October 8, 1982

Repro 10/18

Docket No. 50-245
LS05-82-10-022

Mr. W. G. Counsil, Vice President
Nuclear Engineering and Operations
Northeast Nuclear Energy Company
Post Office Box 270
Hartford, Connecticut 06101

Dear Mr. Counsil:

SUBJECT: SEP TOPIC VI-4, CONTAINMENT ISOLATION SYSTEM
MILLSTONE NUCLEAR POWER STATION, UNIT 1

Reference: Letter from W. G. Counsil to D. M. Crutchfield, dated April 14, 1982.

Enclosed is a copy of our final evaluation of SEP Topic VI-4, Containment Isolation System. This assessment compares your facility, as described in Docket No. 50-245, with the criteria currently used by the regulatory staff for licensing new facilities.

This evaluation will be a basic input to the Integrated Safety Assessment for your facility. This assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this subject are modified before the Integrated Assessment is completed.

Sincerely,

Original signed by:

James J. Shea, Project Manager
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

SE04
DSU USE EX(27)
Add: Gary Stoley

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CSB
WButler
for 10/16/82

OFFICE	SEPB	SEPB	SEPB	SEPB	ORB#5	ORB#5	AD:SA:DL
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DATE	9/13/82	10/1/82	10/1/82	10/1/82	10/1/82	10/4/82	10/8/82

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO: 1981—335-960

SAFETY EVALUATION REPORT

ON

CONTAINMENT ISOLATION SYSTEM

SEP TOPIC VI-4

FOR THE

MILLSTONE NUCLEAR POWER PLANT UNIT 1

DOCKET NO. 50-245

TABLE OF CONTENTS

I. INTRODUCTION

The Millstone Nuclear Power Station, Unit 1 (Millstone 1) began commercial operation in 1971. Since then the safety review criteria have changed and, as part of the Systematic Evaluation Program (SEP), the containment isolation systems at Millstone 1 have been re-evaluated. The purpose of this evaluation is to document the deviations from the current safety criteria as they relate to the containment isolation systems. The significance of the identified deviations, and recommended corrective measures to improve safety, will be the subject of a subsequent integrated assessment of Millstone 1.

II. REVIEW CRITERIA

The safety review criteria used in the current evaluation of the containment isolation system for Millstone 1 are contained in the following references:

1 - 10 CFR Part 50, Appendix A, General Design Criteria for Nuclear Power Plants (GDC 54, 55, 56 and 57).

2 - NUREG-0800, Standard Review Plan for the Review of Safety Analysis Report for Nuclear Power Plants (SRP 6.2.4, Containment Isolation System).

3 - Regulatory Guide 1.11, Instrument Lines Penetrating Primary Reactor Containment.

4 - Regulatory Guide 1.141, Revision 1, Containment Isolation Provisions for Fluid Systems.

III. RELATED SAFETY TOPICS

The review areas identified below are not covered in this report, but are related and essential to the completion of the re-evaluation of the containment isolation system for Millstone 1. These review areas are included in other SEP topics or ongoing Generic Reviews, as indicated below:

1 - III-1, Classification of Structures, Components and Systems (Seismic and Quality)

2 - III-4.C, Internally Generated Missiles

3 - III-5.A, Effects of Pipe Break on Structures, Systems and Components Inside Containment

4 - III-5.B, Pipe Break Outside Containment

5 - III-6, Seismic Design Considerations

6 - III-12, Environmental Qualification of Safety Related Equipment

7 - VI-6, Containment Leak Testing

8 - VII-2, Engineered Safety Feature System Control Logic and Design

9 - VIII-2, Onsite Emergency Power Systems - Diesel Generator

10 - VIII-4, Electric Penetrations of Reactor Containment

11 - XV-16, Radiological Consequences of Failure of Small Lines Carrying Primary Coolant Outside Containment

12 - NUREG-0737, Clarification of TMI Action Plan Requirements, Item II.E.4.2, Containment Isolation Dependability

13 - NUREG-0660, NRC Action Plan Developed as a Result of the TMI-2 Accident, Item II.E.4.4, Containment Purging and Venting Requirements

14 - NUREG-0803, Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping

IV. REVIEW GUIDELINES

The containment isolation system of a nuclear power plant is an engineered safety feature that functions to allow the normal or emergency passage of fluids through the containment boundary while preserving the ability of the boundary to prevent or limit the escape of fission products to the environs that may result from postulated accidents. General Design Criteria 54, 55, 56, and 57 of Appendix A to 10 CFR Part 50 pertain to the containment isolation system of a nuclear power plant.

General Design Criterion 54 establishes design and test requirements for the leak detection provisions, the isolation function and the containment capability of the isolation barriers in lines penetrating the primary reactor containment. From the standpoint of containment isolation, leak detection provisions should be capable of quickly detecting and responding to a spectrum of postulated pipe break accident conditions. To accomplish this, diverse parameters should be monitored to initiate the containment isolation function. The parameters selected should assure a positive, rapid response to the developing accident condition. This aspect of the containment isolation system review will be addressed during the review of the post-TMI requirements approved for implementation, as stated in NUREG-0737, Item II.E.4.2.

Leak detection capability should also be provided at the system level to alert the operator of the need to isolate a system train equipped with remote manual isolation valves. The Standard Review Plan 6.2.4, Item II.6.q, provides guidance in this regard.

With respect to the design requirements for the isolation function, all non-essential systems should be automatically isolated (with manual valves sealed closed), and valve closure times should be selected to assure rapid isolation of the containment in the event of an accident. The review of the classification of systems as essential or non-essential, and the automatic isolation provisions for non-essential systems by appropriate signals, will be addressed in conjunction with the review of the post-TMI requirements as stated in NUREG-0737, Item II.E.4.2. The closure time of the containment ventilation system isolation valves will be evaluated in conjunction with the ongoing generic review of purging practices at operating plants (See NUREG-0660, Item II.E.4.4).

The electrical power supply, instrumentation and control systems should be designed to engineered safety feature criteria to assure accomplishment of the containment isolation function. This aspect of the review is covered under SEP Topics VII-2 and VIII-2. Also, resetting the isolation signal should not result in the automatic re-opening of containment isolation valves. This will be addressed in conjunction with the review of the post-TMI requirements approved for implementation, as stated in NUREG-0737, Item II.E.4.2.

With respect to the capabilities of containment isolation barriers in lines penetrating primary containment, the isolation barriers should be designed to engineered safety feature criteria, and protected against missiles, pipe whip and jet impingement. Typical isolation barriers include valves, closed systems and blind flanges. Furthermore, provisions should be made to permit periodic leak testing of the isolation barriers.

The adequacy of the missile, pipe whip and jet impingement protection will be covered under SEP Topics III-4.C, III-5.A and III-5.B. The acceptability of the design criteria originally used in the design of the containment isolation system components will be covered in SEP Topics III-1, III-6 and III-12.

