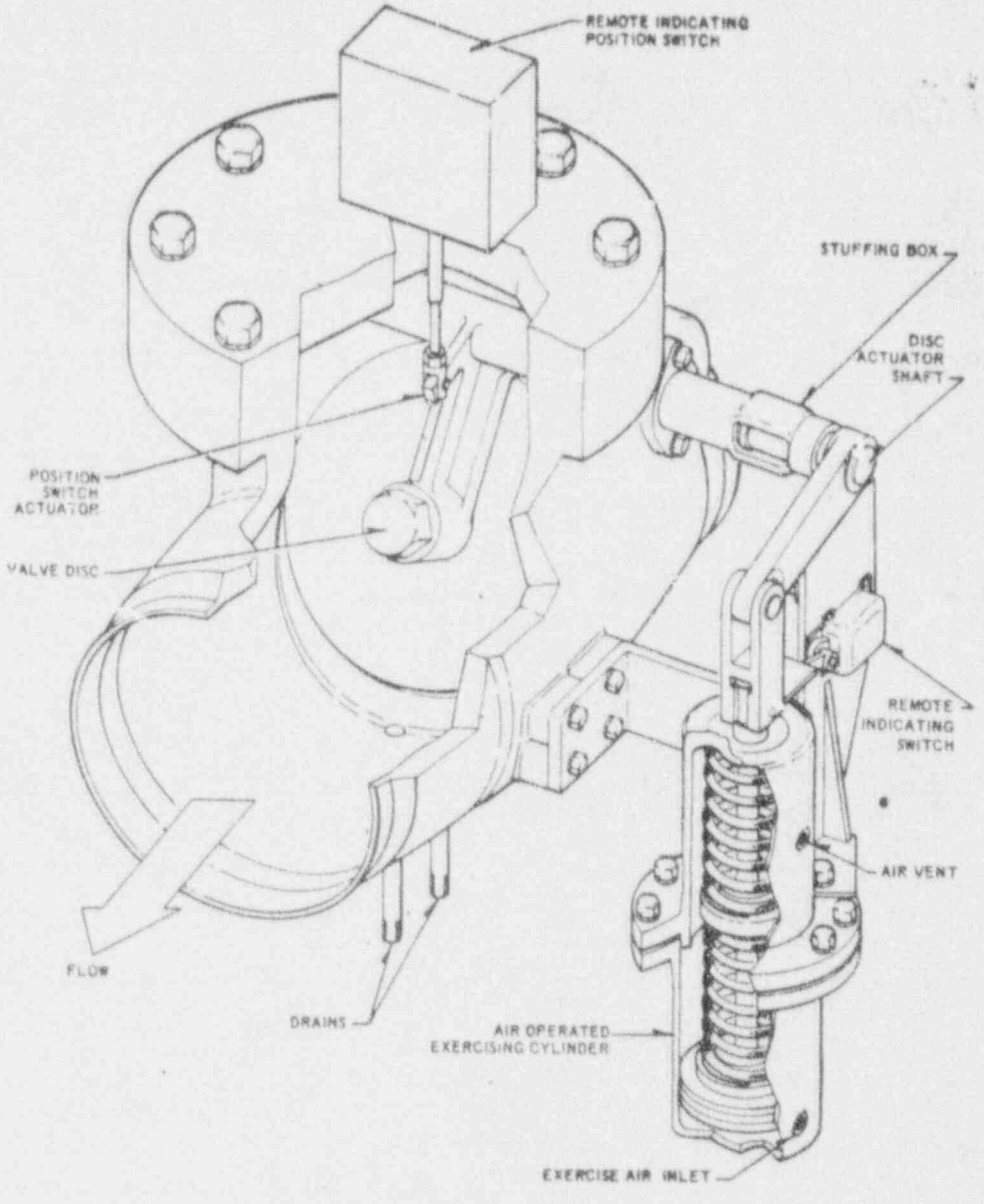

Figure 1. Testable Check Valve (typical of all 4)

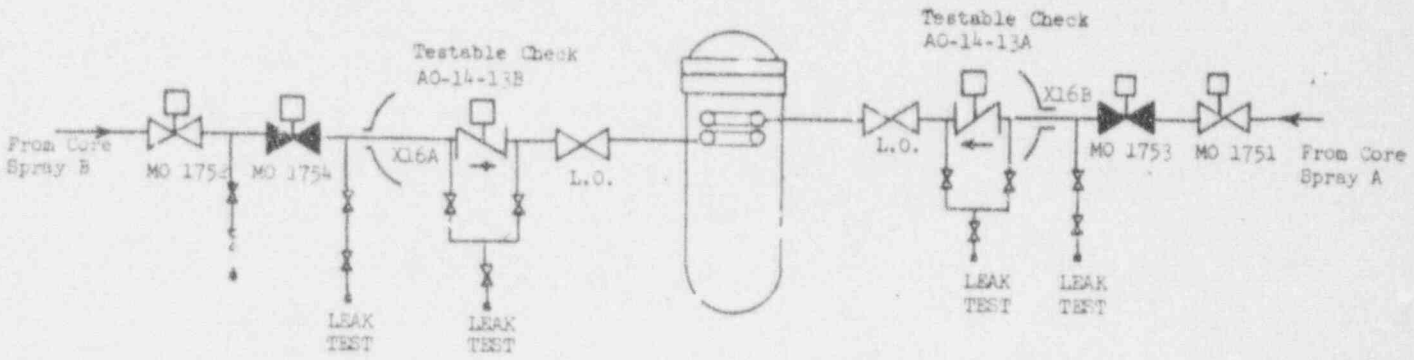

Figure 2. Core Spray System Containment Penetrations

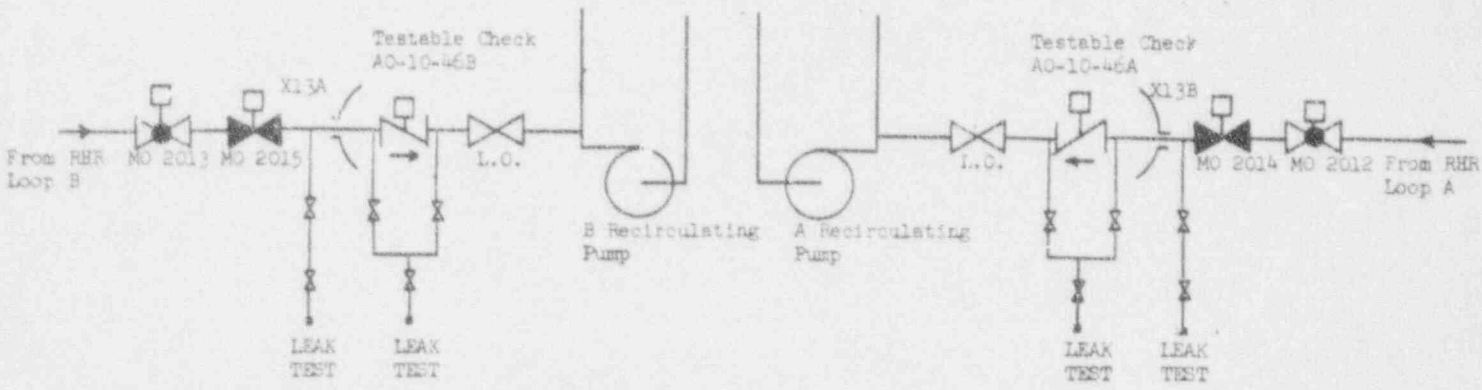

Figure 3. LPCI System Containment Penetrations

2. REQUEST TO EXEMPT TORUS AND DRYWELL SPRAY MOTOR OPERATED VALVES FROM TYPE C TESTING

Two motor operated valves are installed in each torus spray and drywell spray line (Figures 4 and 5). These valves are normally closed, but may be opened following an accident to suppress torus or drywell pressure. Exemptions are requested because these penetrations will not constitute a containment leakage path and because of the following testing difficulties:

Torus Spray Line Isolation Valves	No provision for testing
Drywell Spray Line Isolation Valves	Inner isolation valve cannot be tested in the correct direction. This valve is a wedge type gate valve.

