RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.:	**357-8344**
SRP Section:	**06.02.04 – Containment Isolation System**
Application Section:	**6.2.4**
Date of RAI Issue:	**01/05/2016**

Question No. 06.02.04-1

Provide justification for systems with single valve isolation - Safety Injection (SI) pump and Containment Spray (CS) pump suction line

General Design Criteria (GDC) 56, "Primary containment isolation," requires in part that each line that penetrates containment be provided with two containment isolation valves (one inside and one outside containment) unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some "other defined basis." Standard Review Plan (SRP) Section 6.2.4, Regulatory Guide (RG) 1.141, and ANSI N271-1976 provide guidance for implementation of the "other defined basis" statement in GDC 56.

In DCD Tier 2, Section 6.2.4.2, the applicant stated that containment isolation provisions are listed in Table 6.2.4-1 and the appropriate valve arrangements are shown in Figure 6.2.4-1. Table 6.2.4-1 lists GDC 55 and 56 systems with single valve isolation and provides justification for use of single valve protection. Each of the four SI Pump suction lines including two CS pump suction lines consists of single remote motor operated valve located outside containment (Table 6.2.4-1 Sheet 5 and Figure 6.2.4-1 Sheet 4).

Additional justification is needed in order to demonstrate that the configurations meet ANSI N271-1976 regarding the “other defined basis” requirement in GDC 56. For the SI pump suction and CS pump suction line valves (Figure 6.2.4-1 Sheet 4), the applicant provides a discussion that the SI system (SIS) is shown to be more reliable with this single valve configuration, a discussion that a single active failure can be accommodated with only one valve in the line, a discussion of how leak testing will be performed on that portion of the SIS outside of containment, and a discussion of how it can be shown that system integrity can be maintained during normal plant operations.

ANSI N271-1976, Section 3.6.4 defines the basis for lines consisting of a single valve and a closed system which are both located outside containment. Pursuant to this section of the

standard, provide a discussion in the DCD of the design of any protective or leak tight or controlled leakage housing that encloses the single valve and the piping between the containment and the valve.

Response

Each of the four safety injection (SI) pump suction lines, including two containment spray (CS) pump suction lines which provide in-containment refueling water storage tank (IRWST) water for safety injection and containment spray, contains a single motor-operated gate valve for containment isolation. The suction piping and the associated valves, which stay below the minimum IRWST water level, are submerged at all times to ensure that their safety function of providing water for injection can be performed. Each of these four valves is locked open, fail-as-is, and remains open during shutdown and accident conditions.

Containment penetrations are normally equipped with in-series isolation valves, one inside containment and one outside containment, to ensure the potential pathway for escaping radionuclides is sealed as a result of a LOCA. However, for the suction line penetrations, their safety function is to remain open. Main control room (MCR) operators have the ability to close any of these four valves manually to prevent loss of IRWST water due to any identified downstream leakage. For this reason, these valves are also equipped with an alternate emergency power supply to ensure a single power failure can be accommodated. These valves can also be used to isolate the IRWST for the performance of pump maintenance.

These valves are located outside the containment in valve rooms inside the auxiliary building (AB) above the 55’-0” elevation. These valves are equipped with stem leak-off lines that drain any fluid into a floor drain or the protective equipment drain systems inside their cubicles. Leakage from the valves and piping is routed to the floor drain sumps in the corresponding quadrants, where sump levels are monitored. The MCR operators can detect leakage from individual segments of the piping and valve by the indication of the high sump water level in the sump located within the quadrant in which the associated SI/CS piping and valve are located. These cubicles are also designed to facilitate periodic access for surveillance and inspection of the valves and the associated piping outside the containment for their integrity and leak tightness. In addition, these valves are included in the in-service inspection requirements of ASME XI to provide reasonable assurance of their operability, reliability, and the ability to meet closure requirements (ANS 56.2, Section 4.4.4), as described in DCD Subsection 6.2.4.4.

The SI/CS systems circulate water from inside the containment through outside containment components and back to the inside of the containment, which are therefore closed systems. Since the piping and valves in the suction lines are designed to preclude a breach of piping integrity, which is described in DCD subsection 3.6.2, and since leak detection is provided for the corresponding segments of piping and valves, protective housing is not provided for any of the four segments of piping and valves in accordance with SRP 6.2.4 SRP Acceptance Criteria 5. DCD Subsection 6.2.4.3, “Design Evaluation,” provides a discussion which addresses these issues.

Based upon the safety features aforementioned along with the in-service inspection provisions, this design approach using a single valve configuration is more reliable and meets the intended safety injection function requirements of SRP 6.2.4, RG 1.141, and ANSI 271-1976.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environment Report.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.:	**357-8344**
SRP Section:	**06.02.04 – Containment Isolation System**
Application Section:	**6.2.4**
Date of RAI Issue:	**01/05/2016**

Question No. 06.02.04-2

Clarify design requirements that prevent debris from interfering with valve closure.

Pursuant to RG 1.206 Section C.I.6.2.4.2 guidance, provide a discussion in the DCD on the design requirements of the containment isolation barriers as they pertain to provision taken to ensure that closure of any containment isolation valves is not prevented by debris that could become entrained in escaping fluid. Specifically discuss the following penetrations: Item Nos. 24, 25, 26, 27 (Safety injection pump and Containment spray pump suction line).

Response

The in-containment refueling water storage tank (IRWST) provides a source of borated water for containment spray (CS) and safety injection (SI) through penetrations numbers 24, 25, 26, and 27. Each quadrant of the IRWST contains a pair of suction piping and IRWST sump arrangements for the SI pumps via these penetrations and the associated containment isolation valves (CIVs) 304, 308, 305, and 309. The open end of each suction pipe is equipped with a debris strainer that satisfies NEI 04-07 and SE, and conforms to the guidance in NRC RG 1.82.

The four independent sets of strainers are located in the IRWST. Each strainer is for one of the four SI pumps and for one of the two (shutdown cooling) SC pumps and two CS pumps. Each strainer has sufficient flow surface area (600 ft^2) and perforated plate hole size of 2.38 mm (3/32 inch). The strainers limit debris from entering the suction piping. Debris that gets intrained in the suction, mostly very fine fibrous material, will be transported through the valves and system due to the velocity of the system flows. The isolation valves are gate valves and will not accumulate debris in the seating area due to the inherent design and flow through the valve. The seating surfaces of the safety related ECCS gate valves are hard metallic composition not prone to wear. The composition of the fluid is such that it will not have an impact on the capability of the motor operated valve closure.

A summary discussion regarding the debris blockage of components downstream of the IRWST sump strainers during a LOCA and long-term post-LOCA related to Generic Safety Issue (GSI)-191 is summarized in DCD Subsection 6.8.4.5.9.

Based on the above discussion, the APR1400 includes the design and an evaluation pertaining to the limits of debris entering into the SI piping, thereby ensuring the closure of the CIVs. Additional changes to the DCD are not needed.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environment Report.

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Docket No. 52-046

RAI No.:	**357-8344**
SRP Section:	**06.02.04 – Containment Isolation System**
Application Section:	**6.2.4**
Date of RAI Issue:	**01/05/2016**

Question No. 06.02.04-7

Clarify administrative controls and leak testing provisions for flanged closures, personnel airlock, equipment hatch, and fuel transfer tube

Pursuant to requirements in General Design Criteria (GDC) 54 as it relates to the design of piping systems penetrating containment having the capability to periodically test the operability of the isolation valves and associated apparatus and pursuant to guidance in RG 1.141 (ANSI N271-1976, paragraph 4.10), state in the DCD that the flanged closures, personnel airlock, equipment hatch and fuel transfer tube will be under administrative controls similar to manual valves and have provisions for containment leak testing in accordance with ANSI N271-1976, paragraph 5.3.

In addition, provide descriptions in the DCD of the accommodations for leakage testing that are provided for flanged closures, airlock design, equipment hatch and fuel transfer tube designs.

Response

a) Clarification on Administrative Controls

For the transfer tube flange closure, personnel airlock and equipment hatch, procedures for the operation, inspections, testing and maintenance are to be established for administrative controls. The procedures provide reasonable assurance that these components will operate as designed during normal and post-DBA conditions.

DCD Subsection 6.2.4 will be revised to clarify the administrative controls which are applicable to the flanged closures.

b) Clarification on Leak Test Provisions:

DCD Subsection 6.2.4.4 describes the testing and inspection requirements for containment leakage testing of the fuel transfer tube, equipment hatch, and personnel airlock. The functional tests and the leak test for the fuel transfer tube, equipment hatch, and the containment personnel airlock are described in DCD Subsection 14.2.12.1.120 through 14.2.12.1.122.

The leak test for the fuel transfer tube is discussed in DCD Subsection 14.2.12.1.120. The double-blind flange attached to the transfer tube is equipped with two pressure test taps (Please refer to DCD Figure 9.1.4-11 for details). The pressure test taps provide the accommodation for testing of the annulus between the seals; air or nitrogen is used as the pressurizing medium for the pressure test. The blind flange is Type-B leak rate tested in accordance with ANSI/ANS 56.8-1994. More discussion is provided in DCD Subsection 9.1.4.2.1.3.

The equipment hatch leak test is discussed in DCD Subsection 14.2.12.1.121. The hatch is placed in the closed position for the ANSI/ANS 56.8-1994 Type-B leak rate test, and the seal structural integrity test is performed at the calculated peak accident pressure. A test port is to be provided for the pressure test of the O-rings' seals. Air or nitrogen is used as the pressurizing medium for the pressure test.

The containment personnel airlock leak test is discussed in DCD Subsection 14.2.12.1.122. The airlock is placed in the closed position for the ANSI/ANS 56.8-1994 Type-B leak rate test, and the structural integrity test is performed at the calculated peak accident pressure. Door seal test connections are to be provided for the leak rate test. Air or nitrogen is used as the pressurizing medium for the seal test.

DCD Subsection 6.2.4.2 and Figure 6.2.4-1 will be revised to clarify the leak testing provisions for the personnel airlock, equipment hatch, and fuel transfer tube.

Impact on DCD

DCD Subsection 6.2.4 and 6.2.4.2 will be revised to clarify administrative controls and leak testing provisions for the personnel airlock, equipment hatch, and fuel transfer tube, as indicated in the attachment associated with this response.

Revisions to DCD Figure 6.2.4-1 are shown in Attachment 1 to Question 06.02.04-9 of this RAI.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environment Report.

6.2.3 Secondary Containment

The secondary containment is not applicable to the APR1400.

6.2.4 Containment Isolation System

The containment isolation system provides the means of isolating fluid systems that pass through the containment penetrations to confine the release of any radioactivity from the containment following a postulated DBA. The containment isolation system is required to function following a design basis event to isolate non-safety-related fluid systems penetrating the containment. There is no particular system for complete containment isolation, but isolation design is achieved by applying acceptable common criteria to penetrations in many different fluid systems and by using containment pressure to provide a containment isolation actuation signal (CIAS) as described below to actuate appropriate valves.

~~The containment penetration barriers consisting of the flange closure, personnel airlock and equipment hatch are under administrative control~~.

6.2.4.1 Design Bases

6.2.4.1.1 Overall Requirements

The design bases for the containment isolation systems include provisions for the following:

a. A double barrier at the containment penetration in the fluid systems that are not required to function following a design basis event.

b. Automatic and leaktight closure of valves required to close for containment integrity following a design basis event to minimize release of any radioactive material.

c. A means of leak testing barriers in fluid systems that serves as containment isolation in accordance with GDC 52 (Reference 34).

Flanged closures of the containment isolation system are controlled administratively. The flanged closures include the personnel airlock, equipment hatch, and fuel transfer tube. Procedures for the operation, inspections, testing and maintenance of flanged closures are to be established for administrative controls. The procedures provide reasonable assurance that these components will operate as designed during normal and post-DBA conditions.

h. Valve operators and power sources are selected for containment isolation valves consistent with their required safety function.

i. Instrumentation and control sensing lines that penetrate the containment are provided with containment isolation provisions, which meets the intent of NRC RG 1.11.

j. All containment penetrations not used for accident mitigation or safe shutdown are automatically isolated by a CIAS unless:

1) The valves are normally locked closed.

2) The penetrations are normally sealed (e.g., fuel transfer tube).

3) The lines are needed for RCP operation (RCP seal injection and component cooling water to RCP seal coolers, motors, and lube oil coolers).

The exception of the lines for RCP operation allows the RCPs to be available for accident mitigation or safe shutdown if offsite power and non-essential support systems are available. These lines are continuously monitored for radiation and can be manually isolated from the MCR.

k. The induced stresses in the pressure retaining components of the CIVs, due to an internal containment pressure of less than or equal to 7.67 kg/cm^2 (109 psig), are within the ASME Section III Factored Load Category.

6.2.4.2 System Design

No single flow diagram shows all of the containment penetrations, but they are shown on appropriate flow diagram for systems. Containment isolation provisions are tabulated in Table 6.2.4-1. The appropriate valve arrangements are illustrated in Figure 6.2.4-1.

,including provisions for containment leakage testing,

All valves that receive an ESFAS are designed and tested with closing time appropriate to the function performed. The sequencing system for loading the onsite emergency

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RAI No.:	**357-8344**
SRP Section:	**06.02.04 – Containment Isolation System**
Application Section:	**6.2.4**
Date of RAI Issue:	**01/05/2016**

Question No. 06.02.04-9

Provide a table describing the provisions for individual leakage rate testing of the isolation barrier.

In order to evaluate if requirements of General Design Criteria (GDC) 54, as it relates to the ability to test the operability of isolation barriers, are met and to determine if valve leakage is within acceptable limits, for each containment isolation barrier, provide a table in the DCD describing the provisions (test connection etc.) for individual leakage rate testing of the barrier.