The adequacy of the Appendix J leak testing program will be covered under SEP Topic VI-6. The acceptability of electrical penetrations will be covered in SEP Topic VIII-4.

General Design Criteria 55, 56 and 57 establish explicit requirements for isolation valving in lines penetrating the containment. Specifically, they address the number and location of isolation valves (e.g., redundant valving with one located inside containment and the other located outside containment), valve actuation provisions (e.g., automatic or remote manual isolation valves), valve position (e.g., locked closed, or the position of greater safety in the event of an accident or power failure), and valve

type (e.g., a simple check valve is not a permissable automatic isolation valve outside containment). Figures 1 and 2 depict the explicit valve arrangement specified in GDC 55 and 56 and GDC 57, respectively.

GDC 55 and 56 also permit containment isolation provisions for lines penetrating the primary containment boundary that differ from the explicit requirements, provided the basis for acceptability is defined. This provision is typically invoked when establishing the containment isolation requirements for essential (i.e., safety related) systems, or there is a clear improvement in safety.

The Standard Review Plan 6.2.4, Item II.6 presents guidelines for acceptable alternate containment isolation provisions for certain classes of lines. Containment isolation provisions that are found acceptable on the "other defined basis" represent conformance with the GDC and do not constitute exceptions.

The following evaluation addresses deviations in the containment isolation provisions from the explicit requirements of the General Design Criteria.

V. EVALUATION

The containment isolation provisions for the lines penetrating the primary reactor containment of the Millstone Nuclear Power Station, Unit 1 are tabulated in Table 1. This information was obtained from the documents referenced in Section VII. The licensee should provide any missing information, and make any necessary corrections.

The containment isolation provisions, as tabulated in Table 1, were evaluated against the requirements of GDC 54, 55, 56 and 57 (Appendix A to 10 CFR Part 50), and the supplementary guidance of SRP 6.2.4 (Containment Isolation System), where applicable. Deviations from the explicit requirements of GDC 54, 55, 56 and 57 and the acceptance criteria of SRP 6.2.4 are tabulated in Table 2.

GDC 55

GDC 55 applies to lines penetrating primary reactor containment that are part of the reactor coolant pressure boundary. The following penetrations are covered by GDC 55, as specified in Table 2: X-7, X-8, X-9B, X-10A, X-11B, X-12, X-14, X-15, X-16A,B, X-17, X-27, X-28, X-29, X-30, X-31, X-32, X-33, X-34, X-35, X-37, X-38, X-41, X-42, X-43, X-45, X-49, and X-212.

The isolation provisions for penetrations X-7, X-8, X-10A, X-11B, X-15 and X-41 conform to the explicit requirements of GDC 55. Penetrations X-9B, X-12, X-14, X-17, X-43, and X-45 have test or branch lines which are located inside the outer isolation valves. These branch lines, however, contain only two closed manual valves in series one or both of which should be automatic or locked closed to qualify as isolation valves in accordance with Section 6.2.4.II.6.f of the SRP.

Penetrations X-16A, X-39, X-43, and X-45 contain isolation valves with remote-manual actuation instead of automatic actuation. Since these lines are part of the plant's engineered safety features, the actuation provisions for these isolation valves are acceptable in accordance with Section 6.2.4.II.6.b of the SRP. However, provisions for detecting leakage from these lines outside containment should be verified by the licensee, since this topic was not addressed in the references.

Penetrations X-27 through X-35 and X-49 are instrument lines covered by GDC 55. The isolation provisions for these lines consist of a manual globe valve in series with an excess flow check, both outside containment. These lines are part of the reactor protection system and, therefore, a single excess flow check valve provides adequate isolation capability, based on the criteria given in Regulatory Guide 1.11. Dose considerations are addressed in SEP Topic XV-16.

Penetrations X-9A and B are for the main feedwater lines; each line has one simple check valve inside containment and one simple check valve outside containment. A simple check valve outside containment is not considered an acceptable isolation valve according to GDC 55; however, maintaining feedwater flow could be important for mitigating the consequences of an accident. A stop check valve with the capability for remote manual actuation would be an acceptable alternative. The acceptability of a simple check valve as an isolation valve outside containment will be determined as part of the integrated assessment of the plant.

Penetration X-42 has a simple check valve outside containment, which is a deviation from GDC 55. The acceptability of check valves as isolation valves outside containment will be determined in conjunction with the integrated assessment of the plant.

References 4 and 10 indicate that penetration X-212, cleanup system relief line, has only a single check valve located outside containment. This is a deviation from GDC 55.

GDC 56

GDC 56 applies to lines penetrating primary reactor containment that connect directly to the containment atmosphere. The following penetrations are covered by GDC 56, as noted in Table 2: X-1, X-2, X-3, X-4, X-6, X-18, X-19, X-25, X-26, X-39A,B, X-200, X-201, X-202, X-203, X-204, X-205, X-206, X-210A,B, X-211, and X-213.

Penetrations X-18, X-19 and X-205 have isolation provisions which conform explicitly to GDC 56.

Penetrations X-25, X-26, X-39, X-203, and X-211 are for lines having both isolation valves outside containment. These penetrations are for containment sprays and vents for which isolation valves inside containment are impractical, since these lines have no piping inside containment or the valves would have to operate in a more severe environment. Penetrations X-25, X-26 and X-203 are containment vent lines containing automatic valves. The licensee should verify that the leak detection provisions of SRP 6.2.4.II.6.d are met for penetrations X-39 and X-211. Therefore, the isolation provisions for these lines are acceptable, pending adequate leak detection capability.

Penetration X-39A, B, X-210B and X211A, B connects to a test line or vent line which has two manual valves in series outside containment. These valves should be automatic or locked closed to conform to GDC 56.

Penetration X-210A has a test line with only one isolation valve; a second valve should be provided. Also, there is a branch line continued on drawing 26036(E-8) which requires isolation that conforms to current licensing criteria.

Penetration X-211 also has two remote manual isolation valves in series outside containment which are acceptable according to SRP Section 6.2.4.II.6.b subject to adequate leak detection capability for this line outside containment.

Penetrations X-210A, B are for the containment and core spray test lines. These lines are not ESF related. Existing valves (1501-35A, B/1501-36A, B) are remote manual valves that are normally closed. While they do not isolate on normal containment isolation, if they are open upon initiation of a LPCI signal, they will automatically close. Valves 1501-35A, 36A/1501-35A, 36B are in series and are LPCI system isolation valves which also provide containment isolation. Valves 1501-36A, B are not leak tested, but this branch is a closed loop connecting an ESF system to the torus. Valves 1501-18A, B (1-LP-26A, B) are remote automatic valves on minimum flow lines. They automatically close when sufficient flow is achieved. Additional valving could degrade LPCI reliability. Based on these conditions, the staff considers the present isolation configuration acceptable.