Following an accident these lines are pressurized by the RHR pumps to a pressure well above P_a. Each RHR circuit is supplied by two pumps. No potential for containment leakage exists under normal conditions.

If both RHR pumps in a circuit fail to start, some leakage past the motor operated valves in each line can be expected to occur. This leakage will be retained within the RHR piping, however, and presents no problem since the RHR piping is a low leakage barrier which is effectively an extension of the containment boundary.

During the long-term period following an accident, one RHR circuit may require maintenance. The RHR circuit is isolated from the torus and the drywell by the two motor operated valves in each line. At this time, containment pressure is well below P_a and leakage will be minimal. In the event both motor operated valves in a torus or drywell spray line leak excessively, additional maintenance block valves are provided in each RHR circuit to assist in sealing off any containment leakage. All lines will be water filled, a condition which further reduces the magnitude of any leakage.

Additional maintenance block valves in each line include:

SECTION OF PIPING	NO. OF MAINTENANCE VALVES IN EACH RHR CIRCUIT
From 2nd drywell spray MOV to RHR HX	1
From 2nd drywell spray MOV to RHR Pump	2 (plus 1 check valve)
From 2nd torus spray MOV to RHR HX	1
From 2nd torus spray MOV to RHR Pump	2 (plus 1 check valve

Modifications to test these penetrations in accordance with Appendix J include the addition of a stop valve between each inboard isolation valve and the containment vessel and a test connection in each line. The cost involved in making these modifications is estimated to be $50,000 - $100,000. This expenditure would not lead to any significant improvement in containment system performance.

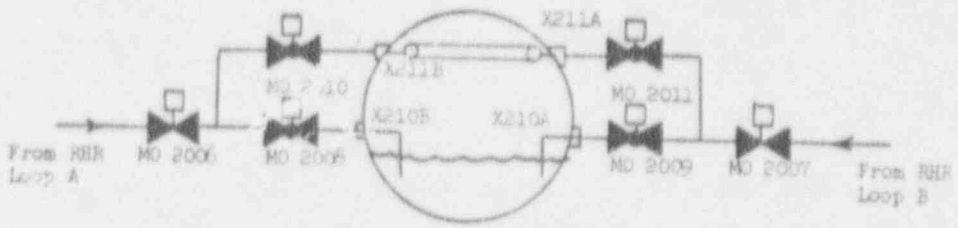

Figure 4. Torus Spray Containment Penetrations

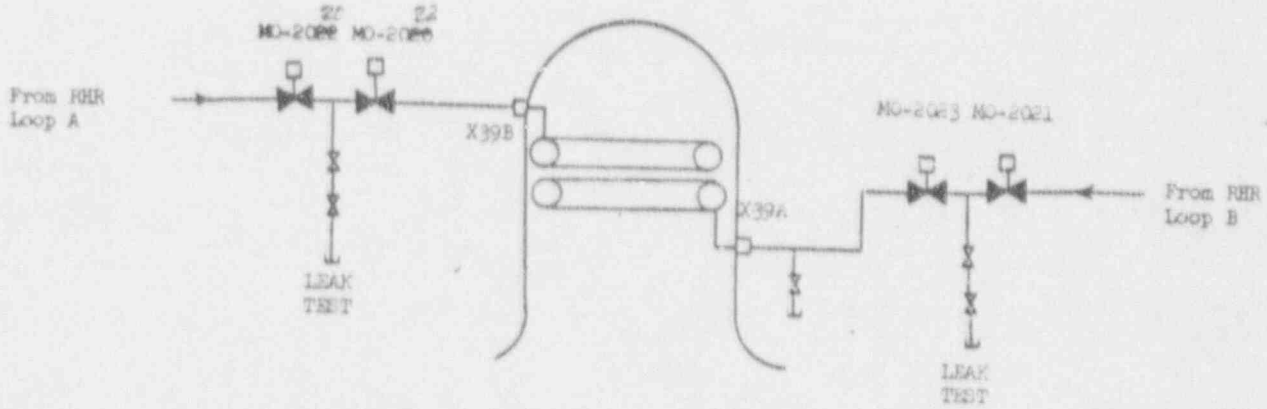

Figure 5. Drywell Spray Containment Penetrations

3. ACCEPTANCE CRITERIA FOR DRYWELL AIR LOCK LEAKAGE TESTS

Appendix J does not contain a specific acceptance criterion for containment air lock Type B leakage tests. The leakage acceptance criterion in Appendix J is based on total leakage from all penetrations.

A difficulty arises in that all Type B and Type C tests, with the exception of the air lock leakage test, are conducted during refueling outages. The air lock is tested at more frequent intervals. Overall air look leakage tests are conducted every six months and door sealing tests are conducted every three days when the air look is in use. If the air lock is tested during an outage when other Type B and Type C tests are conducted, the leakage value measured is acceptable as long as the total for all penetrations is less than $0.6L_a$. When the air lock is tested at other times, the total for all other penetrations is not known and another acceptance criteria must be specified.

An acceptable air lock test criterion is contained in the NRC's "Standard Technical Specifications for General Electric Boiling Water Reactors." This criterion is:

For door seal tests	-	no detectable leakage when door seals are pressurized above 10 psig or P_a
Overall tests	-	$0.05L_a$ at Pa

The basis for this criterion is that $0.05L_a$ is a small fraction of the total permitted Type B and Type C leakage of $0.6L_a$.

The Monticello air lock doors have single gasket seals. Normal door seal tests as such are not possible and all tests must necessarily be overall leakage tests. All such tests require the use of a temporary strongback which is bolted to the outboard side of the inner door. We believe that a satisfactory test pressure for all air lock testing is 10 psig, a value which was established when the plant was licensed and included in the Technical Specifications. We believe that all significant leakage paths can be identified at 10 psig and that the lower test pressure results in a safer test procedure.

If necessary, however, the six month air lock test can be conducted at Pa. The acceptance criterion for this test would be a measured leakage of less than $0.05L_a$. Tests conducted at three day intervals when the air lock is in use should continue to be conducted at 10 psig, however, since this reduced pressure test provides reasonable assurance of door seal integrity and it can be completed within a reasonable time period with a high degree of safety. An acceptable limit on measured leakage at 10 psig would be:

$$\left(P_t/P_a \right)^{1/2} (0.05L_a) = 0.025L_a$$

NSP has requested an exemption from the requirements of Appendix J for both frequency and pressure of air lock Type B tests. We have proposed a 10 psig test pressure in lieu of P_a and have asked to be permitted to perform air lock testing every three days when the air lock is in use instead of after each use.