Response

DCD Tier 2, Figure 6.2.4-1 will be revised to include the leak rate test connections and locations for associated valves, vents, and drain connections along with the locations of the applicable CIVs. Table 6.2.4-1 contains a list of all containment isolation valves (CIVs) including a designation of the test type for each individual valve. Table 6.2.4-1 also includes reference to the valve arrangements depicted in Figure 6.2.4-1. A detailed discussion regarding the Type C test is presented in DCD Tier 2, Subsection 6.2.6.3. The replacement figures provided in Attachment 1 delineate the test connections for the individual CIVs for leakage measurement. This was determined to be a more appropriate means of depicting the associated test connections; a separate table also describing the test connections would be redundant and is considered unnecessary.

Impact on DCD

DCD Tier 2, Figure 6.2.4-1 and DCD Tier 1, Figure 2.11.3-1 will be revised, as indicated in the attachments associated with this response.

- DCD Tier 2, Figure 6.2.4-1 (Attachment 1)

- DCD Tier 1, Figure 2.11.3-1 (Attachment 2)

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environment Report.

Figure 6.2.4-1 Sheet 1 through 9 will be replaced.

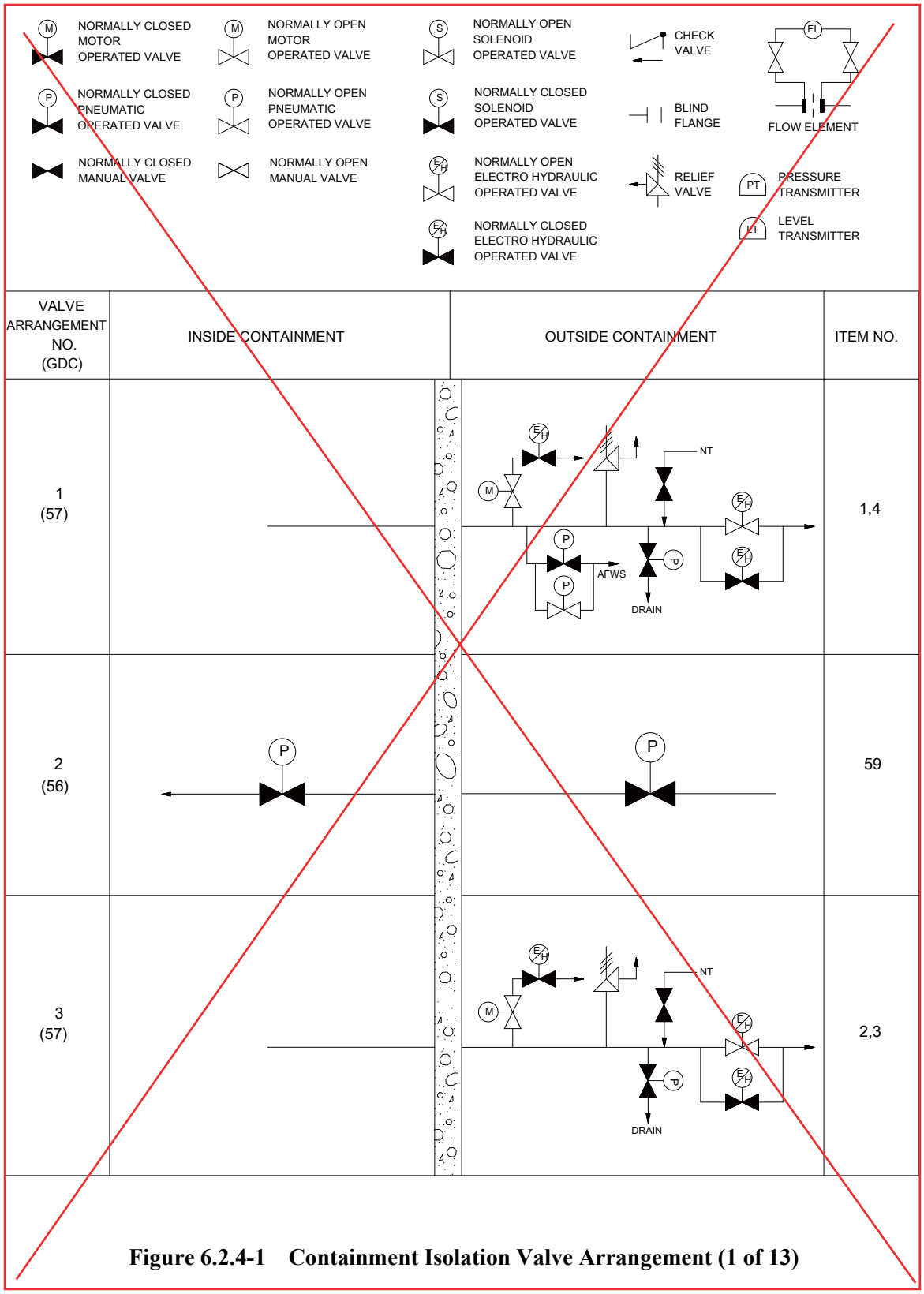


Figure 6.2.4-1 Containment Isolation Valve Arrangement (1 of 13)

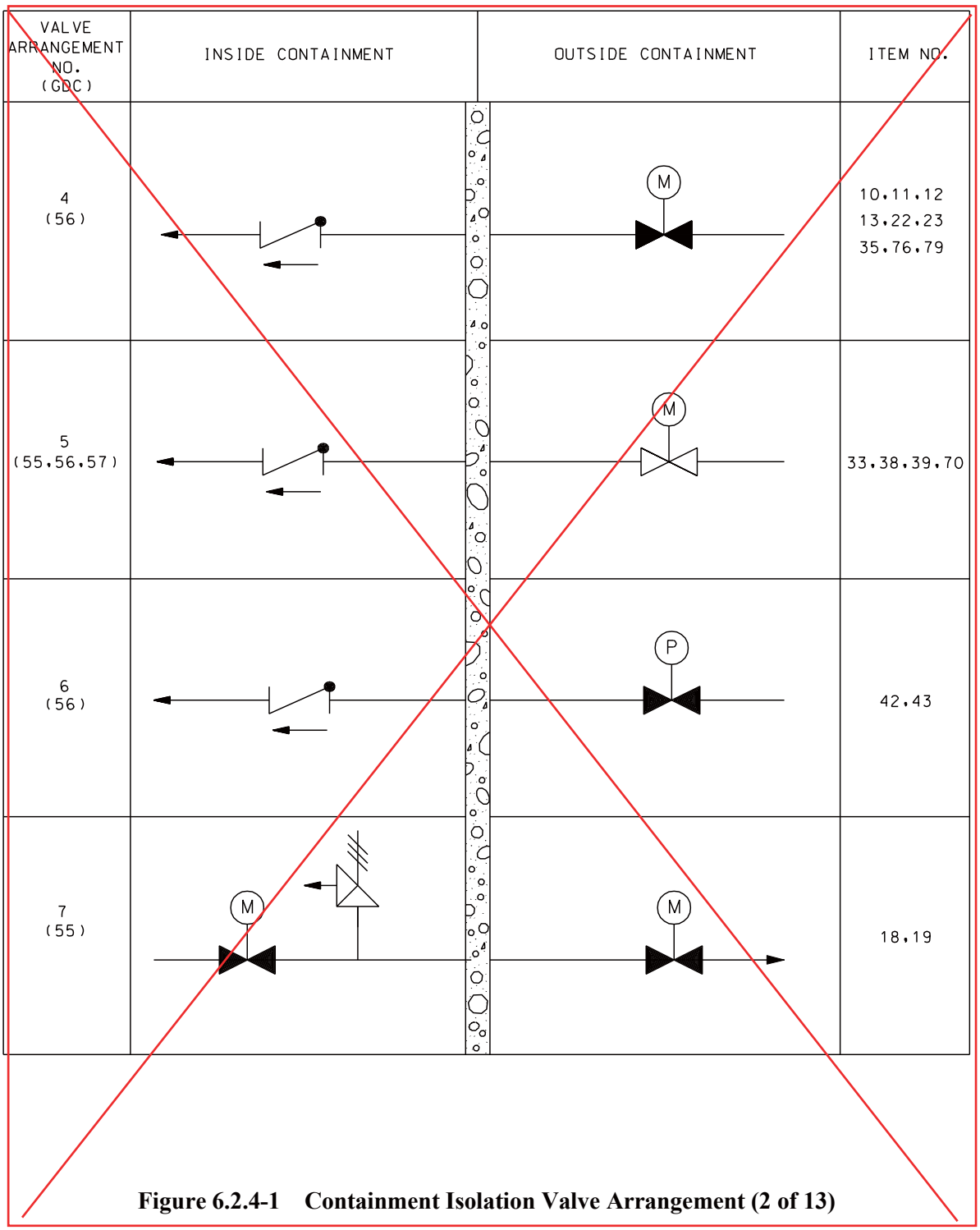


Figure 6.2.4-1 Containment Isolation Valve Arrangement (2 of 13)

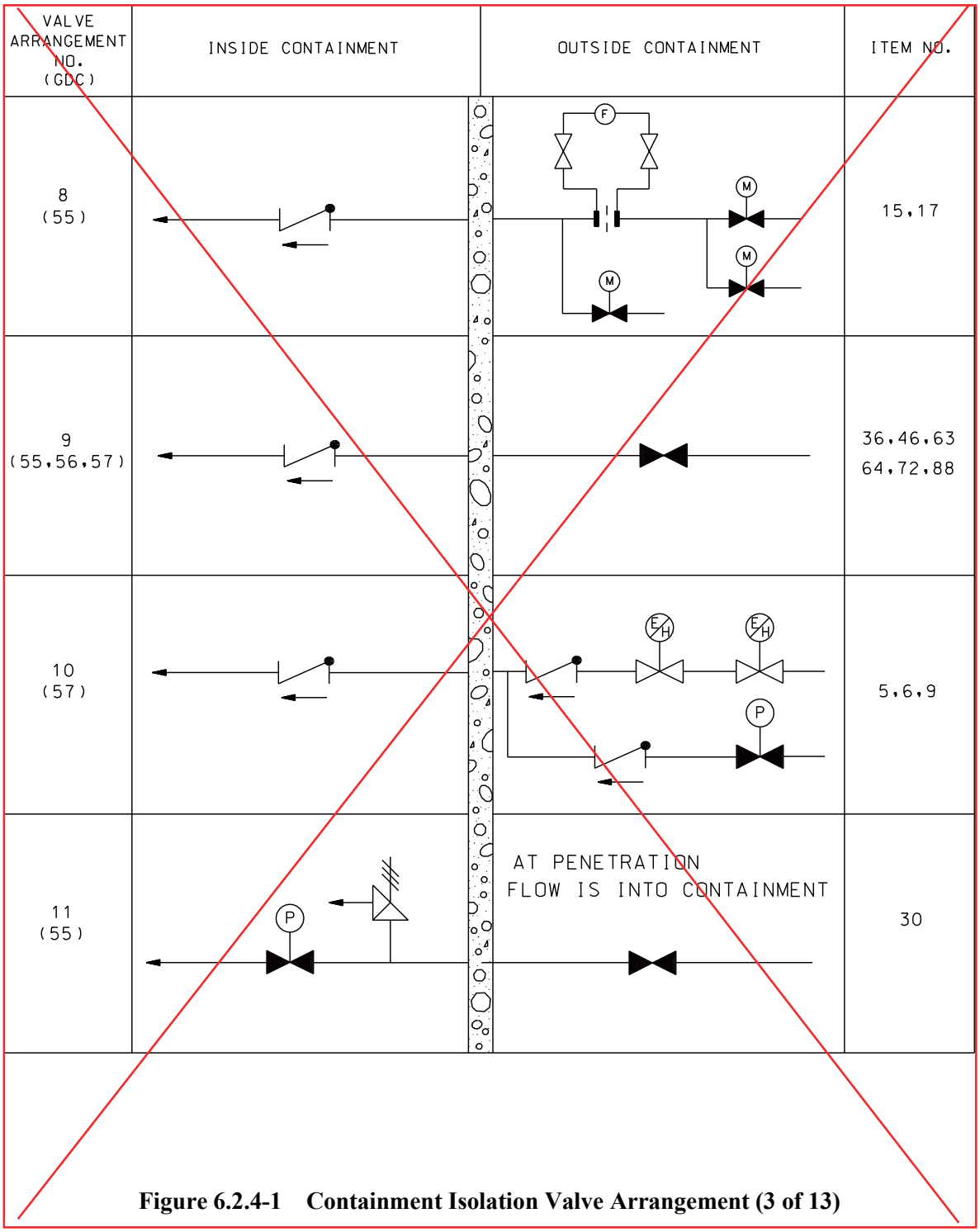


Figure 6.2.4-1 Containment Isolation Valve Arrangement (3 of 13)