Also, there are two branch lines that connect to these lines. Each has only a simple check valve outside containment. The minimum flow portion of this line is ESF related; the balance is not. Along the minimum flow portion, valves CS-13A, 14A/CS-13B, 14B are in series (CS-14A, B are the simple check valves); any additional valving along this path could degrade core spray reliability. Along the full flow test portion, valves CS-21B, 14B/CS-21A, 14A are in series. Valves CS-21A, B are normally closed; if open during a core spray signal, they automatically close. This portion of the line is a closed loop connecting two ESF related lines. Between the valves in series noted above, there are test or drain valves which need to be locked closed. A simple check valve outside containment is not considered acceptable. This is a deviation from GDC 56. With the exception of the simple check valve and the test or drain valves, the staff considers the present isolation configuration acceptable.

Penetrations X-204A, B and C are for containment and core spray suction. These lines lead from the suppression pool to a common ring header outside containment. Four lines lead out of the header; each of these lines contain one manual butterfly valve and one remote manual motor operated gate valve as the isolation valve. Leak detection capability should be provided at the system level to alert the operator of the need to isolate a system train equipped iwth remote manual isolation valves. The Standard Review Plan (SRP) 6.2.4, Item II.5.q, provides guidance in this regard.

Two of the lines leading from the header have branch lines (C. W. Return) before the isolation valves. These branch lines should have isolation valves which conform to current licensing criteria. One of the lines has a two inch drain valve before the isolation valve. This line needs a second isolation valve and both need to be locked closed. The torus drain requires a second valve and both need to be locked closed.

Penetration X-206 is for torus level sensing and has manual valves outside containment; these should be remote manual or automatic to conform to GDC 56. Penetrations X-1 through X-4, X-6, X-200, X-201, X-202, and X-213 are primarily hatches or other containment penetrations are acceptable subject to satisfactory containment leak testing, covered in SEP Topic VI-6.

GDC 57

GDC 57 applies to those lines which penetrate primary reactor containment, but do not communicate directly with the containment atmosphere and do not form part of the reactor coolant pressure boundary. The following penetrations are covered by GDC 57: X-20 through X-24, X-40, X-44, and X-209.

Penetration X-20 has one locked closed manual valve inside containment and one outside containment, penetrations X-21 and X-22 have remote manual valves outside containment; therefore, the isolation provisions for these lines conform to the explicit requirements of GDC 57.

* *

Penetrations X-23 and X-24 are for the reactor building closed cooling water system. Each penetration has one isolation valve: X-23 has a simple check valve inside containment; and X-24 has a remote manual isolation outside containment. GDC 57 states that a single isolation valve outside containment is acceptable for closed systems, but a simple check valve is not acceptable as an isolation valve. Therefore, the isolation provisions for X-23 represent a deviation from GDC 57; however, by letter dated November 6, 1980, the licensee has committed to modify these penetrations so that they fully meet the GDCs.

Penetrations X-40 and X-44 are for instrument lines each having a manual globe valve and an excess flow check valve outside containment. Dose considerations are addressed in SEP Topic XV-16.

Spare penetrations X-10B, X-11A, X-13, X-36, X-46, X-47, X-48 and X-214 through X-219 are seal welded. The isolation provisions for these penetrations are acceptable, subject to satisfactory containment leak testing, covered in SEP Topic VI-6.

VI. CONCLUSIONS

The following summarizes the evaluation of isolation provisions including deviations from the review guidelines for Millstone Nuclear Power Station, Unit 1 (Millstone 1).

The following penetrations have lines with only two closed manual valves in series outside containment, which are not acceptable as isolation valves: X-9B, X-12, X-14, X-17, X-39, X-43, X-45, X-204, X-210A, B and X-211A, B. Most of these valves are on test or branch lines; they should be automatic or locked closed to conform to the GDC. We recommend that the licensee implement administrative controls on these valves for conformance to the GDC. Additionally, penetration X-210A, the torus drain valve and a 2" drain valve inside the isolation valve associated with one of the branch lines off penetration X-204 require another isolation valve in series and both should also be locked closed or automatic

The following penetrations have simple check valves outside containment which is a deviation from the GDC: X-9A, B, X-42, X-210, and X-212. The acceptability of a simple check valve as an isolation valve outside containment will be determined as part of the integrated assessment of the plant. Penetration X-210A, B is associated with an ESF-related system (minimum flow line portion). The acceptability of a single isolation valve for penetration X-210A, B will be determined as part of the integrated assessment of the plant.

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* The licensee has not demonstrated the existence of a closed system in accordance with SRP 6.2.4 Section II.6.e.

Penetration X-206 should have automatic or remote manual valves outside containment; manual valves are not acceptable isolation valves.

Penetration X-23 has only a simple check valve inside containment; this is a deviation from GDC 57 which requires one isolation valve outside containment which cannot be a simple check valve. The acceptability of this valve as an isolation valve will be determined in conjunction with the integrated assessment of the plant.

Penetration X-204A,B and C for containment and core spray suction leads to a ring header outside containment. The isolation valves for this penetration are on four lines branching off the ring header. The isolation provisions for this system are governed by the criteria of SRP Sections 6.2.4.II.6.b and e, and the licensee should verify that these criteria are met for the isolation provisions to be considered acceptable.

An alternative method for isolating this system would be to install remote manual isolation valves between the containment penetrations and the ring header.

The following penetrations have remote-manual isolation valves: X-16, X-24, X-39, X-43, X-45, X-204, and X-211. Since these penetrations are for ESF or ESF-related systems, remote manual valves are acceptable isolation valves as described in SRP Section 6.2.4.II.6.b. However, since no leak detection capability for these lines outside containment was identified, the isolation provisions for these lines represent a deviation from current safety criteria.

The following penetrations have both containment isolation valves outside containment: X-39 and X-211. The licensee should confirm that the valves and piping for these lines meet the criteria for SRP Section 6.2.4.II.6.

Diversity in the parameters monitored to initiate containment isolation is required by Section 6.2.4.II.6.L. This aspect of the containment isolation review is addressed by Item II.E.4.2 of NUREG-0737. Reference 8 contains information on the containment penetrations. Based on this information, inadequate diversity in the parameters sensed to initiate isolation exists for some lines. However, as this item will be reviewed during the implementation of the TMI Action Plan, it was excluded from this evaluation.

The following comments respond to information provided in Reference 10.

The licensee has described its position on the acceptability of simple check valves as containment isolation valves for penetrations X-9 and X-42. This information should be considered in the integrated assessment of the plant.

In Reference 4, the licensee has committed to modifying the isolation provisions of penetrations X-23 and X-24; however, no schedule has been set for the modifications. This item should be addressed during the integrated assessment.

Isolation capability for three lines associated with penetrations X-211A, X-204 are unknown.

The acceptability of remote-manual valves as isolation valves in ESF or ESF-related systems is contingent upon adequate leak detection capability as specified in SRP Sections 6.2.4.II.b.h and q. Periodic leak rate testing, as discussed in the licensee's submittals, does not satisfy the requirement for leak detection capability. The plant operator must have some means of determining excessive leakage when it occurs from a given line in order to isolate the line quickly.