NSP has submitted proposed Technical Specifications containing an air lock test acceptance criterion of $0.05L_a$ at 10 psig. The following acceptance criteria would also be acceptable:

$0.025\ L_a$ at 10 psig

$0.05\ L_a$ at P_a psig

4. REQUEST TO EXEMPT CERTAIN CONTAINMENT ISOLATION VALVES FROM TESTING WITH PRESSURE ON CONTAINMENT SIDE OF VALVE

The Monticello design has been reviewed for cases where containment isolation valves are testable only with pressure applied to the side of the valve away from containment. We believe that testing in this manner is generally acceptable, but in the case of wedge type gate valves leakage measurements may not be conservative relative to leakage measurements made with the valve pressurized on the containment side. Table 3 lists all such cases identified. They are:

		Type Valve
1.	Inboard steam line drain	Gate ***
2.	Inboard RCIC steam supply	Gate ***
3.	Inboard HPCI steam supply	Gate ***
4.	Inboard supply to RWCU	Gate **
5.	Inboard head cooling supply	Gate ***
6.	Inboard floor sump discharge	Gate *
7.	Inboard equipment sump discharge	Gate *

* Incorrectly reported as globe type in NSP Exemption Request dated 5/5/76
** Omitted from NSP Exemption Request dated 5/5/76
*** Can be tested in correct direction with reactor vessel head in place

The inboard drywell spray lines are also equipped with an inboard motor operated gate valve which can only be tested in the reverse direction. These valves are discussed in (2) above.

We have asked to be permitted to test gate valves in the reverse direction where no provision exist to test them in the correct direction. Five valves are involved (if the two drywell spray motor operated valves are included). When the reactor vessel head is removed four additional gate valves can only be tested with pressure in the reverse direction.

5. MANNER IN WHICH NSP HAS APPLIED APPENDIX J, SECTION II.G AND SECTION II.H, TO DETERMINE WHICH CONTAINMENT PENETRATIONS REQUIRE LOCAL LEAKAGE TESTING

Table 1 is a list of all Monticello containment penetrations. Information related to each penetration is given which includes:

a. Penetration "X" number

b. Appendix J Section II.G or II.H classification

c. Description

d. Amplifying notes

e. Inner barrier type

f. Inner barrier testability (yes or no)

g. Outer barrier type

h. Outer barrier testability (yes or no)

Table 1 is arranged by penetration number. Table 2 includes all of the information in Table 1, however it is arranged by Appendix J Section II.G or Section II.H test type. Either table may be used to determine the manner in which NSP has applied the Appendix J Section II.G and Section II.H definitions to the Monticello design. In cases where a penetration falls into more than one Section II.G or Section II.H category, only the first applicable category is listed.

Classification of penetrations is relatively straightforward, with the possible exception of lines terminating below the surface of the suppression pool. NSP believes these lines do not require testing in accordance with Appendix J. Reasons are:

a. The penetrations do not communicate with the containment atmosphere. They are provided with an effective water seal.

b. No provision for testing these valves was included in the original plant design.

These penetrations cannot constitute a significant source of containment leakage following an accident. Being subjected to water pressure, leakage through these penetrations will be one to two orders of magnitude below the leakage which would exist if they were exposed to the containment gaseous atmosphere. In additon, all leakage will be subcooled water which cannot contribute significantly to the offsite dose following an accident.

Tables 1 and 2 contain corrections to a number of minor errors in the penetration tables submitted on May 4, 1976.

6. PROPOSED INCREASE IN VALUE OF L_a FOR MONTICELLO

The Section 4.7 Bases in the current Monticello Technical Specifications, and in the proposed Technical Specification changes dated May 4, 1976, corrects the maximum allowable containment leakage rate of 1.5% per day to 1.2% per day to compensate for the effects of containment environment under accident as opposed to test conditions. The factor of 0.8 was determined by taking the square root of the ratio of gas constants and absolute temperatures for the accident and test containment environments.

Actual tests conducted for the NRC have proven the correction factor to be unnecessary. It has been shown, in fact, that air at P_a and ambient temperature may leak more readily than a steam and air mixture at P_a and at accident temperature. A correction factor is therefore unnecessary. See "Final Results of the Carolinas Virginia Tube Reactor Containment Leakage Rate Tests," C. E. Bingham, Idaho Nuclear Corporation, June, 1970 (IN-1399/TID-4500).

As a result of these findings we ask that the Monticello value of L_a be adjusted to 1.5% per day.

TABLE 1

TESTABILITY OF PRIMARY CONTAINMENT PENETRATIONS
MONTICELLO NUCLEAR GENERATING PLANT

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
DRYWELL HEAD	II.G.4	DRYWELL HEAD				DBL GASKETED SEAL	YES
RESTRAINT PORTS	II.G.1	SEISMIC RESTRAINT PORT A		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT B		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT C		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT D		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT E		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT F		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT G		DBL GASKETED SEAL	YES		
	II.G.1	SEISMIC RESTRAINT PORT H		DBL GASKETED SEAL	YES		
X- 1	II.G.1	DRYWELL EQUIPMENT HATCH				DBL GASKETED SEAL	YES
X- 2	II.G.3	DRYWELL AIRLOCK	6	SINGLE GASKET DOORS	YES - 10 PSIG	SINGLE GASKET DOORS	YES - 10 PSIG
X- 3	NONE	NOT ASSIGNED					
X- 4	II.G.4	HEAD ACCESS HATCH				DBL GASKETED SEAL	YES
X- 5A - 5H	NONE	DRYWELL-TORUS VENT PIPE	7				
X- 6	II.G.4	CRD ACCESS HATCH				DBL GASKETED SEAL	YES
X- 7A - 7D	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	STEAM LINE A	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	STEAM LINE B	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	STEAM LINE C	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	STEAM LINE D	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
X- 8	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	STEAM DRAIN		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 9A - 9B	II.H.4	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	FEEDWATER LINE		CHECK VALVE	YES	CHECK VALVE	YES
	II.H.4	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	FEEDWATER LINE		CHECK VALVE	YES	CHECK VALVE	YES
X- 10	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	RCIC STEAM LINE		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 11	II.H.4	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.4	HPCI STEAM LINE		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 12	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.2	REACTOR TO RHR		MOTOR OP GATE VALVE	YES	MOTOR OP GATE VALVE	YES
X- 13A	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.3	LPCI B LOOP	12	TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
	II.H.3	LPCI B LOOP				MOTOR OP GLOBE VLV	YES