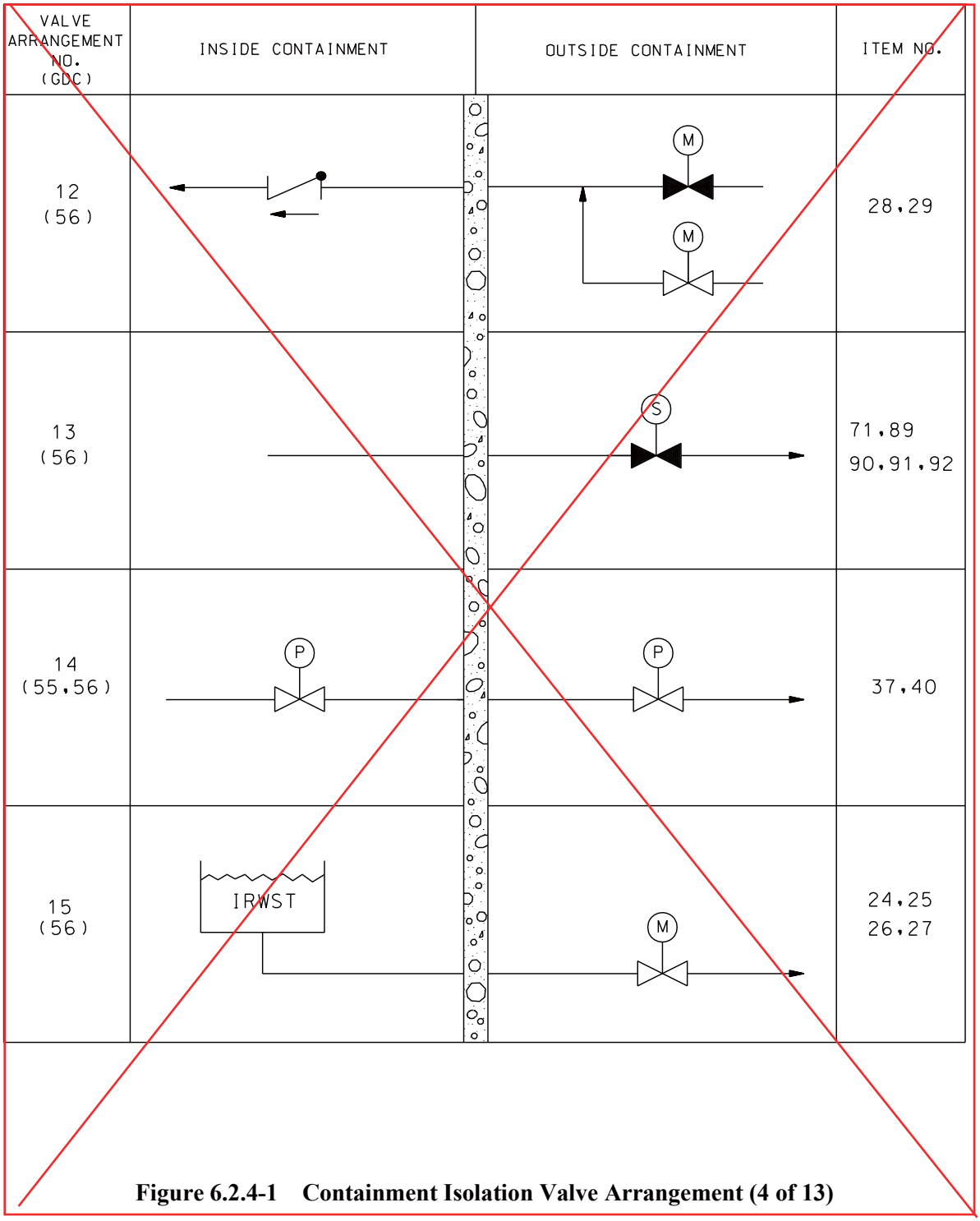


Figure 6.2.4-1 Containment Isolation Valve Arrangement (4 of 13)

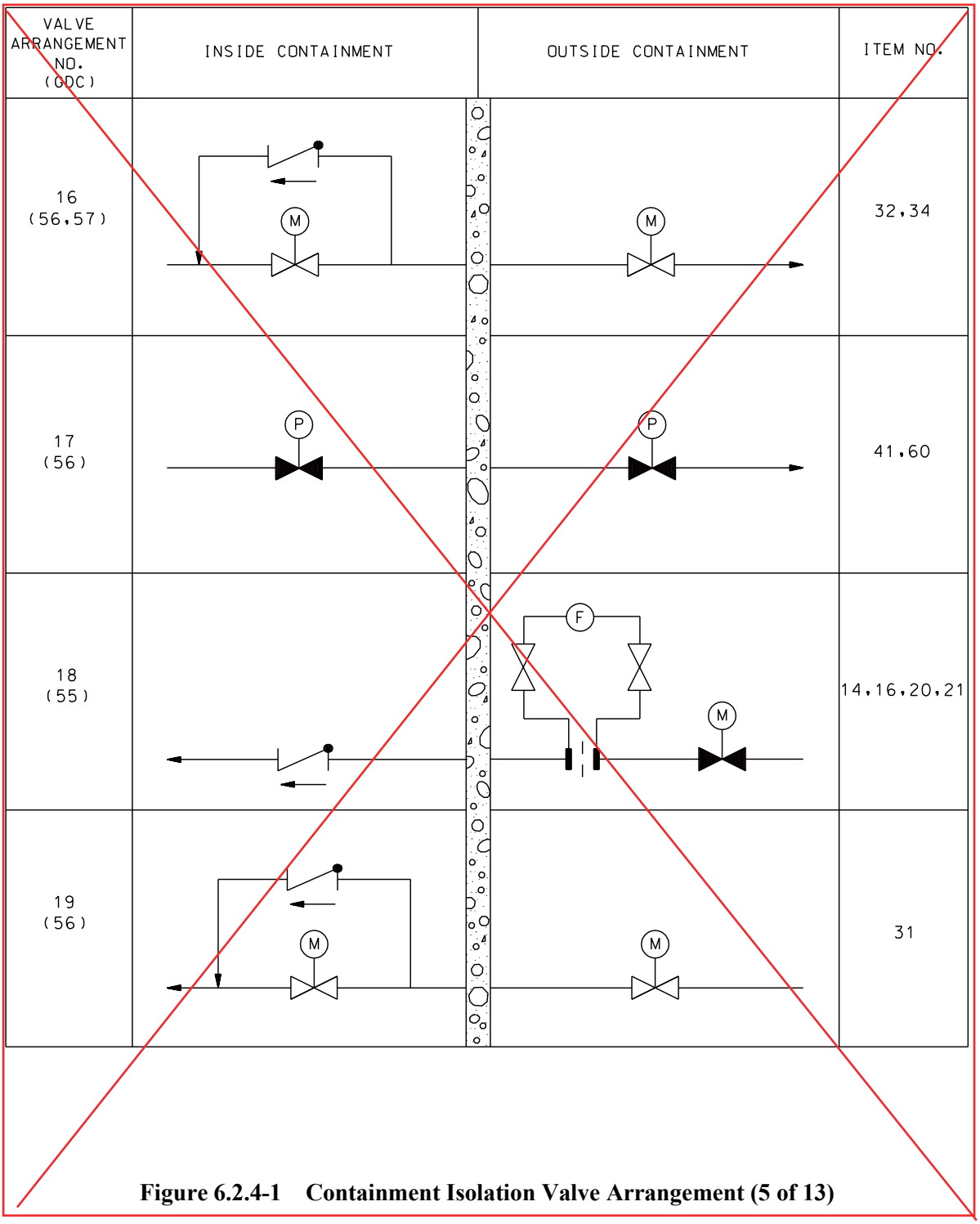


Figure 6.2.4-1 Containment Isolation Valve Arrangement (5 of 13)

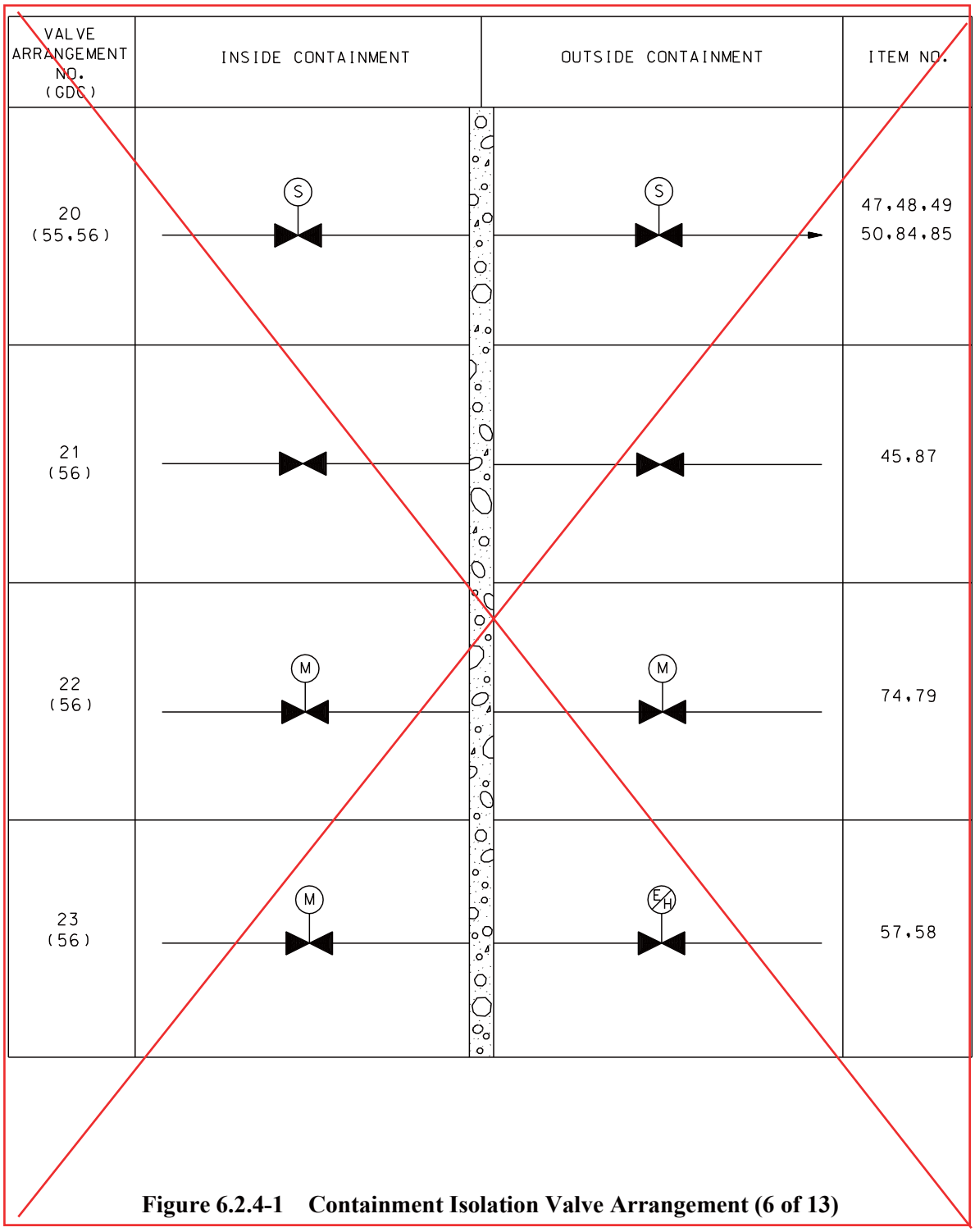


Figure 6.2.4-1 Containment Isolation Valve Arrangement (6 of 13)

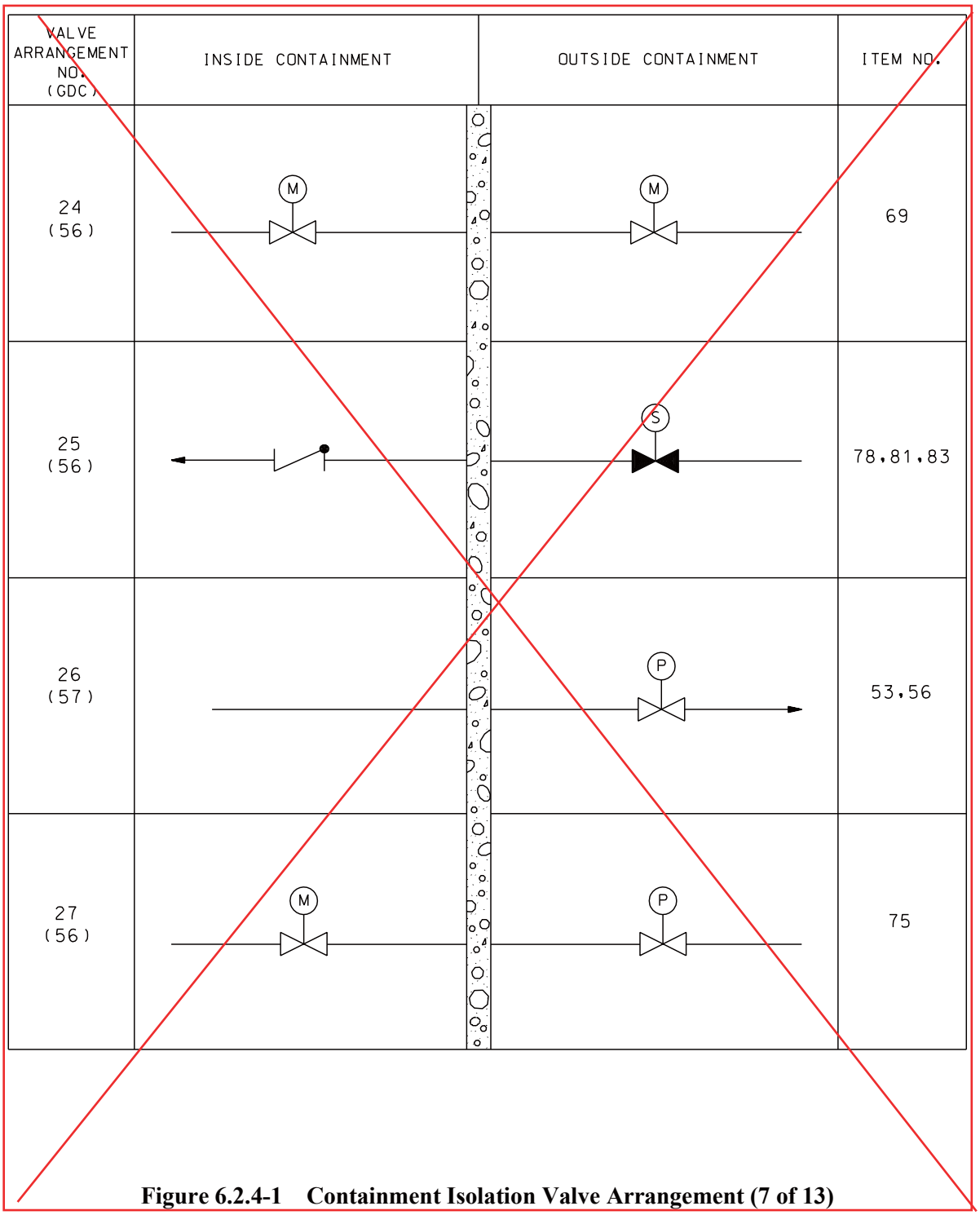


Figure 6.2.4-1 Containment Isolation Valve Arrangement (7 of 13)