The attached Table 3 describes penetration numbers, valve numbers and identified deviation.

VII. REFERENCES

1. Millstone Nuclear Power Station, Unit 1, Final Safety Analysis Report
2. NNECO letter of January 31, 1980 regarding TMI-2 Short Term Lessons Learned, Item 2.1.3, Containment Isolation
3. NNECO letter of September 13, 1979 to D. L. Ziemann, NRC, regarding Inservice Inspection and Testing Program
4. NNECO letter of November 6, 1980 to D. Crutchfield, NRC, regarding Appendix J modifications
5. NNECO letter of January 21, 1981, response to NRC for Additional Information regarding SEP Topic VI-4, Containment Isolation
6. NNECO letter of April 24, 1979 responding to I&E Bulletin 79-8 regarding TMI concerns including containment isolation
7. NRC Internal Memorandum dated April 1, 1981 to D. Crutchfield from J. Olshinski regarding Millstone 1 ESF Actuation Signals
8. NNECO letter of November 15, 1979 responding to deferred items of I&E Bulletin 79-08

9. Millstone, Unit 1 Piping and Instrumentation Diagrams

a.	Reactor Core and Containment Spray Cooling	G187476
b.	Condensate and Feedwater Systems	G187482
c.	Fire Domestic, Condensate Storage and Transfer	G187487
d.	Reactor Closed Cooling Water System	G187474
e.	Main, Extraction and Auxiliary Steam System	G187481
f.	Reactor Fuel Pool Cooling and Filtering	G187475
g.	Service and Cooling Water Diagram	G187484
h.	Shutdown Reactor Cooling System	718E940
i.	Reactor Water Cleanup System	718E942
j.	Isolation Condenser System	718E917
k.	Secondary Cooling, Air Evacuation, and Offgas System	G187479
l.	Reactor Head Cooling	886D612
m.	Nuclear Boiler	718E831
n.	Standby Liquid Control System	153F715
o.	Control Rod Drive Hydraulic System	104R897
p.	Drywell Primary Containment Penetrations	718E858

10. NNECO letter of April 14, 1982 to D. Crutchfield, NRC, responding to draft evaluation for SEP Topic VI-4 for Millstone Nuclear Power Station, Unit 1.