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X- 13B	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.3	LPCI A LOOP	12	TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
	II.H.3	LPCI A LOOP				MOTOR OP GLOBE VLV	YES
X- 14	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.2	REACTOR TO RWCU SYSTEM		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 15	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 16A	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.3	CORE SPRAY B		TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
	II.H.3	CORE SPRAY B				MOTOR OP GATE VALVE	YES
X- 16B	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.3	CORE SPRAY A		TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
	II.H.3	CORE SPRAY A				MOTOR OP GATE VALVE	YES
X- 17	II.G.1	BELLOWS				HOT PIPE BELLOWS	YES
	II.H.1	HEAD COOLING		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 18	II.H.2	FLOOR SUMP DISCHARGE				AIR OP GATE VALVE	YES-WRONG DIR
	II.H.2	FLOOR SUMP DISCHARGE				AIR OP GATE VALVE	YES
X- 19	II.H.2	EQUIPMENT SUMP DISCHARGE				AIR OP GATE VALVE	YES-WRONG DIR
	II.H.2	EQUIPMENT SUMP DISCHARGE				AIR OP GATE VALVE	YES
X- 20	II.H.1	DEMIN WATER SUPPLY				MANUAL GATE VALVE	NO
	II.H.1	DEMIN WATER SUPPLY				MANUAL GATE VALVE	NO
X- 21	II.H.1	SERVICE AIR SUPPLY				MANUAL GATE VALVE	NO
	II.H.1	SERVICE AIR SUPPLY				MANUAL GATE VALVE	NO
	II.H.1	SERVICE AIR SUPPLY				MANUAL GATE VALVE	NO
X- 22	II.H.1	INSTRUMNT AIR TO DRYWELL				DIAPH OP GLOBE VLV	NO
X- 23	II.H.1	COOLING WATER TO DRYWELL				CHECK VALVE	NO
X- 24	II.H.1	COOLING WATER FM DRYWELL				MOTOR OP GATE VALVE	NO
X- 25	II.H.1	DRYWELL VENT EXHAUST				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	DRYWELL VENT EXHAUST				AIR OP BUTTERFLY V	YES-WRONG DIR
	II.H.1	DRYWELL VENT EXHAUST				AIR OP BUTTERFLY V	YES
X- 26	II.H.1	DRYWELL VENT SUPPLY				AIR OP BUTTERFLY V	YES
	II.H.1	DRYWELL VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
	II.H.1	DRYWELL VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
	II.H.1	DRYWELL PURGE SUPPLY				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	DRYWELL PURGE SUPPLY				DIAPH OP GLOBE VLV	YES
	II.H.1	DRYWELL PURGE SUPPLY				DIAPH OP GLOBE VLV	YES
X- 27A - 27C	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 27D - 27F	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X- 27D - 27F	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
X- 28A - 28F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 29A - 29D	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 29E - 29F	II.H.1	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
X- 30A - 30F	NONE	SPARE PENETRATIONS				SPARE - WELDED CAP	NO
X- 31A,B,D,F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 31C	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 32A,B,D,E,F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 32C	II.H.1	DRYWELL FLOOD SWITCH	8			INST LINE - NO EFCV	NO
X- 33A - 33F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 34A - 34F	NONE	SPARE PENETRATIONS				SPARE - WELDED CAP	NO
X- 35A - 35E	II.H.2	TIP PROBE 1	4			BALL VALVE	NO
	II.H.2	TIP PROBE 1				SHEAR VALVE	NO
	II.H.2	TIP PROBE 2				BALL VALVE	NO
	II.H.2	TIP PROBE 2				SHEAR VALVE	NO
	II.H.2	TIP PROBE 3				BALL VALVE	NO
	II.H.2	TIP PROBE 3				SHEAR VALVE	NO
	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
	II.H.2	PURGE SUPPLY				CHECK VALVE	NO
	II.H.2	PURGE SUPPLY				SOLENOID GLOBE VLV	NO
X- 36	II.H.1	CRD HYDRAULIC EXHAUST		CHECK VALVE	NO	CHECK VALVE	YES
X- 37A - 37D	II.H.1	RECIRC PUMP 12 SEAL INJ		CHECK VALVE	YES	CHECK VALVE	YES
	NONE	CRD INSERT LINES (121)	5	CHECK VALVE	NO	SOLENOID GLOBE VLV	NO
X- 38A - 38D	II.H.1	RECIRC PUMP 11 SEAL INJ		CHECK VALVE	YES	CHECK VALVE	YES
	NONE	CRD WITHDRAW LINES (121)	5	CHECK VALVE	NO	SOLENOID GLOBE VLV	NO
X- 39A	II.H.1	DRYWELL SPRAY B				MOTOR OP GATE VALVE	YES-WRONG DIR
	II.H.1	DRYWELL SPRAY B				MOTOR OP GATE VALVE	YES
X- 39B	II.H.1	DRYWELL SPRAY A				MOTOR OP GATE VALVE	YES-WRONG DIR
	II.H.1	DRYWELL SPRAY A				MOTOR OP GATE VALVE	YES
X- 40AA - 40DF	II.H.1	INSTRUMENTATION				INST LINE - EFCV	YES
X- 41	II.H.1	RECIRC LOOP B SAMPLE		DIAPH OP GLOBE VLV	YES-WRONG DIR	DIAPH OP GLOBE VLV	YES

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X- 42	II.H.1	STANDBY LIQUID CONTROL		CHECK VALVE	NO	CHECK VALVE	YES
X- 43	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 44	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 45	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 46	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 47	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X- 48	II.H.1	NITROGEN PUMPBACK SUCT	13			DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	NITROGEN PUMPBACK SUCT	13			DIAPH OP GLOBE VLV	YES
X- 49A - 49F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 50A - 50D	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 50E - 50F	II.H.1	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
X- 51A - 51F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 52A - 52F	II.H.1	INSTRUMENTATION	3			INST LINE - EFCV	YES
X- 53 - X- 99	NONE	NOT ASSIGNED					
X-100A - 100D	II.G.2	ELECTRICAL PENETRATIONS				ELECTRICAL PEN	YES
X-100E	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-101A	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-101B	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
X-101C	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-101D	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
X-102	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-103	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
X-104A - 104D	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
X-104E	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-105A	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
X-105B	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-105C - 105D	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X-106	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-107	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-108 - X-199	NONE	NOT ASSIGNED					
X-200A	II.G.4	TORUS HATCH				DBL GASKETED SEAL	YES
X-200B	II.G.4	TORUS HATCH				DBL GASKETED SEAL	YES
X-201A - 201H	NONE	TORUS VENT PIPES	7				
X-202A-H,J-K	NONE	DRYWELL-TORUS VAC BKR	7				
X-202I	NONE	NOT ASSIGNED					
X-203	NONE	NOT ASSIGNED					
X-204A - 204D	NONE	TORUS RING HEADER	7				
X-205	II.H.1	TORUS VENT EXHAUST				AIR OP BUTTERFLY V	YES-WRONG DIR
	II.H.1	TORUS VENT EXHAUST				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	TORUS VENT EXHAUST				AIR OP BUTTERFLY V	YES
	II.H.1	N2 RECIRC SYS SUPPLY				DIAPH OP GLOBE VLV	YES
X-206A - 206D	II.H.1	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
X-207A - 207H	NONE	VENT PIPE DRAINS	7				
X-208A - 208H	NONE	RELIEF VALVE DISCH LINES	7				
X-209A - 209D	II.H.1	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
X-210A	NONE	RHR AND CS B TEST LINE	9			CHECK VALVE	NO
	NONE	RHR AND CS B TEST LINE	9			MOTOR OP GATE VALVE	NO
	NONE	RHR AND CS B TEST LINE	9			MOTOR OP GLOBE VLV	NO
	NONE	RHR AND CS B TEST LINE	9			MOTOR OP GLOBE VLV	NO
	NONE	RHR AND CS B TEST LINE	9			MANUAL GLOBE VALVE	NO
	NONE	RHR AND CS B TEST LINE	9			CHECK VALVE	NO
X-210B	NONE	RHR AND CS A TEST LINE	9			CHECK VALVE	NO
	NONE	RHR AND CS A TEST LINE	9			MOTOR OP GATE VALVE	NO
	NONE	RHR AND CS A TEST LINE	9			MOTOR OP GLOBE VLV	NO
	NONE	RHR AND CS A TEST LINE	9			MOTOR OP GLOBE VLV	NO
	NONE	RHR AND CS A TEST LINE	9			MANUAL GLOBE VALVE	NO
	NONE	RHR AND CS A TEST LINE	9			CHECK VALVE	NO
X-211A	II.H.1	TORUS SPRAY B				MOTOR OP GLOBE VLV	NO
	II.H.1	TORUS SPRAY B				MOTOR OP GATE VALVE	NO
X-211B	II.H.1	TORUS SPRAY A				MOTOR OP GLOBE VLV	NO
	II.H.1	TORUS SPRAY A				MOTOR OP GATE VALVE	NO