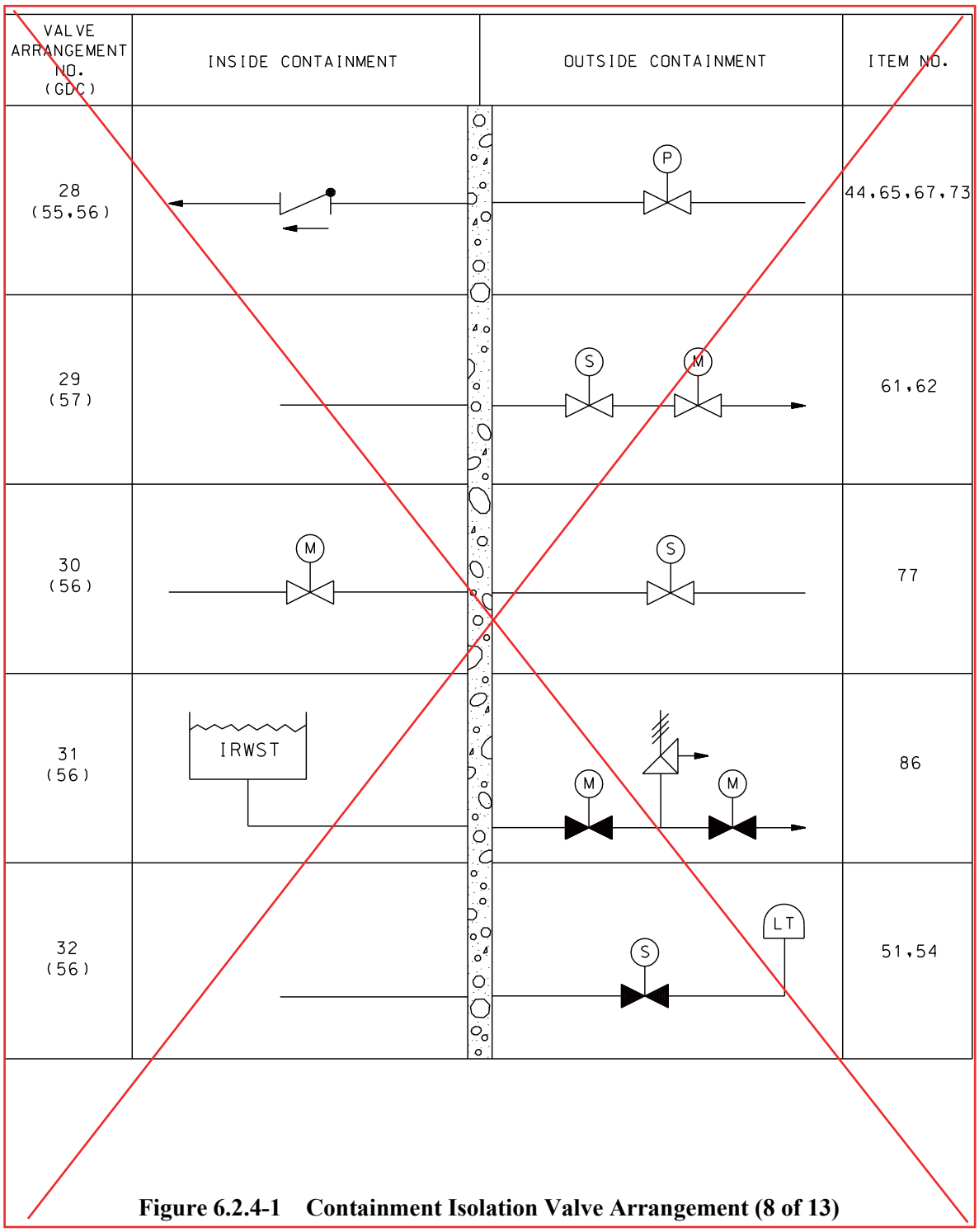


Figure 6.2.4-1 Containment Isolation Valve Arrangement (8 of 13)

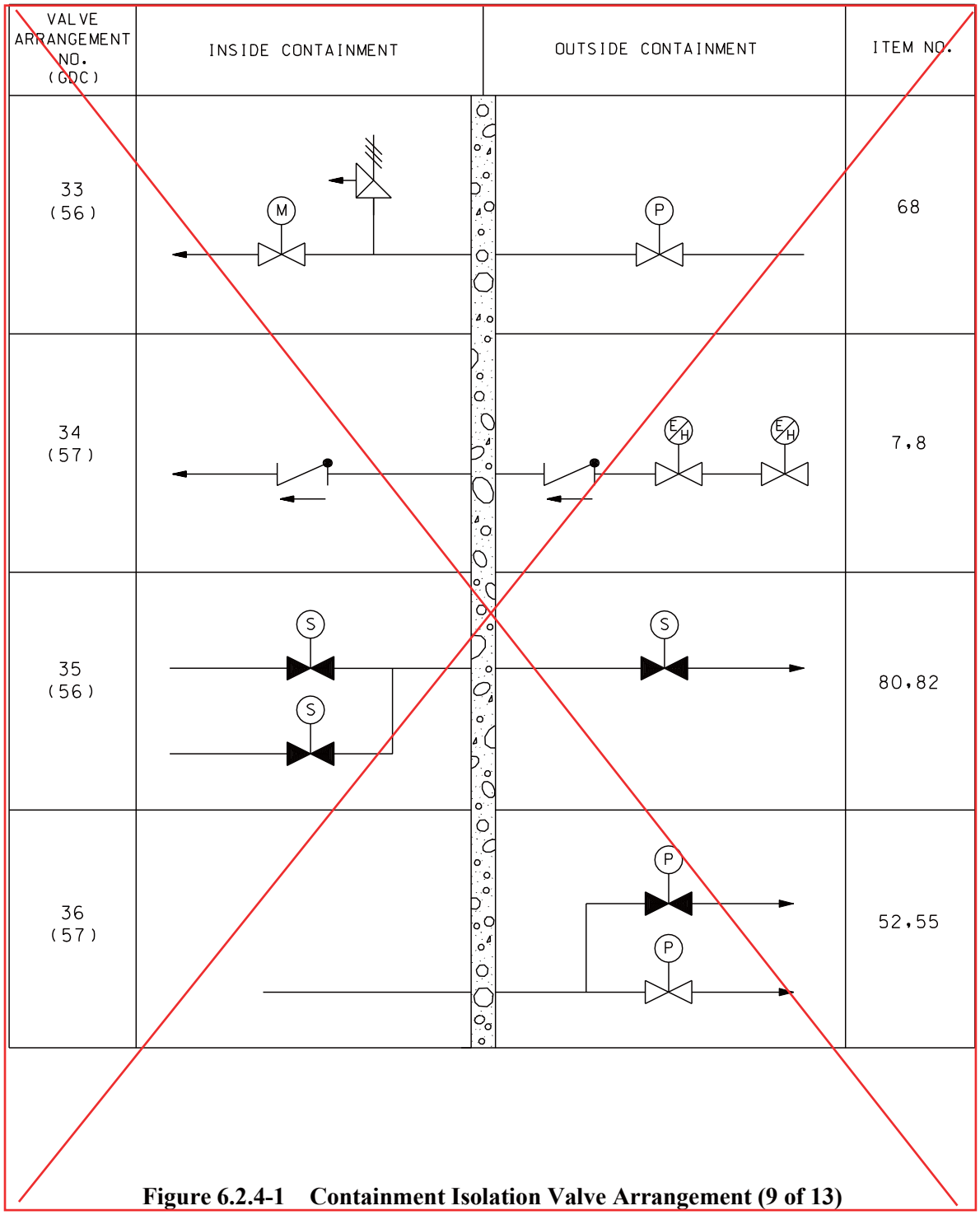
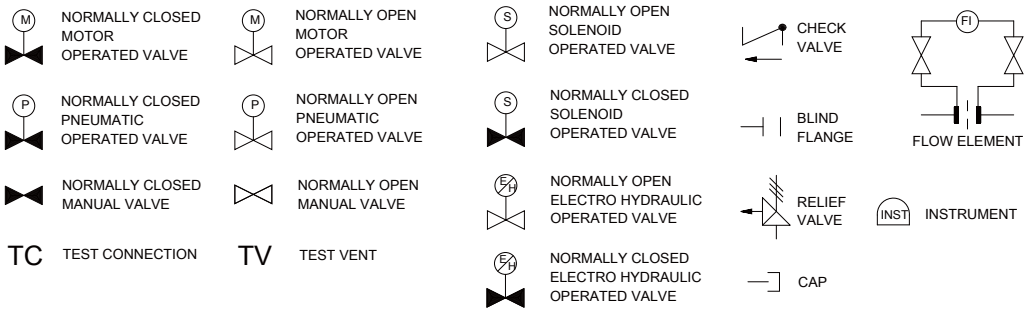


Figure 6.2.4-1 Containment Isolation Valve Arrangement (9 of 13)



* This test connection / vent may be located outside the containment due to the space limitation of the actual pipe arrangement

** This test connection may be located inside the bypass loop due to the space limitation of actual pipe arrangement

*** The draining of the CIVs utilizes the nearby piping low point drain

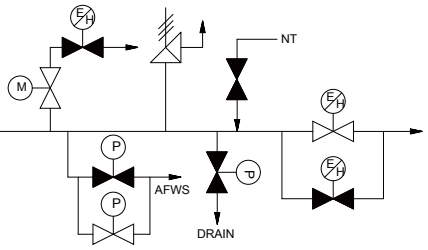
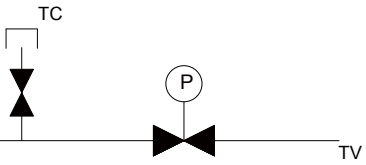
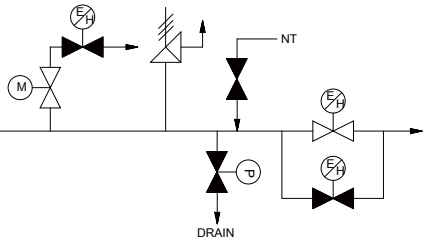
VALVE ARRANGEMENT NO. (GDC)	INSIDE CONTAINMENT	OUTSIDE CONTAINMENT	ITEM NO.
1 (57)			1,4
2 (56)			59
3 (57)			2,3

Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 1 of 13)

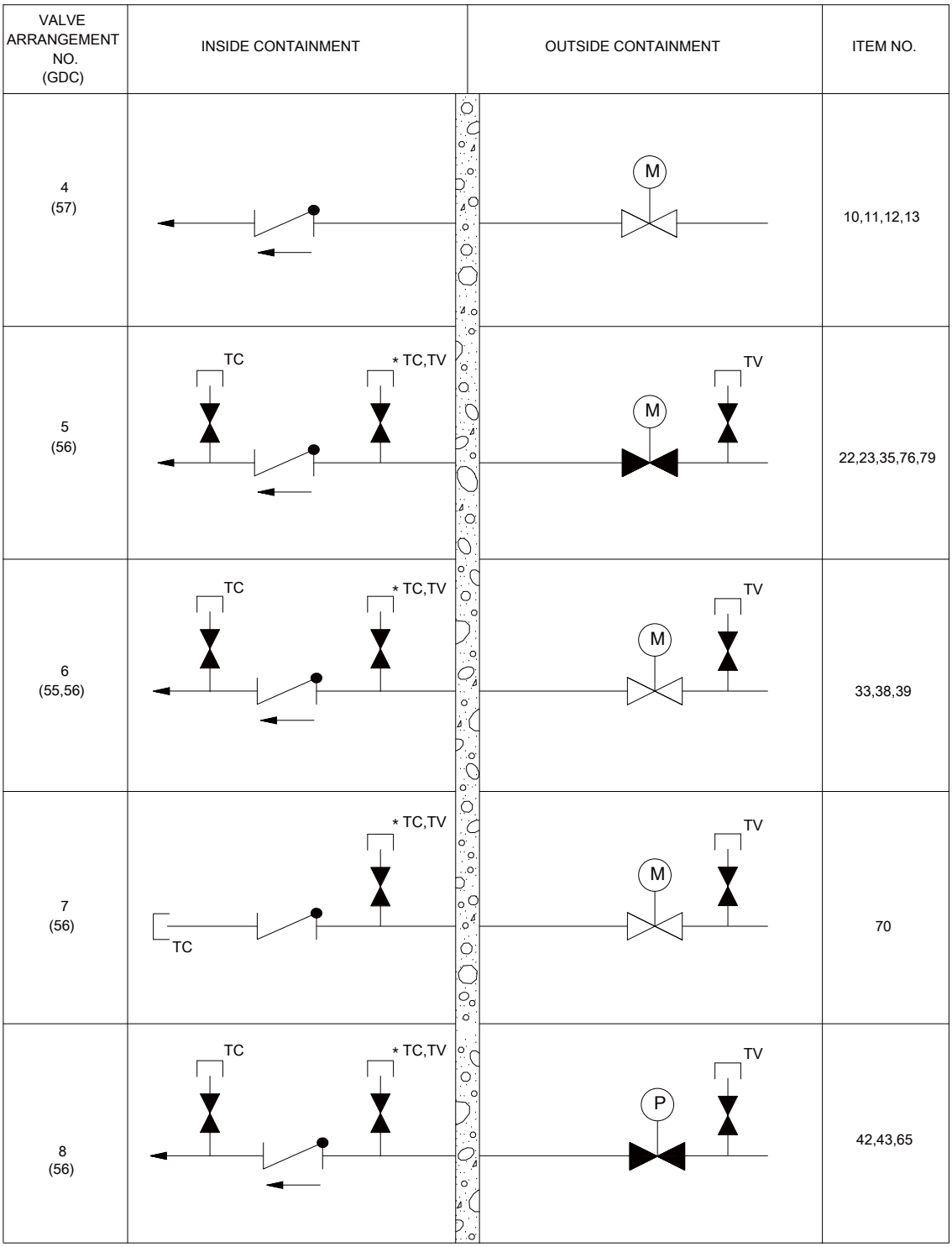


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 2 of 13)