GENERAL DESIGN CRITERIA 55 AND 56
ISOLATION VALVE CRITERIA

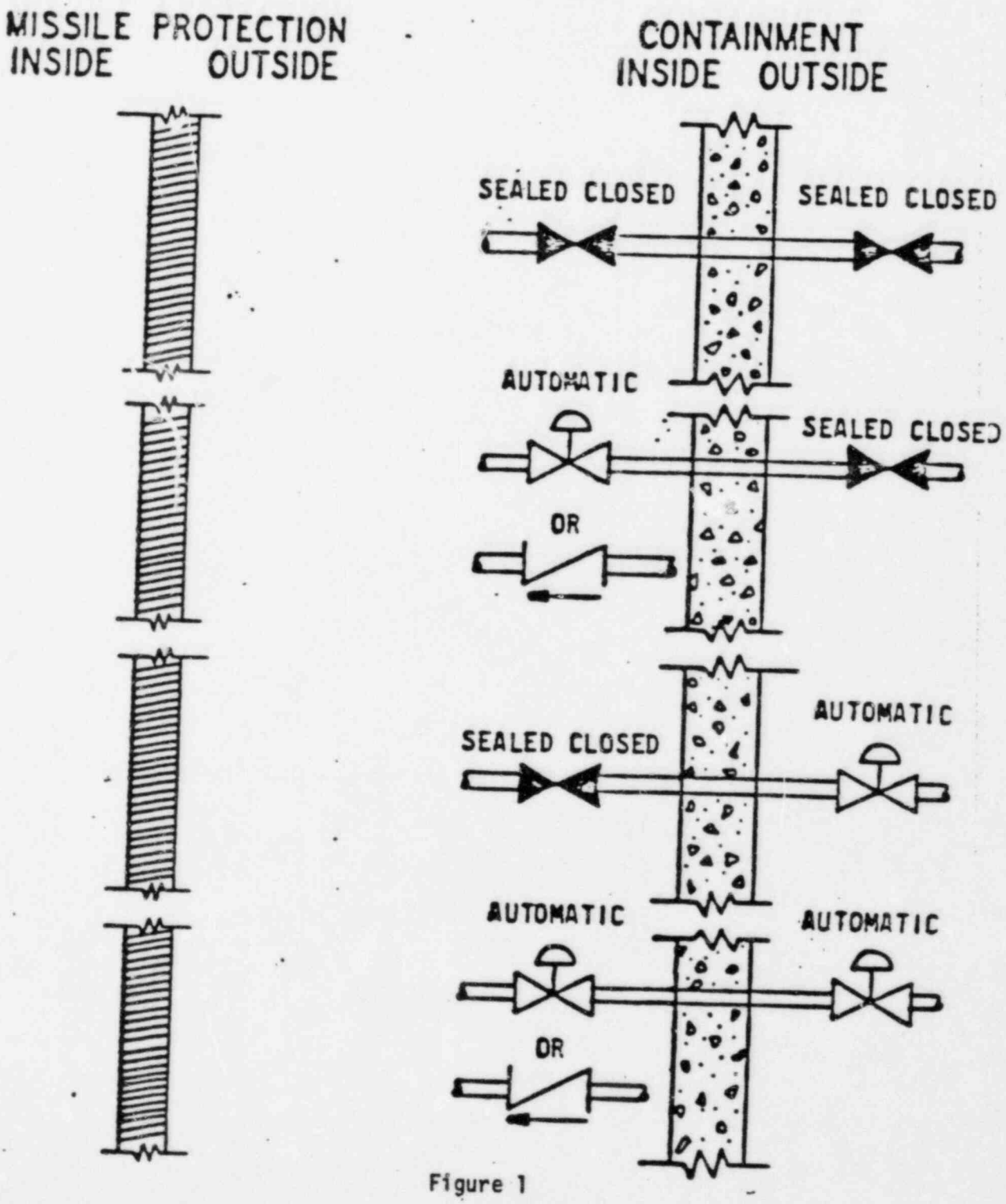

Figure 1

GENERAL DESIGN CRITERION 57
ISOLATION VALVE CRITERIA

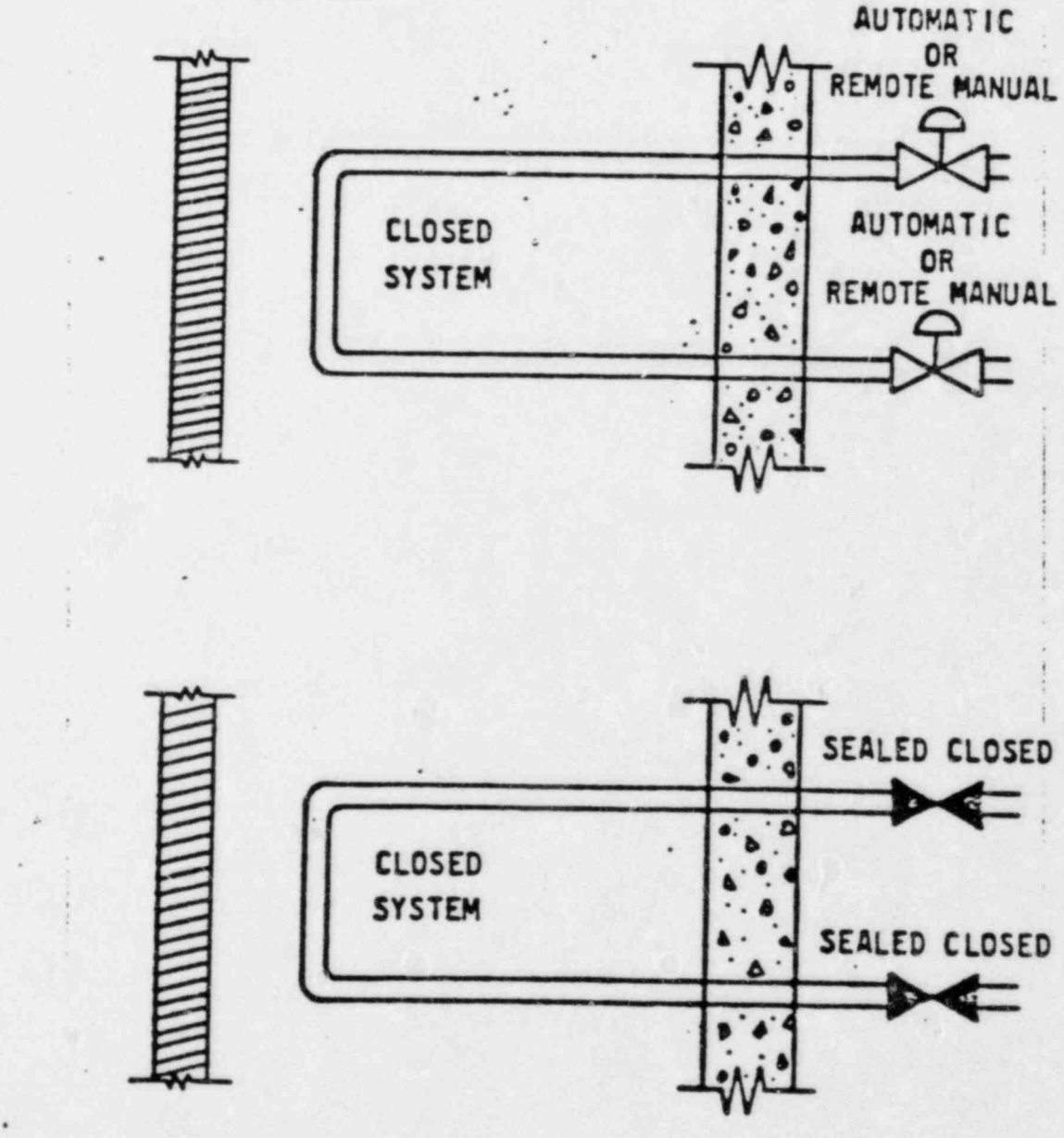

Figure 2

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE -1 TABLE-1

PENETRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESSENTIAL	ACTUATION	REMARKS
					O.C.	I.C.	NORMAL	SHUT DN	POST LOCA	PWR FAIL.			
X-1	EQUIPMENT HATCH 10'												BOLTED, DOUBLE TONGUE AND GROOVE SEAL
X-2	PERSONNEL LOCK 8'4"												DOUBLE DOOR AIR LOCK
X-3	CONSTRUCTION MANWAY 24"												SEAL WELDED
X-4	HEAD ACCESS HATCH 24"	1											BOLTED, DOUBLE GASKETED SEAL
X-6	DRIVE REMOVAL HATCH 24"												BOLTED, DOUBLE GASKETED SEAL
X-7(A-D)	MAIN STEAM LINES 20"		203-1 (A-D)	A.O. GLOBE		✓	O	C	C	C	N	A/RM	MS-1 (A-D)
			203-2 (A-D)	A.O. GLOBE	✓		O	C	C	C	N	A/RM	MS-2 (A-D)
	CAPPED TEST LINES (A-D) 3/4"		203-9 (A-D) 203-10 (A-D)	MAN. GLOBE MAN. GLOBE	✓ ✓		L.C. L.C.	C C	C C	C C	N N		
X-8	MAIN STEAM DRAIN 4"		220-1	M.O. GATE		✓	C	C	C	A.I.	N	A/RM	MS-5
			220-2	M.O. GATE	✓		C	C	C	A.I.	N	A/RM	MS-6
	CAPPED TEST LINE 3/4"		220-5 220-6	MAN. GLOBE MAN. GLOBE	✓ ✓		L.C. L.C.	C C	C C	C C	N N		
X-9(A-B)	FEEDWATER 18"		220-62 A,B	R.F. CHECK	✓		O	C	O	—	Y	R.F.	FW-9 (A,B)
			220-58 A,B	R.F. CHECK		✓	O	C	O	—	Y	R.F.	FW-10 (A,B)
	CAPPED TEST LINE "A" 1"		220-86 A 220-87 A	MAN. GLOBE MAN. GLOBE	✓ ✓		L.C. L.C.	C C	C C	C C	N N		
	CAPPED TEST LINE "B" 1"		220-86 B 220-87 B	MAN. GLOBE MAN. GLOBE	✓ ✓		C C	C C	C C	C C	N N		VALVES SHOULD BE LOCKED CLOSED
X-10 A	ISOLATION CONDENSER SUPPLY 14"		1301-1	M.O. GATE		✓	O	C	C	A.I.	Y	A/RM	IC-1
			1301-2	M.O. GATE	✓		O	C	C	A.I.	Y	A/RM	IC-2
	CAPPED TEST LINE 3/4"		1301-34 1301-35	MAN. GLOBE MAN. GLOBE	✓ ✓		L.C. L.C.	C C	C C	C C	N N		