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X-212	II.H.1	RCIC TURBINE EXHAUST				CHECK VALVE	NO
	II.H.1	RCIC TURBINE EXHAUST				CHECK VALVE	YES
	II.H.1	RCIC TURBINE EXHAUST				MANUAL GATE VALVE	NO
	II.H.1	RCIC TURBINE EXHAUST				MANUAL GLOBE VALVE	NO
	II.H.1	RCIC TURBINE EXHAUST				MANUAL GATE VALVE	NO
X-213A - 213B	NONE	TORUS DRAINS	10			DBL GASKETED SEAL	NO
X-214	II.H.1	O2 ANALYZER TO CONTAINMT				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H	O2 ANALYZER TO CONTAINMT				DIAPH OP GLOBE VLV	YES
X-215	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-216	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-217	NONE	HPCI EXHAUST VAC BKR	11				
X-218	II.H.1	VAC BKR & VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
	II.H.1	VAC BKR & VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
	II.H.1	VAC BKR & VENT SUPPLY				SELF-ACT VACUUM BKR	YES
	II.H.1	VAC BKR & VENT SUPPLY				AIR OP BUTTERFLY V	YES
	II.H.1	VAC BKR & VENT SUPPLY				SELF-ACT VACUUM BKR	YES
	II.H.1	TORUS PURGE SUPPLY				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	TORUS PURGE SUPPLY				DIAPH OP GLOBE VLV	YES
X-219	NONE	RCIC EXHAUST VAC BKR	11				
X-220	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
	II.H.1	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
X-221	II.H.1	HPCI TURBINE EXHAUST				CHECK VALVE	NO
	II.H.1	HPCI TURBINE EXHAUST				CHECK VALVE	YES
X-222	NONE	HPCI STEAM LINE DRAINS	9			CHECK VALVE	NO
	NONE	HPCI STEAM LINE DRAINS	9			CHECK VALVE	YES
X-223	NONE	RCIC STEAM LINE DRAINS	9			CHECK VALVE	NO
	NONE	RCIC STEAM LINE DRAINS	9			CHECK VALVE	YES
	NONE	RCIC STEAM LINE DRAINS	9			MANUAL GLOBE VALVE	NO
X-224A	NONE	LPCI B SUCTION	9			MOTOR OP GATE VALVE	NO
X-224B	NONE	LPCI A SUCTION	9			MOTOR OP GATE VALVE	NO
X-225	NONE	HPCI SUCTION	9			MOTOR OP GATE VALVE	YES-WRONG DIR
	NONE	HPCI SUCTION	9			MOTOR OP GATE VALVE	YES
X-226A	NONE	CORE SPRAY B SUCTION	9			MOTOR OP GATE VALVE	NO
X-226B	NONE	CORE SPRAY A SUCTION	9			MOTOR OP GATE VALVE	NO
X-227	NONE	RCIC SUCTION	9			MOTOR OP GATE VALVE	YES-WRONG DIR

PENETRATION NO.	APPENDIX J CLASS	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X-228	NONE	NOT ASSIGNED					
X-229A	NONE	SPARE PENETRATION				SPARE - WELDED CAP	NO
X-229B	II.H.1	INSTRUMENT AIR TO TORUS				DIAPH OP GLOBE VLV	NO
X-229C - 229K	NONE	SPARE PENETRATION					
X-230	II.G.2	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES

PRIMARY CONTAINMENT PENETRATIONS
LISTED BY APPENDIX REQUIRED TEST CATEGORIES
MONTICELLO NUCLEAR GENERATION PLANT

APPENDIX J CLASS	PENETRATION NO.	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
II.G.1	RESTRAINT PORTS	SEISMIC RESTRAINT PORT A		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT B		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT C		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT D		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT E		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT F		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT G		DBL GASKETED SEAL	YES		
		SEISMIC RESTRAINT PORT H		DBL GASKETED SEAL	YES		
	X- 1	DRYWELL EQUIPMENT HATCH				DBL GASKETED SEAL	YES
	X- 7A - 7D	BELLOWS				HOT PIPE BELLOWS	YES
		BELLOWS				HOT PIPE BELLOWS	YES
		BELLOWS				HOT PIPE BELLOWS	YES
		BELLOWS				HOT PIPE BELLOWS	YES
	X- 8	BELLOWS				HOT PIPE BELLOWS	YES
	X- 10	BELLOWS				HOT PIPE BELLOWS	YES
	X- 12	BELLOWS				HOT PIPE BELLOWS	YES
	X- 13A	BELLOWS				HOT PIPE BELLOWS	YES
	X- 13B	BELLOWS				HOT PIPE BELLOWS	YES
	X- 14	BELLOWS				HOT PIPE BELLOWS	YES
	X- 16A	BELLOWS				HOT PIPE BELLOWS	YES
	X- 16B	BELLOWS				HOT PIPE BELLOWS	YES
	X- 17	BELLOWS				HOT PIPE BELLOWS	YES
II.G.2	X-100A - 100D	ELECTRICAL PENETRATIONS				ELECTRICAL PEN	YES
	X-101B	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
	X-101D	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
	X-103	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
	X-104A - 104D	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
	X-105A	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
	X-105C - 105D	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
	X-230	ELECTRICAL PENETRATION				ELECTRICAL PEN	YES
II.G.3	X- 2	DRYWELL AIRLOCK	6	SINGLE GASKET DOORS	YES - 10 PSIG	SINGLE GASKET DOORS	YES - 10 PSIG
II.G.4	DRYWELL HEAD	DRYWELL HEAD				DBL GASKETED SEAL	YES
	X- 4	HEAD ACCESS HATCH				DBL GASKETED SEAL	YES
	X- 6	CRD ACCESS HATCH				DBL GASKETED SEAL	YES
	X-200A	TORUS HATCH				DBL GASKETED SEAL	YES
	X-200B	TORUS HATCH				DBL GASKETED SEAL	YES
II.H.1	X- 17	HEAD COOLING		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
	X- 20	DEMIN WATER SUPPLY				MANUAL GATE VALVE	NO
		DEMIN WATER SUPPLY				MANUAL GATE VALVE	NO
	X- 21	SERVICE AIR SUPPLY				MANUAL GATE VALVE	NO
		SERVICE AIR SUPPLY				MANUAL GATE VALVE	NO
		SERVICE AIR SUPPLY				MANUAL GATE VALVE	NO
	X- 22	INSTRUMNT AIR TO DRYWELL				DIAPH OP GLOBE VLV	NO
	X- 23	COOLING WATER TO DRYWELL				CHECK VALVE	NO
	X- 24	COOLING WATER FM DRYWELL				MOTOR OP GATE VALVE	NO
	X- 25	DRYWELL VENT EXHAUST				DIAPH OP GLOBE VLV	YES-WRONG DIR
		DRYWELL VENT EXHAUST				AIR OP BUTTERFLY V	YES-WRONG DIR
		DRYWELL VENT EXHAUST				AIR OP BUTTERFLY V	YES