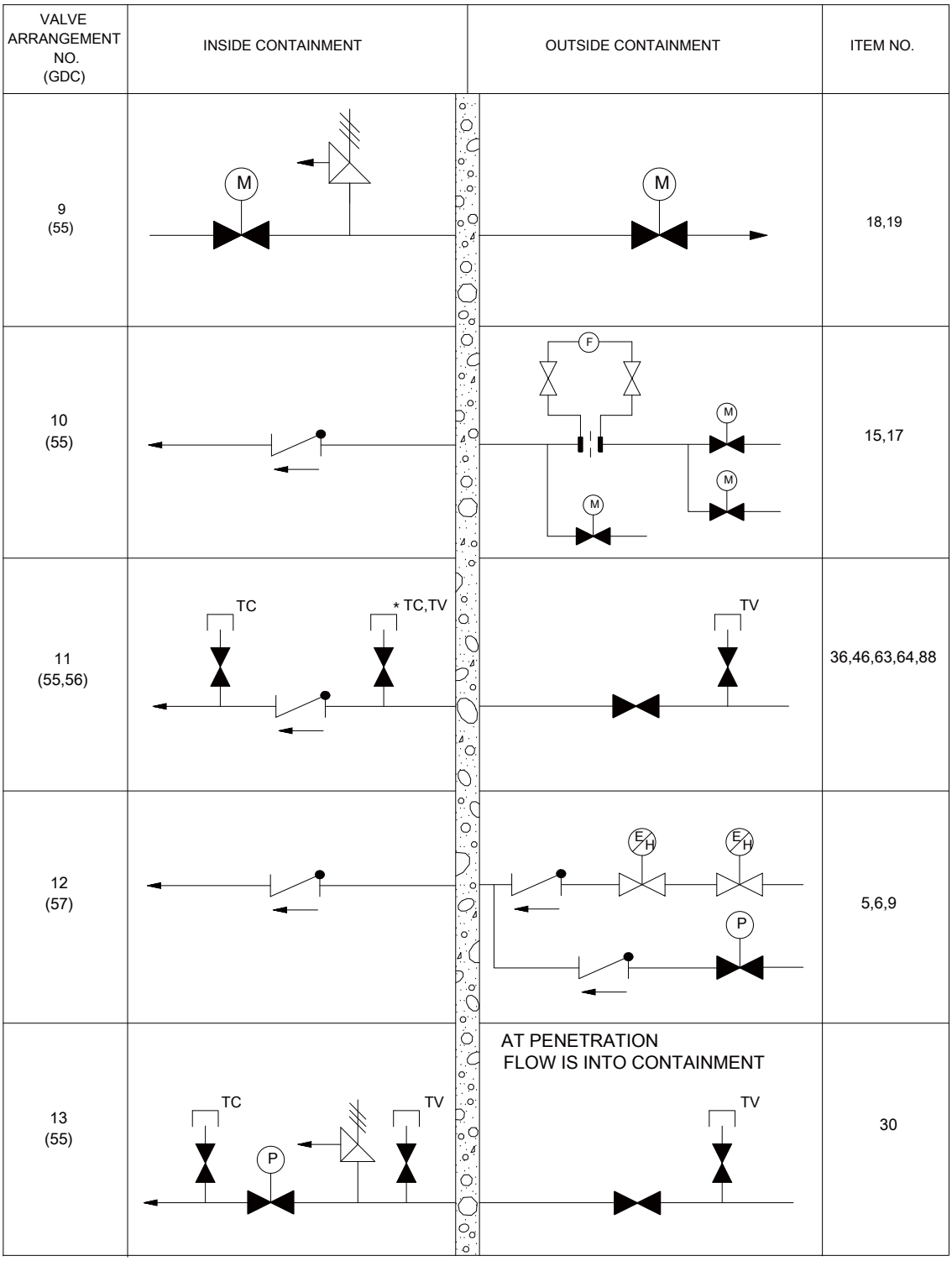


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 3 of 13)

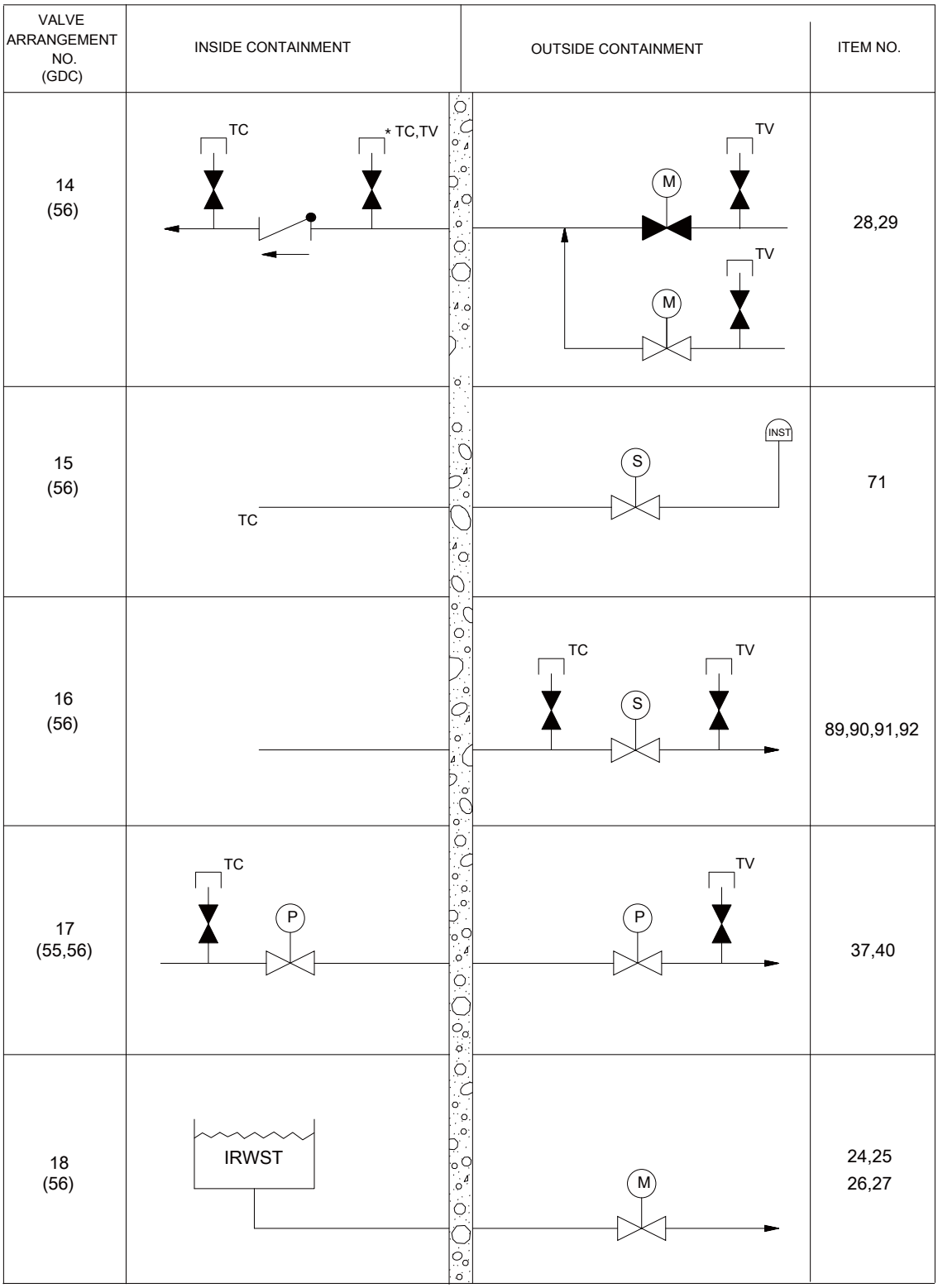


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 4 of 13)

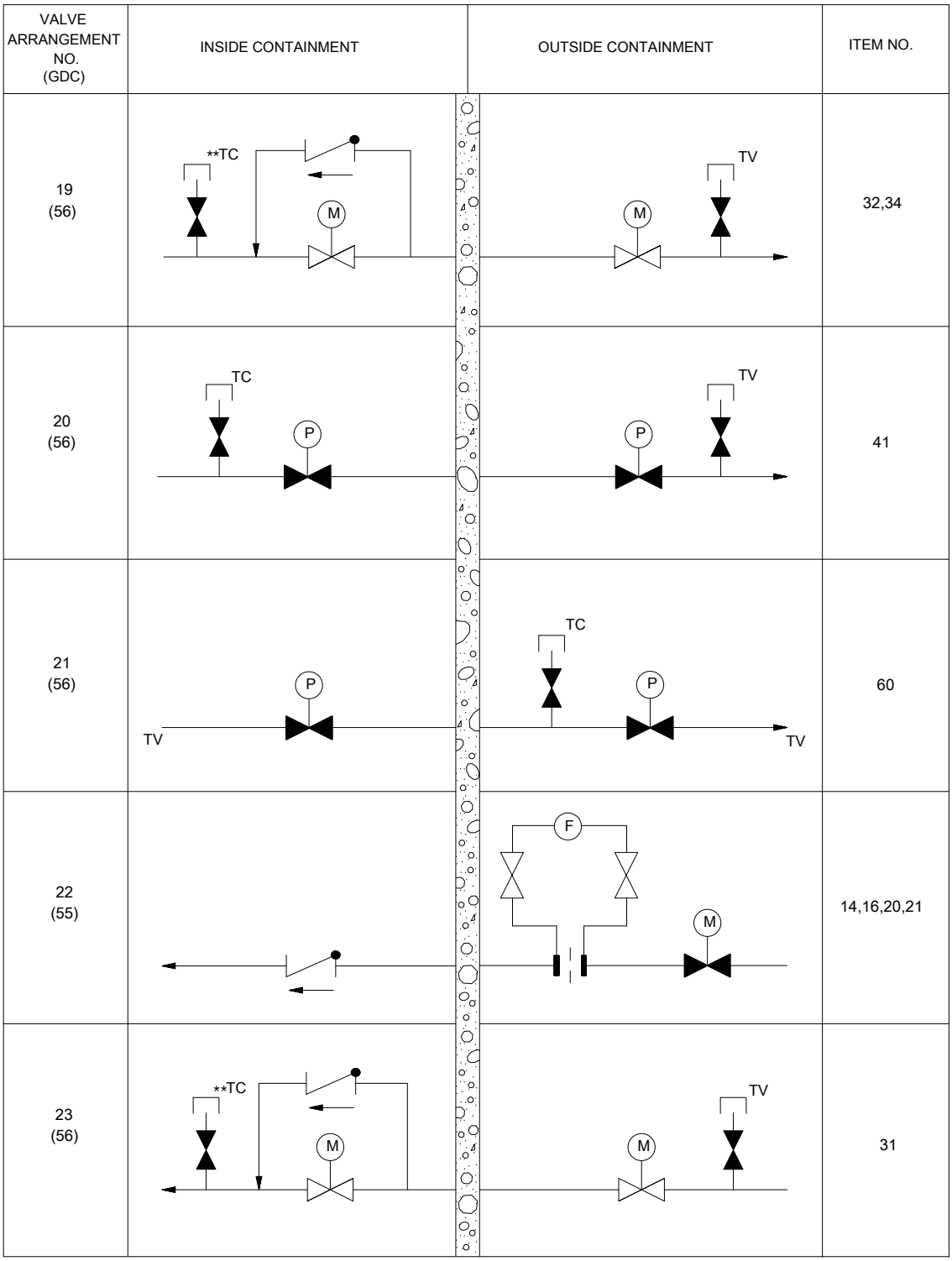


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 5 of 13)