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE - 1

PENE-TRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESS-EN-TIAL	ACTUA-TION	REMARKS
					O.C.	I.C.	NOR-MAL	SHUT DN	POST LOCA	PWR FAIL.			
X-10B	SPARE 14"												SEAL WELDED
X-11A	SPARE 10"												SEAL WELDED
X-11B	ISOLATION CONDENSER RETURN 10"		1301-3	M.O. GATE	✓		C	C	C	A.I.	Y	A/RM	IC-3
		1	1301-4	M.O. GATE		✓	O	C	C	A.I.	Y	A/RM	IC-4
	CAPPED TEST LINE 3/4"		1301-32 1301-33	MAN. GLOBE MAN. GLOBE	✓ ✓		L.C. L.C.	C C	C C	C C	N N		
X-12	REACTOR SHUTDOWN COOLING SUPPLY 14"		1001-1	M.O. GATE		✓	C	O	C	A.I.	Y	A/RM	SD-1
			1001-2 A,B	M.O. GATE	✓		C	O	C	A.I.	Y	A/RM	SD-2(A,B)
	TEST LINE 1"		1001-6 —	MAN. GLOBE MAN. GLOBE	✓ ✓		C C	C C	C C	C C	N N		MUST BE LOCKED CLOSED OR AUTOMATIC
	VENT AND N_2 CONNECTION 3/4"		1001-11B 1001-12B	MAN. GLOBE MAN. GLOBE	✓ ✓		C C	C C	C C	C C	N N		MUST BE LOCKED CLOSED OR AUTOMATIC
X-13	SPARE												SEAL WELDED
X-14	REACTOR WATER CLEANUP SUPPLY 8"		1201-2	M.O. GATE		✓	O	C	C	A.I.	N	A/RM	CU-2
			1201-5	M.O. GATE	✓		O	C	C	A.I.	N	A/RM	CU-3
			1201-7	M.O. GATE	✓		C	C	C	A.I.	N	A/RM	CU-5
			1-CU-2A	A.O. GLOBE		✓	C	C	C	C	N	A/RM	BYPASSES 1201-2
	BRANCH LINE TO R.B.E.D.T.		1201-3 1201-4	MAN. GLOBE MAN GLOBE	✓ ✓		C C	C C	C C	C C	N N		MUST BE LOCKED CLOSED OR AUTOMATIC
X-15	REACTOR WATER CLEANUP RETURN 8"		1201-80	M.O. GATE	✓		O	C	C	A.I.	N	A/RM	CU-28
			1201-81	R.F. CHECK		✓	O	—	—	—	N	R.F.	CU-29
X-16(A,B)	CORE SPRAY 10"		1402-24(A,B)	M.O. GATE	✓		O	O	O	A.I.	Y	RM	CS 5A,B

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE-1

PENETRATION NO	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESSENTIAL	ACTUATION	REMARKS
					O.C.	I.C.	NORMAL	SHUT DN	POST LOCA	PWR FAIL.			
X-16(AB)	CORE SPRAY 10"		1402-25(AB)	M.O. GATE	✓		C	C	O	A.I.	Y	R.M.	
			1402-9(A,B)	A.O. CHECK		✓	C	C	O	—	Y	RM	
X-17	REACTOR HEAD COOLING 2"		205-2-6	R.F. CHECK		✓	C	C	C	A.I.	N	R.F.	HS-5
		1	205-2-5	M.O. GATE	✓		C	C	C	A.I.	N	A/RM	HS-4
	TEST LINE		205-2-7 205-2-8	MAN. GLOBE MAN. GLOBE	✓ ✓		C C						SHOULD BE LOCKED CLOSED OR AUTOMATIC
X-18	FLOOR DRAIN 3"		SS-3	A.O. DIAPHRAGM	✓		O	C	C	C	N	A/RM	
			SS-4	A.O. DIAPHRAGM	✓		O	C	C	C	N	A/RM	
				R.F. CHECK		✓	O				N	R.F.	
X-19	EQUIPMENT DRAIN 3"		SS-13	A.O. DIAPHRAGM	✓		O	C	C	C	N	A/RM	
			SS-14	A.O. DIAPHRAGM	✓		O	C	C	C	N	A/RM	
				R.F. CHECK		✓	O				N	R.F.	
X-20	DEMINERALIZED WATER SUPPLY 4"			MAN. GATE	✓		L.C.	C	C	C	N		
				MAN. GATE		✓	L.C.	C	C	C	N		
X-21	SERVICE AIR 1"		SA-35	M.O. GATE	✓		C	C	C	C	N	RM	
			SA-36	R.F. CHECK		✓	O				N	R.F.	
X-22	INSTRUMENT AIR 1"		IA-68	M.O. GATE	✓		O	O	O	O	Y	RM	
			IA-69	R.F. CHECK		✓	O				Y	R.F.	
X-23	RBCCW INLET 6"		V4-60	R.F. CHECK		✓	O				N	R.F.	REQUIRES 1 ISOLATION VALVE O.C. ; NOT SIMPLE CHECK 1-RC-6

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE-1

PENE-TRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESS-EN-TIAL	ACTUA-TION	REMARKS
					O.C.	I.C.	NOR-MAL	SHUT DN	POST LOCA	PWR FAIL.			
X-24	RBCCW OUTLET 6"		58B	M.O. GATE	✓		O				N	RM	
X-25	VENT FROM DRYWELL 18"		1-AC-7	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
			1-AC-8	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
	RELIEF LINE 2"		1-AC-9	A.O. PLUG	✓		C	C	C	C	N	A/RM	
			1-AC-10	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
			1-AC-11	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
	RELIEF LINE 2"		1-AC-12	A.O. PLUG	✓		C	C	C	C	N	A/RM	
X-26	VENT TO DRYWELL 18"		1-AC-5	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
			1-AC-4	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
			1-AC-6	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
			1-AC-17	A.O. BUTTERFLY	✓		—	—	C	C	N	A/RM	
	ANALYZER LINE 1"		1-AC-15A	SOLENOID GATE	✓		O	O	O	A.I.	N	A/RM	
X-27(a-f)	INSTRUMENT			MANUAL GLOBE	✓		O	O	O	A.I.	Y		
through X-34(a-f)	SENSING LINES 1"			EXCESS FLOW CHECK	✓		O				Y		
X-35(a-c)	TIP DRIVES 3/8"			E.F. CHECK	✓		O				N		
				EXPLOSIVE SHEAR	✓		O	O	O	O	N	RM	
X-36	SPARE 3"												SEAL WELDED
X-37(A-D)	CRD INSERT 1"			SOLENOID GATE	✓								
				MANUAL GLOBE	✓								