APPENDIX J CLASS	PENETRATION NO.	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
II.H.1	X- 26	DRYWELL VENT SUPPLY				AIR OP BUTTERFLY V	YES
		DRYWELL VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
		DRYWELL VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
		DRYWELL PURGE SUPPLY				DIAPH OP GLOBE VLV	YES-WRONG DIR
		DRYWELL PURGE SUPPLY				DIAPH OP GLOBE VLV	YES
		DRYWELL PURGE SUPPLY				DIAPH OP GLOBE VLV	YES
	X- 27A - 27C	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 27D - 27F	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
		O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
		O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
		O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
		O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
		O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
	X- 28A - 28F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 29A - 29D	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 29E - 29F	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
	X- 31A,B,D,F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 32A,B,D,E,F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 32C	DRYWELL FLOOD SWITCH	8			INST LINE - NO EFCV	NO
	X- 33A - 33F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 36	CRD HYDRAULIC EXHAUST		CHECK VALVE	NO	CHECK VALVE	YES
	X- 37A - 37D	RECIRC PUMP 12 SEAL INJ		CHECK VALVE	YES	CHECK VALVE	YES
	X- 38A - 38D	RECIRC PUMP 11 SEAL INJ		CHECK VALVE	YES	CHECK VALVE	YES
	X- 39A	DRYWELL SPRAY B				MOTOR OP GATE VALVE	YES-WRONG DIR
		DRYWELL SPRAY B				MOTOR OP GATE VALVE	YES
	X- 39B	DRYWELL SPRAY A				MOTOR OP GATE VALVE	YES-WRONG DIR
		DRYWELL SPRAY A				MOTOR OP GATE VALVE	YES
	X- 40AA - 40DF	INSTRUMENTATION				INST LINE - EFCV	YES
	X- 41	RECIRC LOOP B SAMPLE		DIAPH OP GLOBE VLV	YES-WRONG DIR	DIAPH OP GLOBE VLV	YES
	X- 42	STANDBY LIQUID CONTROL		CHECK VALVE	NO	CHECK VALVE	YES
	X- 48	NITROGEN PUMPBACK SUCT	13			DIAPH OP GLOBE VLV	YES-WRONG DIR
		NITROGEN PUMPBACK SUCT	13			DIAPH OP GLOBE VLV	YES
	X- 49A - 49F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 50A - 50D	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 50E - 50F	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
	X- 51A - 51F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X- 52A - 52F	INSTRUMENTATION	3			INST LINE - EFCV	YES
	X-205	TORUS VENT EXHAUST				AIR OP BUTTERFLY V	YES-WRONG DIR
		TORUS VENT EXHAUST				DIAPH OP GLOBE VLV	YES-WRONG DIR
		TORUS VENT EXHAUST				AIR OP BUTTERFLY V	YES
		N2 RECIRC SYS SUPPLY				DIAPH OP GLOBE VLV	YES
	X-206A - 206D	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
	X-209A - 209D	INSTRUMENTATION	8			INST LINE - NO EFCV	NO
	X-211A	TORUS SPRAY B				MOTOR OP GLOBE VLV	NO
		TORUS SPRAY B				MOTOR OP GATE VALVE	NO
	X-211B	TORUS SPRAY A				MOTOR OP GLOBE VLV	NO
		TORUS SPRAY A				MOTOR OP GATE VALVE	NO
	X-212	RCIC TURBINE EXHAUST				CHECK VALVE	NO
		RCIC TURBINE EXHAUST				CHECK VALVE	YES
		RCIC TURBINE EXHAUST				MANUAL GATE VALVE	NO
		RCIC TURBINE EXHAUST				MANUAL GLOBE VALVE	NO
		RCIC TURBINE EXHAUST				MANUAL GATE VALVE	NO

PRIMARY CONTAINMENT PENETRATIONS
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MONTICELLO NUCLEAR GENERATION PLANT

APPENDIX J CLASS	PENETRATION NO.	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
II.H.1	X-214	O2 ANALYZER TO CONTAINMT				DIAPH OP GLOBE VLV	YES-WRONG DIR
		O2 ANALYZER TO CONTAINMT				DIAPH OP GLOBE VLV	YES
	X-218	VAC BKR & VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
		VAC BKR & VENT SUPPLY				AIR OP BUTTERFLY V	YES-WRONG DIR
		VAC BKR & VENT SUPPLY				SELF-ACT VACUUM BKR	YES
		VAC BKR & VENT SUPPLY				AIR OP BUTTERFLY V	YES
		VAC BKR & VENT SUPPLY				SELF-ACT VACUUM BKR	YES
		TORUS PURGE SUPPLY				DIAPH OP GLOBE VLV	YES-WRONG DIR
		TORUS PURGE SUPPLY				DIAPH OP GLOBE VLV	YES
	X-220	O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES-WRONG DIR
		O2 ANALYZER SAMPLE				DIAPH OP GLOBE VLV	YES
	X-221	HPCI TURBINE EXHAUST				CHECK VALVE	NO
		HPCI TURBINE EXHAUST				CHECK VALVE	YES
	X-229B	INSTRUMENT AIR TO TORUS				DIAPH OP GLOBE VLV	NO
II.H.2	X- 12	REACTOR TO RHR		MOTOR OP GATE VALVE	YES	MOTOR OP GATE VALVE	YES
	X- 14	REACTOR TO RWCU SYSTEM		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
	X- 18	FLOOR SUMP DISCHARGE				AIR OP GATE VALVE	YES-WRONG DIR
		FLOOR SUMP DISCHARGE				AIR OP GATE VALVE	YES
	X- 19	EQUIPMENT SUMP DISCHARGE				AIR OP GATE VALVE	YES-WRONG DIR
		EQUIPMENT SUMP DISCHARGE				AIR OP GATE VALVE	YES
	X- 35A - 35E	TIP PROBE 1	4			BALL VALVE	NO
		TIP PROBE 1				SHEAR VALVE	NO
		TIP PROBE 2				BALL VALVE	NO
		TIP PROBE 2				SHEAR VALVE	NO
		TIP PROBE 3				BALL VALVE	NO
		TIP PROBE 3				SHEAR VALVE	NO
		PURGE SUPPLY				CHECK VALVE	NO
		PURGE SUPPLY				SOLENOID GLOBE VLV	NO
II.H.3	X- 13A	LPCI B LOOP	12	TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
		LPCI B LOOP				MOTOR OP GLOBE VLV	YES
	X- 13B	LPCI A LOOP	12	TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
		LPCI A LOOP				MOTOR OP GLOBE VLV	YES
	X- 16A	CORE SPRAY B		TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
		CORE SPRAY B				MOTOR OP GATE VALVE	YES
	X- 16B	CORE SPRAY A		TESTABLE CHK VALVE	YES	MOTOR OP GATE VALVE	YES
		CORE SPRAY A				MOTOR OP GATE VALVE	YES
II.H.4	X- 7A - 7D	STEAM LINE A	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
		STEAM LINE B	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
		STEAM LINE C	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
		STEAM LINE D	1	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	X- 8	STEAM DRAIN		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
	X- 9A - 9B	BELLOWS				HOT PIPE BELLOWS	YES
		FEEDWATER LINE		CHECK VALVE	YES	CHECK VALVE	YES
		BELLOWS				HOT PIPE BELLOWS	YES
		FEEDWATER LINE		CHECK VALVE	YES	CHECK VALVE	YES
	X- 10	RCIC STEAM LINE		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
	X- 11	BELLOWS				HOT PIPE BELLOWS	YES
		HPCI STEAM LINE		MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES