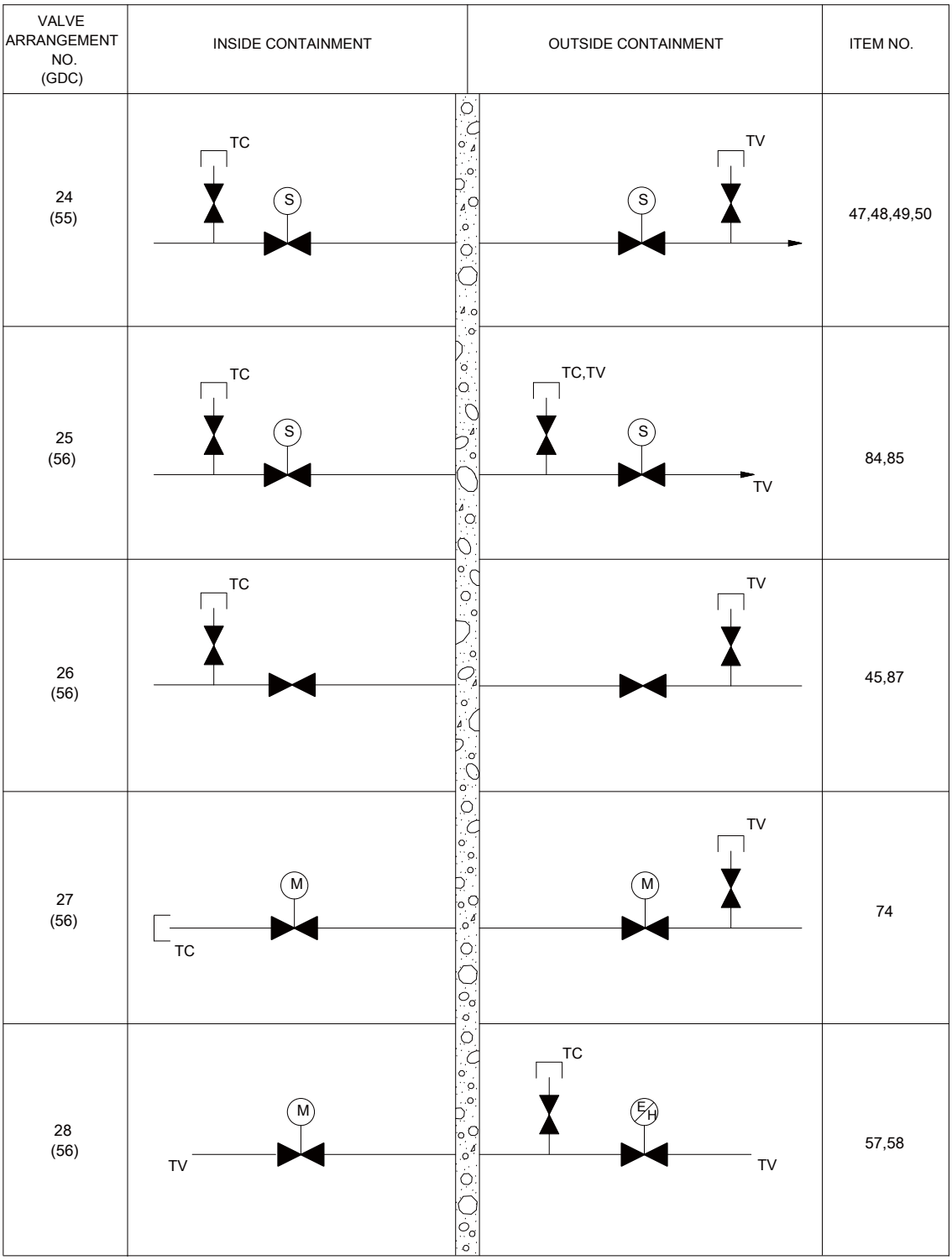


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 6 of 13)

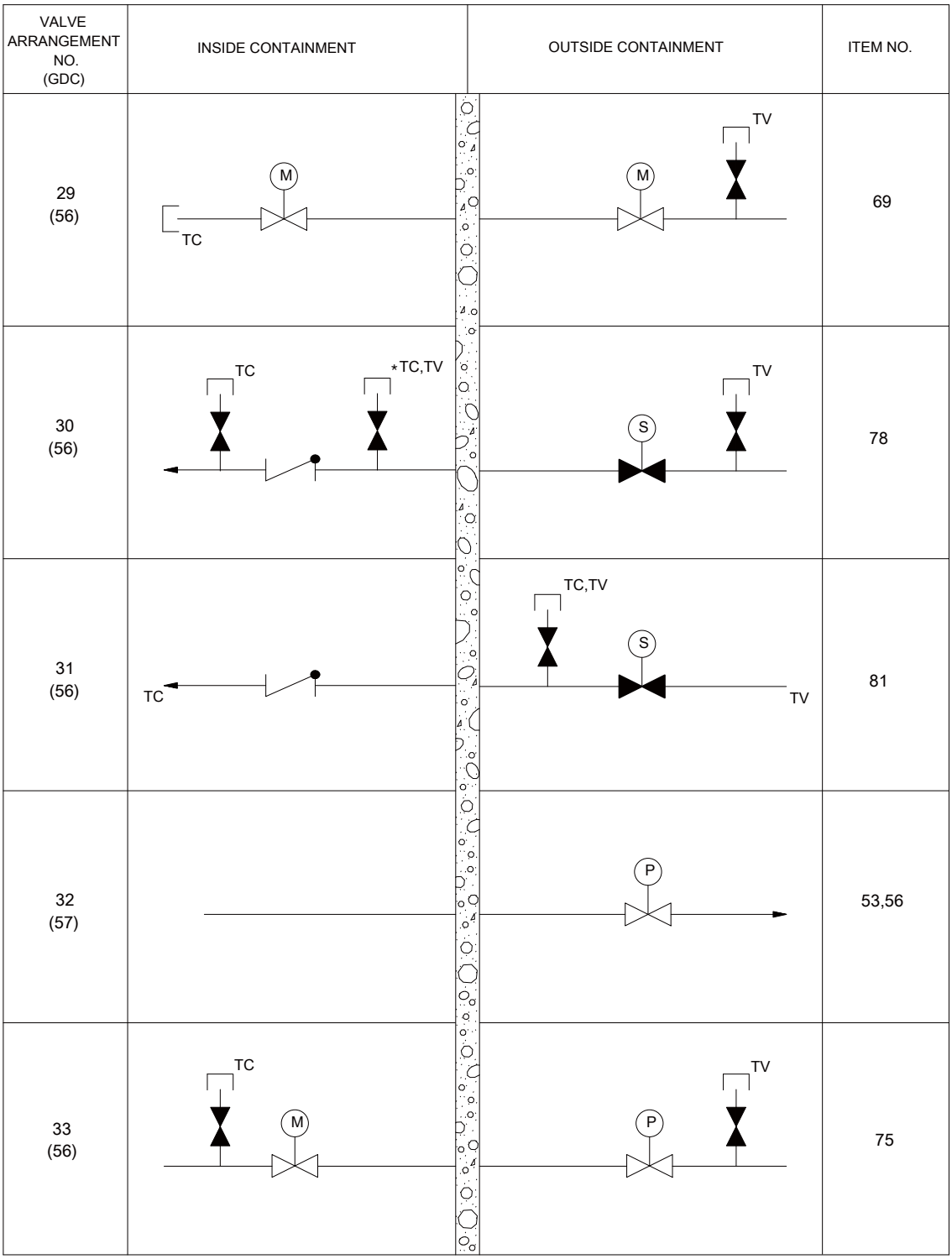


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 7 of 13)

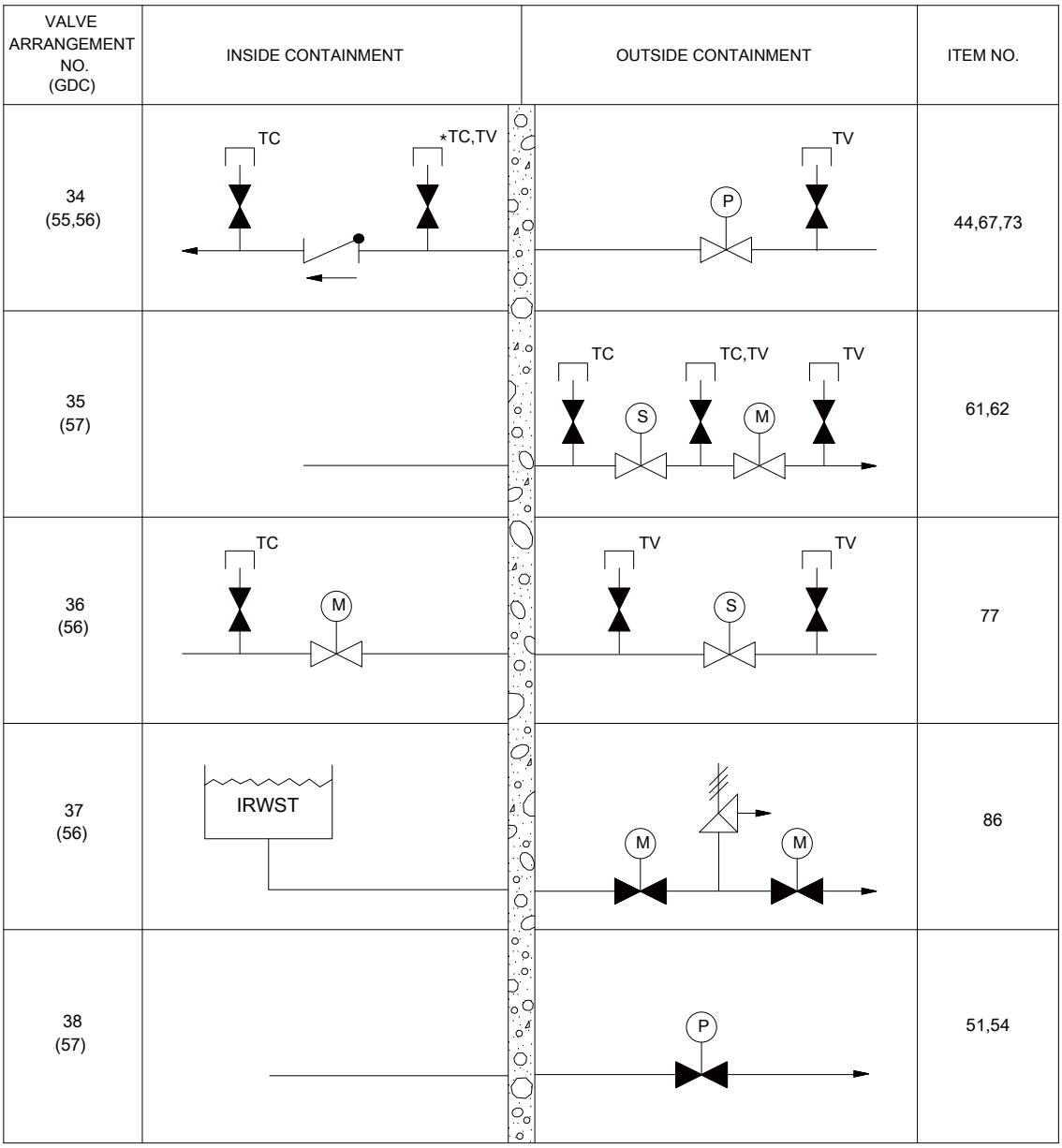


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 8 of 13)

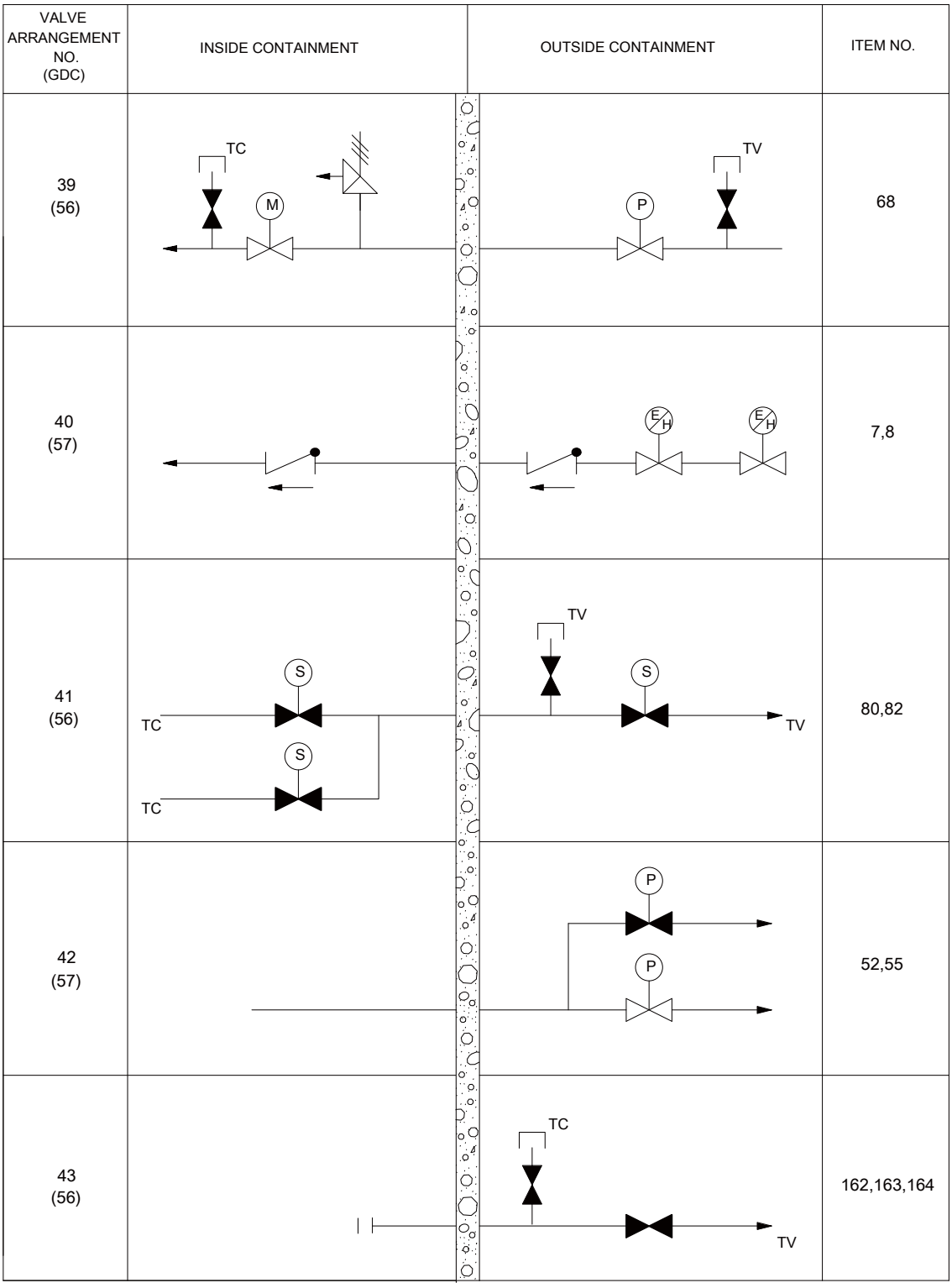


Figure 6.2.4-1 Containment Isolation Valve Arrangement (Sheet 9 of 13)