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE-1

PENETRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESSENTIAL	ACTUATION	REMARKS
					O.C.	I.C.	NORMAL	SHUT DN	POST LOCA	PWR FAIL.			
X-38(A,B)	CRD WITHDRAW 3/4"			SOLENOID GATE	✓								
				MAN. GLOBE	✓								
X-39(A,B)	CONTAINMENT SPRAY 10"		1501-26(A,B)	M.O. GATE	✓		C	C	O		Y	RM	
			1501-47(A,B)	M.O. GLOBE	✓		C	C	O		Y	RM	LP-15(A,B)
	TEST LINE		1501-24B	MAN GLOBE	✓		C	C	C	C	N		MUST BE LOCKED CLOSED OR AUTOMATIC
			1501-25B	MAN. GLOBE	✓		C	C	C	C	N		MUST BE LOCKED CLOSED OR AUTOMATIC
X-40	INSTRUMENT SENSING LINES 1"			MAN. GLOBE	✓		O	O	O	AI	Y		
				E.F. CHECK	✓		O						
X-41	RECIRC. WATER SAMPLE 3/4"		220-44	S.O. GATE		✓	C	C	C	C	Y	A/RM	RR-36
			220-45	S.O. GATE	✓		C	C	C	C	Y	A/RM	RR-37
	CAPPED TEST LINE 3/4"		220-43	MAN. GLOBE	✓		L.C.	C	C	C	N		
			220-42	MAN. GLOBE	✓		L.C.	C	C	C	N		
X-42	STANDBY LIQUID CONTROL 1½"		1101-15	R.F. CHECK		✓					Y		SL-8
			1101-16	R.F. CHECK	✓						Y		SL-7
	CAPPED TEST LINE 3/4"		1101-30	MAN. GLOBE	✓		L.C.	C	C	C	N		
			1101-31	MAN. GLOBE	✓		L.C.	C	C	C	N		
X-43	LPCI INLET 18"		1501-32A	R.F. CHECK		✓					Y	R.F.	
			1501-29A	M.O. GATE	✓		C	C	O	C	Y	A/RM	LP-10A
X-44(A-H)	INSTRUMENT SENSING LINES 1"		1501-66 b,d,f,h	MAN. GLOBE	✓		O	O	O	O	Y		
			1501-67 b,d,f,h	E.F. CHECK	✓		O				Y		

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE-1

PENETRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESSENTIAL	ACTUATION	REMARKS
					O.C.	I.C.	NORMAL	SHUT DN	POST LOCA	PWR FAIL.			
X-45	LPCI INLET 18"		1501-32B	R.F. CHECK		✓					Y	R.F.	
			1501-29B	M.O. GATE	✓		C	C	O	C	Y	A/RM	
X-46	SPARE 1"												SEAL WELDED
X-47	SPARE												SEAL WELDED
X-48	SPARE												SEAL WELDED
X-49	INSTRUMENT SENSING LINES 3/4"		1301-21,22, 27,28	MAN. GLOBE	✓		O	O	O	O	Y		
(a-d)			1301-23,24, 29,30	E.F. CHECK	✓		O						
X-200(a)	ACCESS HATCH												BOLTED, DOUBLE GASKETED SEAL
X-201(A-H)	VENT TO TORUS												CONNECTS PORTIONS OF PRIMARY CONTAINMENT
X-202(A-H)	VENT FROM TORUS												CONNECTS PORTIONS OF PRIMARY CONTAINMENT
X-203(A-H)	SUPPRESSION CHAMBER VENT 18"		1-AC-11	A.O. BUTTERFLY	✓		—	-	C	C	N	A/RM	
	+ VENT RELIEF 2"		1-AC-12	A.O. PLUG	✓		—	-	C	C	N	A/RM	
X-204(A-D)	CONTAINMENT AND CORE 12"		1402-3A	M.O. GATE	✓		O	O	O		Y	RM	CS-2A
	SPRAY SUCTION 12"		1402-3B	M.O. GATE	✓		O	O	O		Y	RM	CS-2B
	20"		1501-7A,C	M.O. GATE	✓		O	O	O		Y	RM	LP-2A,C
	20"		1501-7B,D	M.O. GATE	✓		O	O	O		Y	RM	LP-2B,D
	DRAIN LINE 2"			MAN. GATE	✓		C						MUST BE LOCKED CLOSED OR AUTOMATIC
X-205	ATMOSPHERIC CONTROL 20"		AC-6	A.O. BUTTERFLY	✓						N	A/RM	

CONTAINMENT ISOLATION SYSTEM SEP REVIEW ITEMS

PLANT: MILLSTONE-1

PENE-TRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESS-EN-TIAL	ACTUA-TION	REMARKS
					O.C.	I.C.	NOR-MAL	SHUT DN	POST LOCA	PWR FAIL.			
X-205	ATMOSPHERIC CONTROL 20"		AC-3A,B	A.O. BUTTERFLY	✓						N	A/RM	
			AC-2A,B	A.O. BUTTERFLY	✓						N	A/RM	
			AC-4, 17	A.O. BUTTERFLY	✓						N	A/RM	
	1"		AC-14, 15B	A.O. BUTTERFLY	✓						N	A/RM	
X-206	TORUS LEVEL SENSING 1"			GATE	✓		O	O	O		Y		
X-209	THERMOWELLS										N		SEAL WELDED
X-210A,B	CONTAINMENT AND CORE SPRAY		1501-35A,B	M.O. GATE	✓		O				Y	RM	LP-43A,B
	TEST LINES 10"		1501-18A,B	M.O. GATE	✓		O				Y	RM	LP-26A,B
			V10-18a,b	R.F. CHECK	✓						Y	R.F.	CS-14a,b
X-211A,B	CONTAINMENT POOL SPRAY 6"		1501-37A,B	M.O. GLOBE	✓		C	C	C	C	Y	RM	LP-14A,B
			1501-34A,B	M.O. GATE	✓						Y	RM	
	VENT LINES ¾"			MAN. GLOBE	✓						N		SHOULD BE LOCKED CLOSED OR AUTOMATIC
X-212	CLEANUP SYSTEM RELIEF 18"		CU-69	R.F. CHECK	✓								
X-213	CONSTRUCTION DRAIN												LOCKED CLOSED AND BLANK FLANGED
X-214 to X-219	SPARES												SEAL WELDED

TABLE 2

CONTAINMENT ISOLATION SYSTEM SEP REVIEW FINDINGS

PLANT: MILLSTONE-1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS						REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION		
X-1	EQUIPMENT HATCH	56							
X-2	PERSONNEL LOCK	56							
X-3	CONSTRUCTION MANWAY	56							
X-4	HEAD ACCESS HATCH	56							
X-6	DRIVE REMOVAL HATCH	56							
X-7	MAIN STEAM LINES	55							
X-8	MAIN STEAM DRAIN	55							
X-9	FEEDWATER	55	X		X		X		CHECK OUTSIDE CONTAINMENT - DEVIATION CAPPED TEST LINE "B" VALVES MUST BE LOCKED CLOSED OR AUTOMATIC
X-10A	ISOLATION CONDENSER SUPPLY	55							
X-10B	SPARE								
X-11A	SPARE								
X-11B	ISOLATION CONDENSER RETURN	55							

CONTAINMENT ISOLATION SYSTEM
SEP REVIEW FINDINGS

PLANT: MILLSTONE-1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS					REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION	
X-12	REACTOR SHUTDOWN COOLING SUPPLY	55					X	BRANCH LINES SHOULD HAVE LOCKED CLOSED OR AUTOMATIC ISOLATION VALVES
X-14	REACTOR WATER CLEANUP SUPPLY	55					X	BRANCH LINE VALVES SHOULD BE AUTOMATIC OR LOCKED CLOSED
X-15	REACTOR WATER CLEANUP RETURN	55						
X-16	CORE SPRAY	55						
X-17	HEAD SPRAY	55					X	TEST LINE VALVES SHOULD BE LOCKED CLOSED OR AUTOMATIC
X-18	FLOOR DRAIN	56						
X-19	EQUIPMENT DRAIN	56						
X-20	DEMINERALIZED WATER SUPPLY	57						
X-21	SERVICE AIR	57						
X-22	INSTRUMENT AIR	57						
X-23	RBCCW INLET	57			X		X	SIMPLE CHECK VALVE IS NOT AN ACCEPTABLE AUTOMATIC ISOLATION VALVE
X-24	RBCCW OUTLET	57						CLOSED SYSTEM INSIDE CONTAINMENT SUBJECT TO SRP 6.2.4.II.6.0.