PRIMARY CONTAINMENT PENETRATIONS
LISTED BY APPENDIX REQUIRED TEST CATEGORIES
MONTICELLO NUCLEAR GENERATION PLANT

APPENDIX J CLASS	PENETRATION NO.	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
NONE	X- 3	NOT ASSIGNED					
	X- 5A - 5H	DRYWELL-TORUS VENT PIPE	7				
	X- 15	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 30A - 30F	SPARE PENETRATIONS				SPARE - WELDED CAP	NO
	X- 31C	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 34A - 34F	SPARE PENETRATIONS				SPARE - WELDED CAP	NO
	X- 35A - 35E	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 37A - 37D	CRD INSERT LINES (121)	5	CHECK VALVE	NO	SOLENOID GLOBE VLV	NO
	X- 38A - 38D	CRD WITHDRAW LINES (121)	5	CHECK VALVE	NO	SOLENOID GLOBE VLV	NO
	X- 43	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 44	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 45	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 46	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 47	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X- 53 - X- 99	NOT ASSIGNED					
	X-100E	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-101A	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-101C	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-102	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-104E	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-105B	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-106	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-107	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-108 - X-199	NOT ASSIGNED					
	X-201A - 201H	TORUS VENT PIPES	7				
	X-202A-H,J-K	DRYWELL-TORUS VAC BKR	7				
	X-2021	NOT ASSIGNED					
	X-203	NOT ASSIGNED					
	X-204A - 204D	TORUS RING HEADER	7				
	X-207A - 207H	VENT PIPE DRAINS	7				
	X-208A - 208H	RELIEF VALVE DISCH LINES	7				
	X-210A	RHR AND CS B TEST LINE	9			CHECK VALVE	NO
		RHR AND CS B TEST LINE	9			MOTOR OP GATE VALVE	NO
		RHR AND CS B TEST LINE	9			MOTOR OP GLOBE VLV	NO
		RHR AND CS B TEST LINE	9			MOTOR OP GLOBE VLV	NO
		RHR AND CS B TEST LINE	9			MANUAL GLOBE VALVE	NO
		RHR AND CS B TEST LINE	9			CHECK VALVE	NO
	X-210B	RHR AND CS A TEST LINE	9			CHECK VALVE	NO
		RHR AND CS A TEST LINE	9			MOTOR OP GATE VALVE	NO
		RHR AND CS A TEST LINE	9			MOTOR OP GLOBE VLV	NO
		RHR AND CS A TEST LINE	9			MOTOR OP GLOBE VLV	NO
		RHR AND CS A TEST LINE	9			MANUAL GLOBE VALVE	NO
		RHR AND CS A TEST LINE	9			CHECK VALVE	NO
	X-213A - 213B	TORUS DRAINS	10			DBL GASKETED SEAL	NO
	X-215	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-216	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-217	HPCI EXHAUST VAC BKR	11				
	X-219	RCIC EXHAUST VAC BKR	11				
	X-222	HPCI STEAM LINE DRAINS	9			CHECK VALVE	NO
		HPCI STEAM LINE DRAINS	9			CHECK VALVE	YES
	X-223	RCIC STEAM LINE DRAINS	9			CHECK VALVE	NO
		RCIC STEAM LINE DRAINS	9			CHECK VALVE	YES

PRIMARY CONTAINMENT PENETRATIONS
LISTED BY APPENDIX REQUIRED TEST CATEGORIES
MONTICELLO NUCLEAR GENERATION PLANT

APPENDIX J CLASS	PENETRATION NO.	DESCRIPTION	NOTES	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
NONE	X-223	RCIC STEAM LINE DRAINS	9			MANUAL GLOBE VALVE	NO
	X-224A	LPCI B SUCTION	9			MOTOR OP GATE VALVE	NO
	X-224B	LPCI A SUCTION	9			MOTOR OP GATE VALVE	NO
	X-225	HPCI SUCTION	9			MOTOR OP GATE VALVE	YES-WRONG DIR
		HPCI SUCTION	9			MOTOR OP GATE VALVE	YES
	X-226A	CORE SPRAY B SUCTION	9			MOTOR OP GATE VALVE	NO
	X-226B	CORE SPRAY A SUCTION	9			MOTOR OP GATE VALVE	NO
	X-227	RCIC SUCTION	9			MOTOR OP GATE VALVE	YES-WRONG DIR
	X-228	NOT ASSIGNED					
	X-229A	SPARE PENETRATION				SPARE - WELDED CAP	NO
	X-229C - 229K	SPARE PENETRATION					

TABLE 1

LIST OF PRIMARY CONTAINMENT PENETRATION TEST
DEVIATIATIONS FROM REQUIREMENTS OF 10 CFR 50 APPENDIX J
MONTICELLO NUCLEAR GENERATING PLANT

PENETRATION NO.	DESCRIPTION	APPENDIX J CLASS	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X- 2	DRYWELL AIRLOCK	II.G.3	SINGLE GASKET DOORS	YES - 10 PSIG	SINGLE GASKET DOORS	YES - 10 PSIG
X- 7A - 7D	STEAM LINE A	II.H.4	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	STEAM LINE B	II.H.4	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	STEAM LINE C	II.H.4	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
	STEAM LINE D	II.H.4	AIR OP GLOBE VALVE	YES-WRONG DIR	AIR OP GLOBE VALVE	YES - 25 PSIG
X- 8	STEAM DRAIN	II.H.4	MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 10	RCIC STEAM LINE	II.H.4	MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 11	HPCI STEAM LINE	II.H.4	MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 14	REACTOR TO RWCU SYSTEM	II.H.2	MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 17	HEAD COOLING	II.H.1	MOTOR OP GATE VALVE	YES-WRONG DIR	MOTOR OP GATE VALVE	YES
X- 18	FLOOR SUMP DISCHARGE	II.H.2			AIR OP GATE VALVE	YES-WRONG DIR
X- 19	EQUIPMENT SUMP DISCHARGE	II.H.2			AIR OP GATE VALVE	YES-WRONG DIR
X- 20	DEMIN WATER SUPPLY	II.H.1			MANUAL GATE VALVE	NO
	DEMIN WATER SUPPLY	II.H.1			MANUAL GATE VALVE	NO
X- 21	SERVICE AIR SUPPLY	II.H.1			MANUAL GATE VALVE	NO
	SERVICE AIR SUPPLY	II.H.1			MANUAL GATE VALVE	NO
	SERVICE AIR SUPPLY	II.H.1			MANUAL GATE VALVE	NO
X- 22	INSTRUMNT AIR TO DRYWELL	II.H.1			DIAPH OP GLOBE VLV	NO
X- 23	COOLING WATER TO DRYWELL	II.H.1			CHECK VALVE	NO
X- 24	COOLING WATER FM DRYWELL	II.H.1			MOTOR OP GATE VALVE	NO
X- 29E - 29F	INSTRUMENTATION	II.H.1			INST LINE - NO EFCV	NO
X- 32C	DRYWELL FLOOD SWITCH	II.H.1			INST LINE - NO EFCV	NO
X- 35A - 35E	TIP PROBE 1	II.H.2			BALL VALVE	NO
	TIP PROBE 1	II.H.2			SHEAR VALVE	NO
	TIP PROBE 2	II.H.2			BALL VALVE	NO
	TIP PROBE 2	II.H.2			SHEAR VALVE	NO
	TIP PROBE 3	II.H.2			BALL VALVE	NO
	TIP PROBE 3	II.H.2			SHEAR VALVE	NO
	PURGE SUPPLY	II.H.2			CHECK VALVE	NO
	PURGE SUPPLY	II.H.2			SOLENOID GLOBE VLV	NO
X- 36	CRD HYDRAULIC EXHAUST	II.H.1	CHECK VALVE	NO	CHECK VALVE	YES
X- 39A	DRYWELL SPRAY B	II.H.1			MOTOR OP GATE VALVE	YES-WRONG DIR
X- 39B	DRYWELL SPRAY A	II.H.1			MOTOR OP GATE VALVE	YES-WRONG DIR