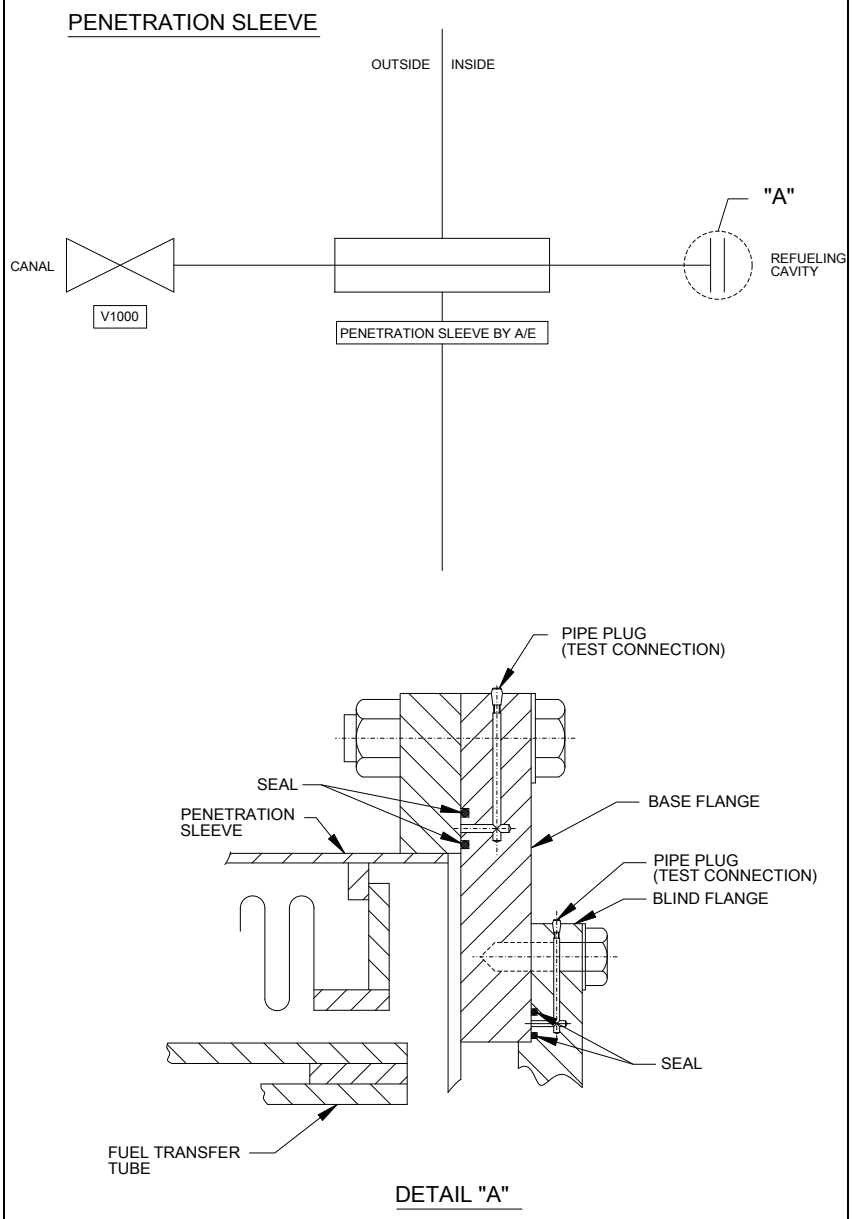
VALVE ARRANGEMENT NO (GDC)	Fuel Transfer Tube	ITEM NO.
44 ~~37~~ (-)		93

Figure 6.2.4-1 Containment Isolation Valve Arrangement (10 of 13)

Figure 2.11.3-1 Sheet 1 through 9 will be replaced.

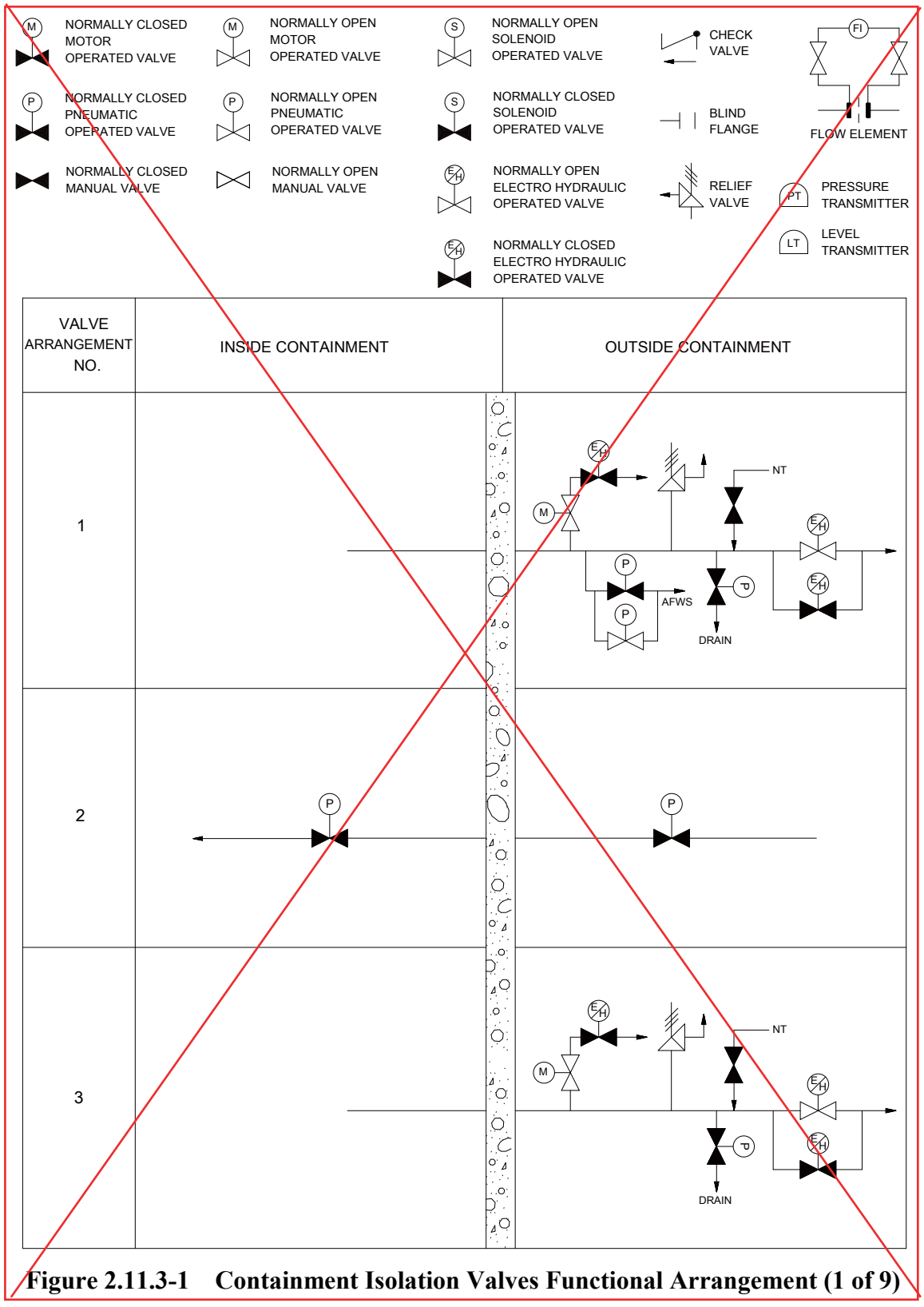


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (1 of 9)

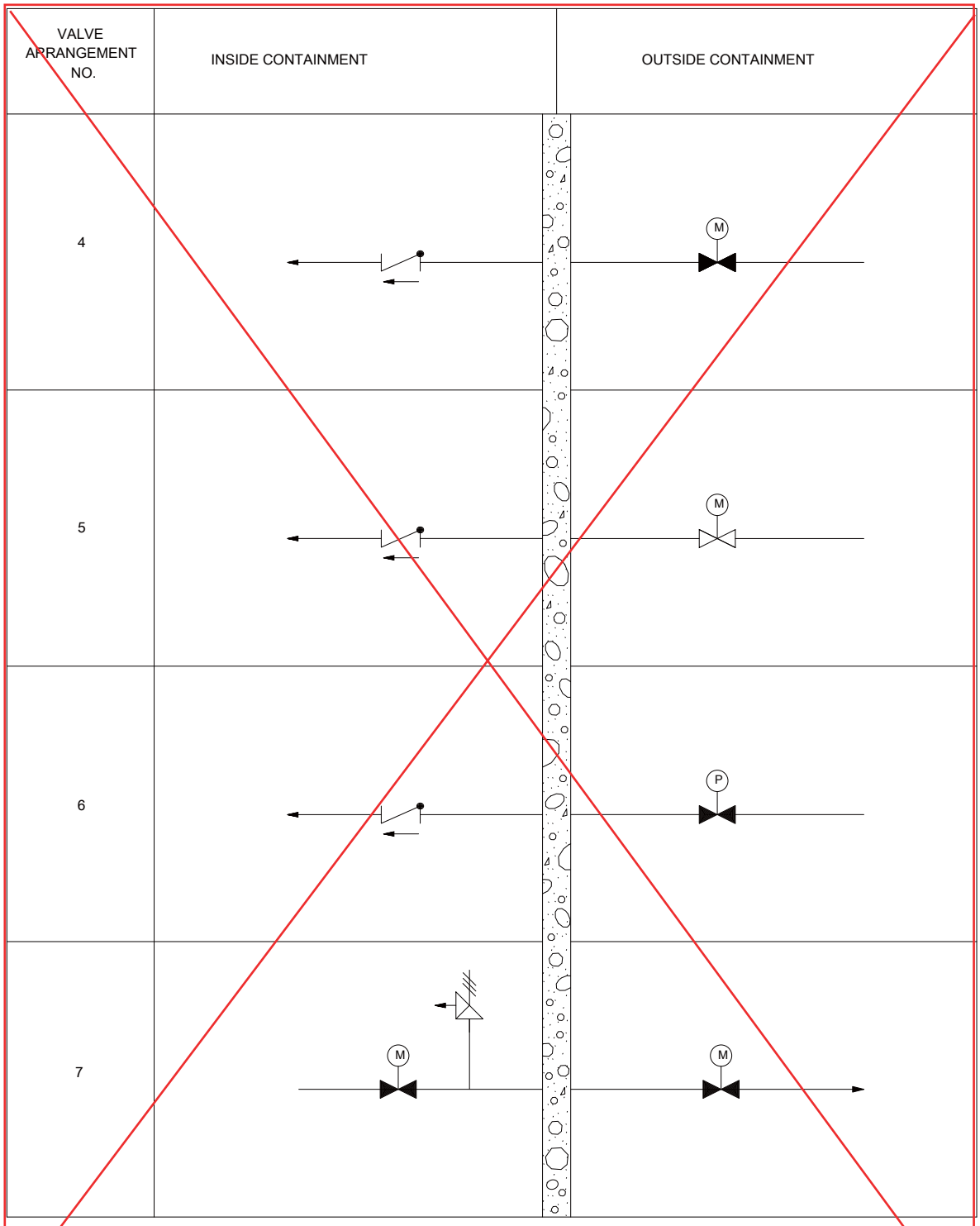


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (2 of 9)