CONTAINMENT ISOLATION SYSTEM
SEP REVIEW FINDINGS

PLANT: MILLSTONE-1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS						REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION		
X-25	VENT TO DRYWELL	56							
X-26	VENT FROM DRYWELL	56							
X-27-X-34	INSTRUMENT LINES	55							
X-35	TIP DRIVES	55							
X-36	SPARE								
X-37	CRD INSERT	55							ADDRESSED AS PART OF GENERIC REVIEW IN NUREG-0803
X-38	CRD WITHDRAW	55							
X-39	CONTAINMENT SPRAY	56					X		TEST LINE VALVES MUST BE LOCKED CLOSED OR AUTOMATIC
X-40	INSTRUMENT LINES	57							
X-41	RECIRC. WATER SAMPLE	55							
X-42	STANDBY LIQUID CONTROL	55	X		X				SIMPLE CHECK VALVE OUTSIDE CONTAINMENT. IS NOT AN AUTOMATIC ISOLATION VALVE
X-43	LPCI INLET	55							

CONTAINMENT ISOLATION SYSTEM
SEP REVIEW FINDINGS

PLANT: MILLSTONE-1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS						REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION		
X-44	INSTRUMENT LINES	57							
X-45	LPCI INLET	55							
X-46	SPARE								
X-47	SPARE								
X-48	SPARE								
X-49	INSTRUMENT LINES	55							
X-200	ACCESS HATCH	56							
X-201	VENT TO TORUS	56							
X-202	VENT FROM TORUS	56							
X-203	SUPPRESSION CHAMBER VENT + RELIEF	56							
X-204	CONTAINMENT AND CORE SPRAY SUCTION	56			X				BRANCH LINE VALVES SHOULD BE LOCKED CLOSED OR AUTOMATIC
X-205	ATMOSPHERIC CONTROL	56							

CONTAINMENT ISOLATION SYSTEM
SEP REVIEW FINDINGS

PLANT: MILLSTONE-1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS					REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION	
X-206	TORUS LEVEL SENSING	56					X	VALVES SHOULD BE REMOTE-MANUAL
X-209	THERMOWELLS	57						
X-210	CONTAINMENT AND CORE SPRAY TEST	55			X		X	VALVES SHOULD BE AUTOMATIC OR LOCKED CLOSED
X-211	CONTAINMENT POOL SPRAY	56			X			VENT LINE VALVES MUST BE AUTOMATIC OR LOCKED CLOSED
X-212	CLEANUP SYSTEM RELIEF	55			X			CHECK VALVES ARE NOT AUTOMATIC ISOLATION VALVES OUTSIDE CONTAINMENT
X-213	CONSTRUCTION DRAIN	56						
X-214-X-219	SPARES							
X-13	SPARE							

TABLE 3

DIFFERENCE	PENETRATION	LINES.	VALVES.
1. Valves which should be automatic or locked closed	x-9B	Test line off feedwater line	220-86B
	x-12	Test line from reactor shutdown cooling supply	1001-6
	x-14	Branch line from RWCU supply	1201-3
	x-17	Test line from reactor head cooling	205-2-7 (HS-8)
	x-39A	Test line off containment spray	1501-25A (LP-42A)
	x-39B	"	1501-25B (LP-42B)
	x-43	Test line off LPCI	1-LP-72A
	x-45	"	1-LP-72B
	X-210B	Containment and Core Spray Test Line drain	valve on line CS-4b (valve number unknown) 1-LP-67B 1-LP-68B 1-CS-32B 1-CS-35B

DIFFERENCE	PENETRATION	LINES.	VALVES.
	X-211A	Vent or drain lines off containment pool spray line on line CC-26	1½" valves(2) 1-LP-35A
	X-211B	"	1-LP-37B 1-LP-38B 1-LP-36B

DIFFERENCE	PENETRATION	LINES.	VALVES.
2. Test or drain lines requiring a second isolation valve and valves noted in right column be automatic or locked closed	X-204	— unknown —	2" drain valve on CC-16 (valve number unknown)
	X-210A	Containment and Core spray test line drain	1-LP-67A
	-----	Torus drain.	valve number unknown

DIFFERENCE	PENETRATION	LINES.	VALVES.
3. Simple check valve outside containment; check valve outside containment is unacceptable as an isolation valve.	X-9A	Feedwater	220-62A (FW-9A)
	X-9B	"	220-62B (FW-9B)
	X-42	Standby Liquid Control	1101-16 (SL-7)
	X-210A	Containment and Core Spray Test Line	V-10-18A (CS-14A)
	X-210B		V-10-18B (CS-14B)
	X-212	RWCU vent	number unknown
	X-23	RBCCW inlet	V-4-60

DIFFERENCE	PENETRATION	LINES.	VALVES.
4. Remote manual valves that should be governed by SRP 6.2.4 II.6 be (ESF related requiring system leak detection)	X-204A X-204B X-204C	Containment and Core Spray Inlet	1402-3A (CS-2A) 1402-3B (CS-2B) 1-LP-2A, B, C, D
	X-16A X-16B	Core Spray Outlet	1402-25A (CS-5A) 1402-25B (CS-5B)
	X-24	RBCCW outlet	58-B
	X-43	LPCI inlet	1501-29A (1-LP-10A)
	X-45	LPCI inlet	1501-29B (1-LP-10B)
	X-211A X-211B	Containment Pool Spray	1501-37A (1-LP-14A) 1501-37B (1-LP-14B)
	X-39	Containment Spray	1501-26A, B (LP-69A, B) 1501-47A, B (LP-47A, B)
	X-16	Core Spray	CS-5A CS-5B

DIFFERENCE	PENETRATION	LINES.	VALVES.
5. Manual valves that shall be remote manual or automatic	X-208	Torus level sensing	valve number unknown.
6. Both containment valves outside containment (Location acceptable pending adequate leak detection)	X-39	Containment Spray	1501-26A,B (LP-16A,B) 1501-47A,B (LP-15A,B)
	X-211	Containment Pool Spray inlet	1501-37A,B (LP-14A,B) 1501-34A,B (LP-13A,B)
7. Isolation capability unknown	X-211A	R.C. sample return line connected to CC-26 shown on drawing 2603G(E-8)	
	X-204	C.W. return lines(2) which branch off in-between takeoffs to containment spray pumps.	