LIST OF PRIMARY CONTAINMENT PENETRATION TEST
DEVIATIATIONS FROM REQUIREMENTS OF 10 CFR 50 APPENDIX J
MONTICELLO NUCLEAR GENERATING PLANT

PENETRATION NO.	DESCRIPTION	APPENDIX J CLASS	INNER BARRIER TYPE	INNER BARRIER TESTABLE?	OUTER BARRIER TYPE	OUTER BARRIER TESTABLE?
X- 42	STANDBY LIQUID CONTROL	II.H.1	CHECK VALVE	NO	CHECK VALVE	YES
X- 50E - 50F	INSTRUMENTATION	II.H.1			INST LINE - NO EFCV	NO
X-206A - 206D	INSTRUMENTATION	II.H.1			INST LINE - NO EFCV	NO
X-209A - 209D	INSTRUMENTATION	II.H.1			INST LINE - NO EFCV	NO
X-211A	TORUS SPRAY B	II.H.1			MOTOR OP GLOBE VLV	NO
	TORUS SPRAY B	II.H.1			MOTOR OP GATE VALVE	NO
X-211B	TORUS SPRAY A	II.H.1			MOTOR OP GLOBE VLV	NO
	TORUS SPRAY A	II.H.1			MOTOR OP GATE VALVE	NO
X-212	RCIC TURBINE EXHAUST	II.H.1			CHECK VALVE	NO
	RCIC TURBINE EXHAUST	II.H.1			MANUAL GATE VALVE	NO
	PCIC TURBINE EXHAUST	II.H.1			MANUAL GLOBE VALVE	NO
	RCIC TURBINE EXHAUST	II.H.1			MANUAL GATE VALVE	NO
X-221	HPCI TURBINE EXHAUST	II.H.1			CHECK VALVE	NO
X-229B	INSTRUMENT AIR TO TORUS	II.H.1			DIAPH OP GLOBE VLV	NO

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 LINE EQUIPPED WITH EXCESS FLOW CHECK VALVE (EFCV). 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 CONTAINMENT.

4 TRAVERSING IN-CORE PROBES (TIP) ARE WITHDRAWN ON A CONTAINMENT ISOLATION SIGNAL IF THEY ARE IN USE. THE LINE IS ISOLATED BY AUTOMATIC CLOSURE OF A BALL VALVE. A SHEAR VALVE CAN BE MANUALLY CLOSED FROM THE CONTROL ROOM IN THE EVENT A PROBE FAILS TO RETRACT. A SOLENOID VALVE IN THE PURGE LINE AUTOMATICALLY CLOSES ON A CONTAINMENT ISOLATION SIGNAL.

5 CONTAINMENT ISOLATION OF THE CONTROL ROD DRIVE (CRD) HYDRAULIC CONTROL CONTROL LINES IS ACCOMPLISHED WITH A BALL CHECK VALVE INTERNAL TO EACH DRIVE MECHANISM AND A NORMALLY CLOSED CONTROL VALVE. SINCE THE CRD'S ARE LOCATED AT THE BOTTOM OF THE REACTOR VESSEL, THEY ARE PROVIDED WITH A WATER SEAL AND ARE NOT EXPOSED TO THE CONTAINMENT ATMOSPHERE.

6 THE DRYWELL AIR LOCK IS CONSTRUCTED WITH BOTH DOORS OPENING INWARD SO THAT CONTAINMENT PRESSURE WILL SEAT THE DOOR SEALS. DURING OVERALL AIR LOCK PRESSURE TESTS, A SUPPORT MEMBER IS INSTALLED ON THE INNER DOOR TO PREVENT THE DOOR FROM BEING FORCED OPEN.

7 THESE ARE INTERNAL PENETRATIONS BETWEEN SECTIONS OF THE CONTAINMENT STRUCTURE.

8 INSTRUMENTATION LINE NOT EQUIPPED WITH AN EXCESS FLOW CHECK VALVE (EFCV). LEAKAGE CAN OCCURE ONLY THROUGH RUPTURE OF THE LINE OR ITS ASSOCIATED INSTRUMENT OUTSIDE OF CONTAINMENT.

9 THIS PENETRATION TERMINATES BELOW THE SUPPRESSION POOL SURFACE AND IS THEREFORE PROVIDED WITH A WATER SEAL. IT IS NOT EXPOSED TO THE CONTAINMENT ATMOSPHERE.

10 THESE DRAINS ARE INSTALLED AT THE BOTTOM OF THE SUPPRESSION POOL AND ARE THEREFORE PROVIDED WITH A WATER SEAL. THEY ARE NOT EXPOSED TO THE CONTAINMENT ATMOSPHERE.

11 THE HPCI AND RCIC STEAM EXHAUST LINE VACUUM BREAKER PENETRATIONS UTILIZE THE HPCI AND RCIC STEAM EXHAUST LINE CHECK VALVES FOR CONTAINMENT ISOLATION. CONTAINMENT ISOLATION VALVES ARE BEING CONSIDERED FOR THESE LINES THEREBY ESTABLISHING A WATER SEAL IN THE HPCI AND RCIC STEAM EXHAUST

LINES. LEAKAGE TESTING OF THE STEAM EXHAUST LINES WOULD NOT BE REQUIRED FOLLOWING THIS MODIFICATION.

12 THIS LINE IS EQUIPPED WITH AN AIR OPERATED TESTABLE CHECK VALVE INSIDE CONTAINMENT. THE CONTAINMENT ISOLATION FUNCTION IS PROVIDED BY REDUNDANT MOTOR OPERATED VALVES (2) OUTSIDE CONTAINENT.

13 THE NITROGEN PUMPBACK SYSTEM IS NOT FULLY OPERABLE AND THE VALVES IN THIS LINE ARE LOCKED CLOSED.