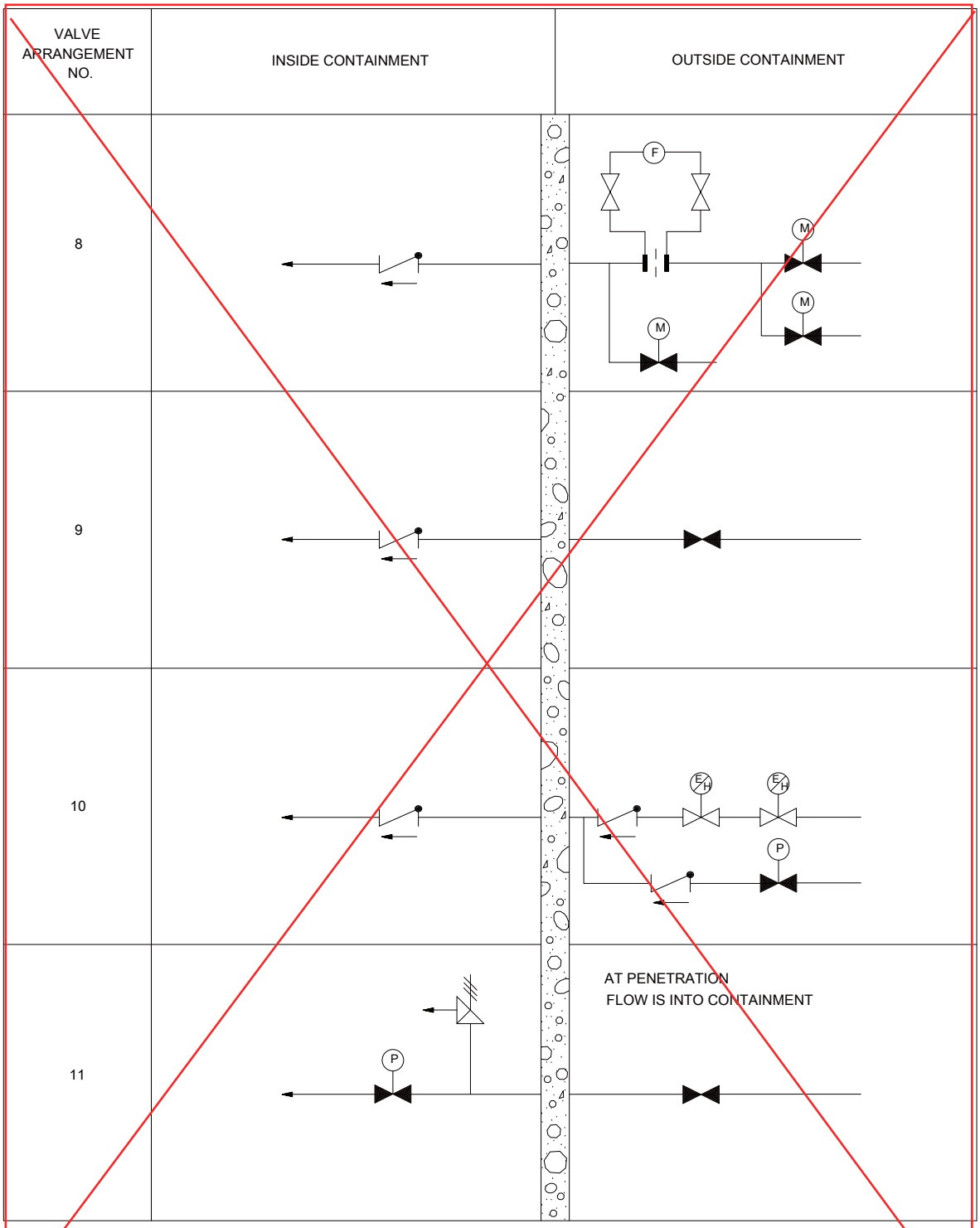


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (3 of 9)

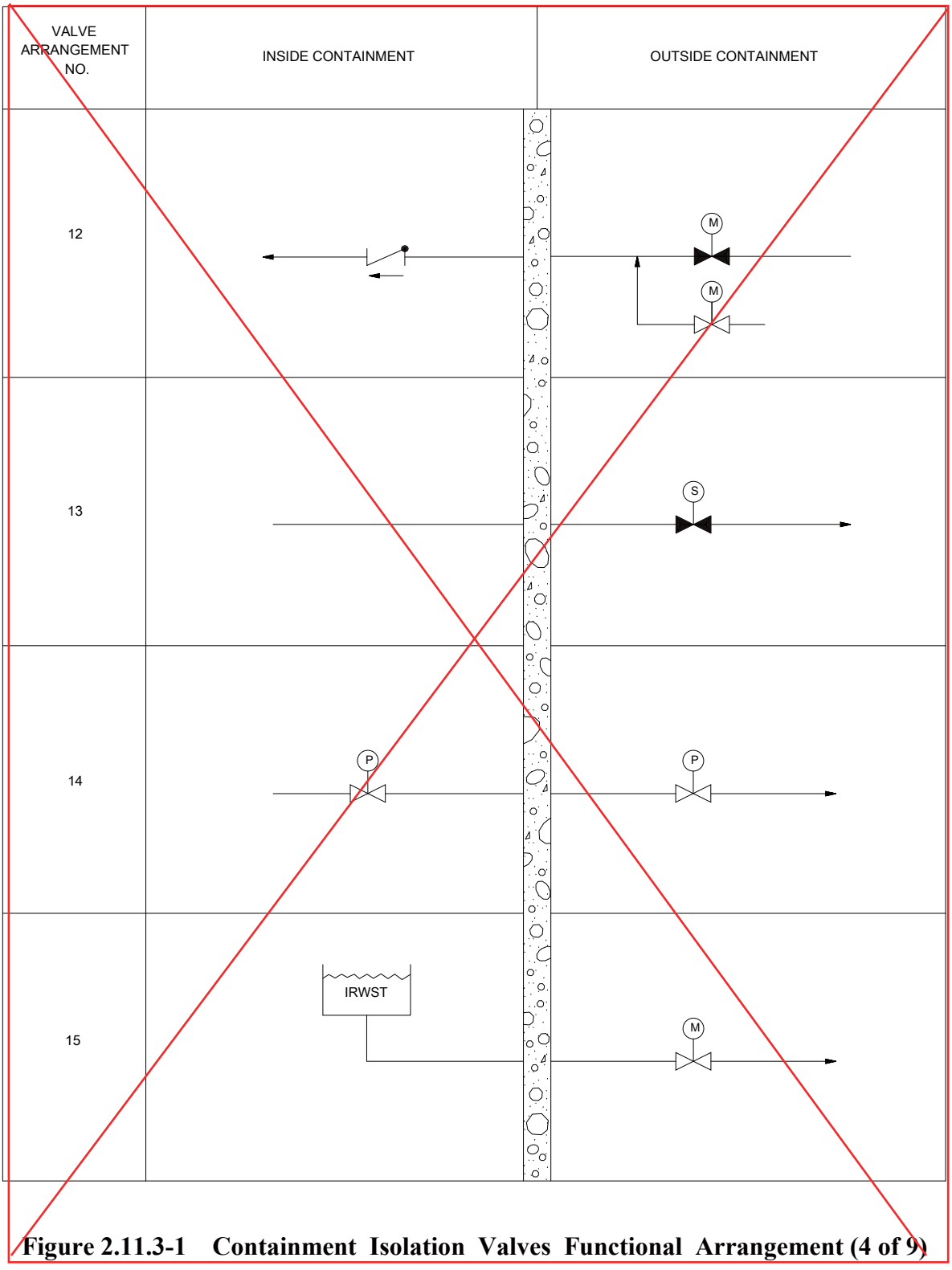


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (4 of 9)

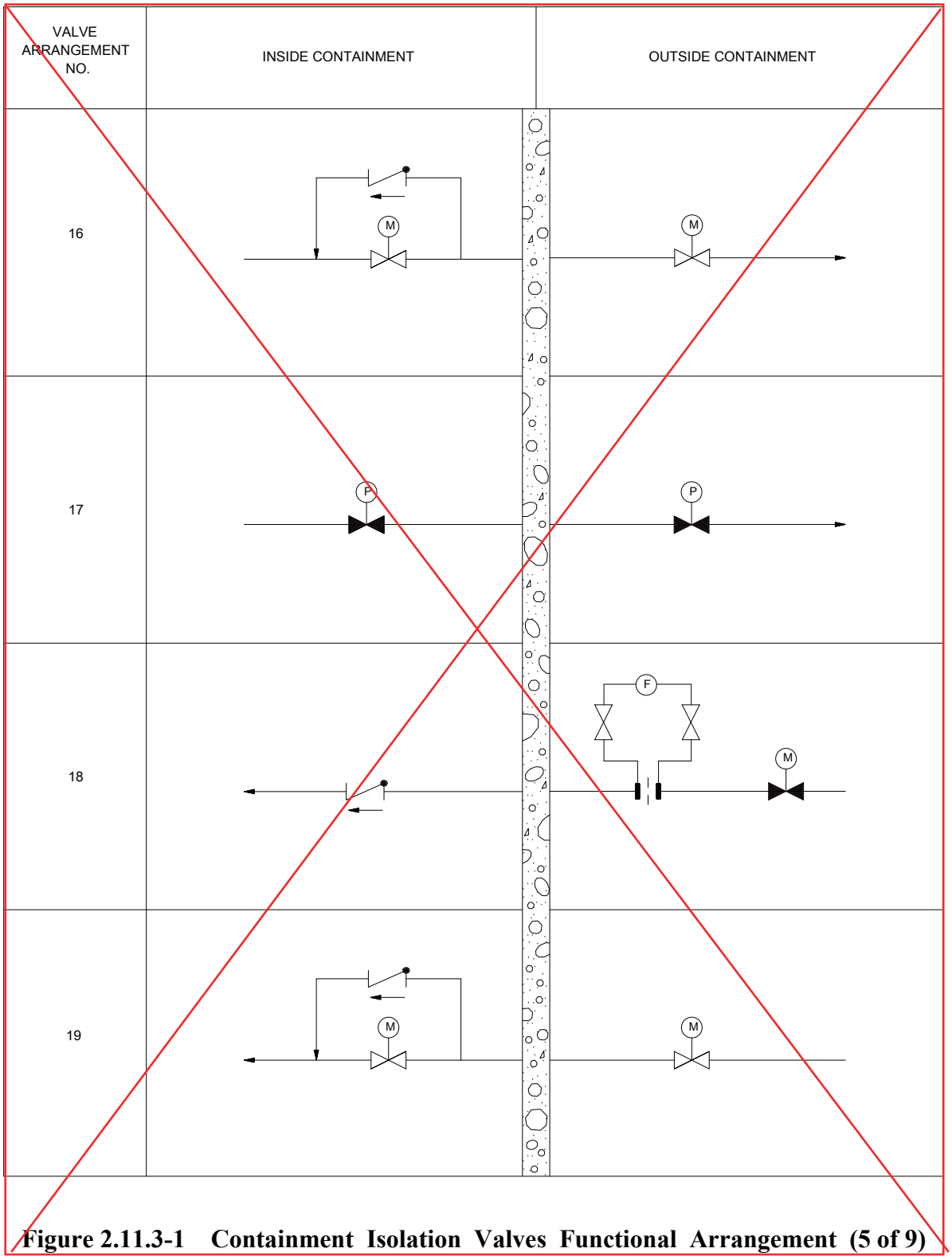


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (5 of 9)

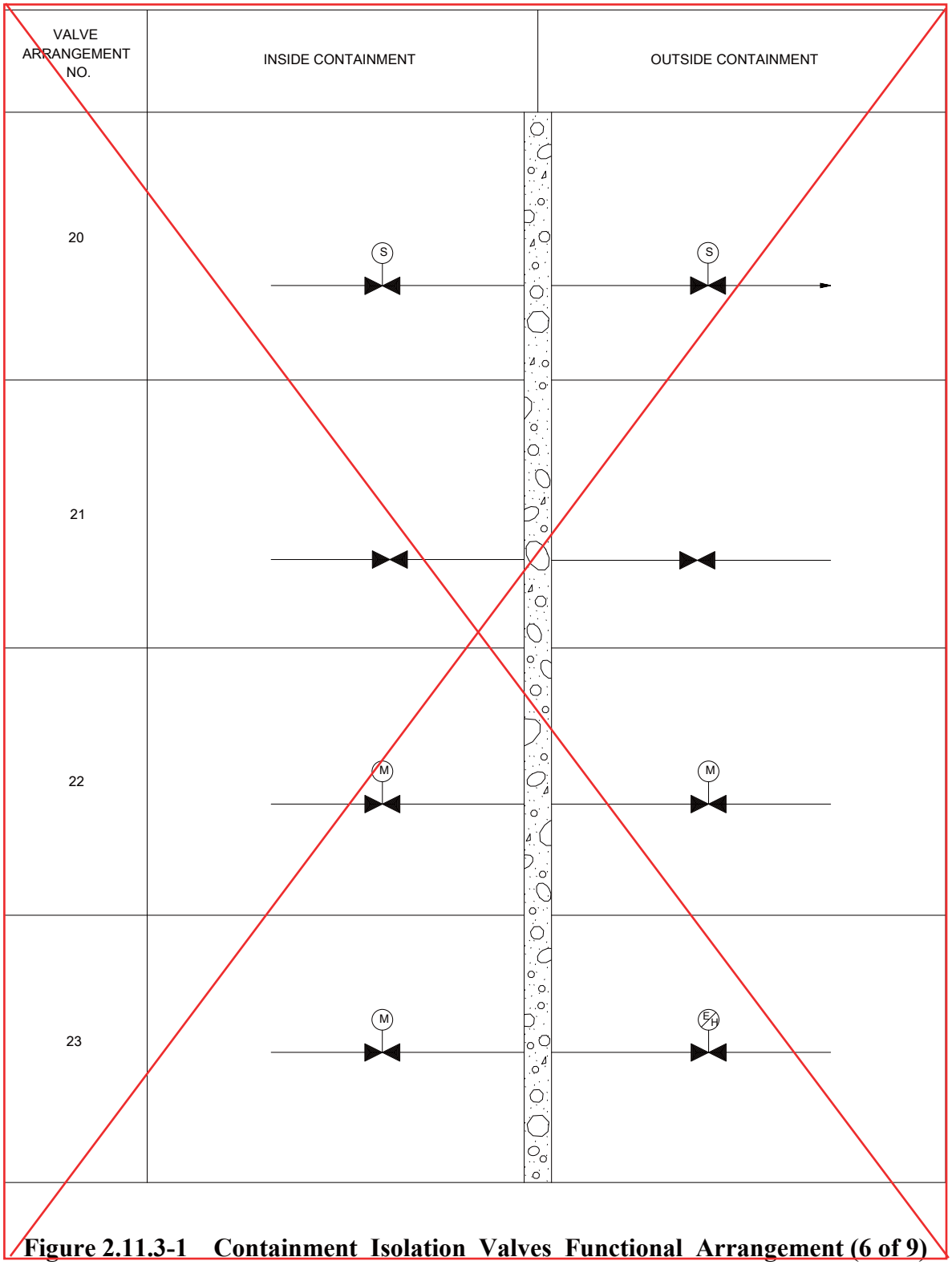


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (6 of 9)

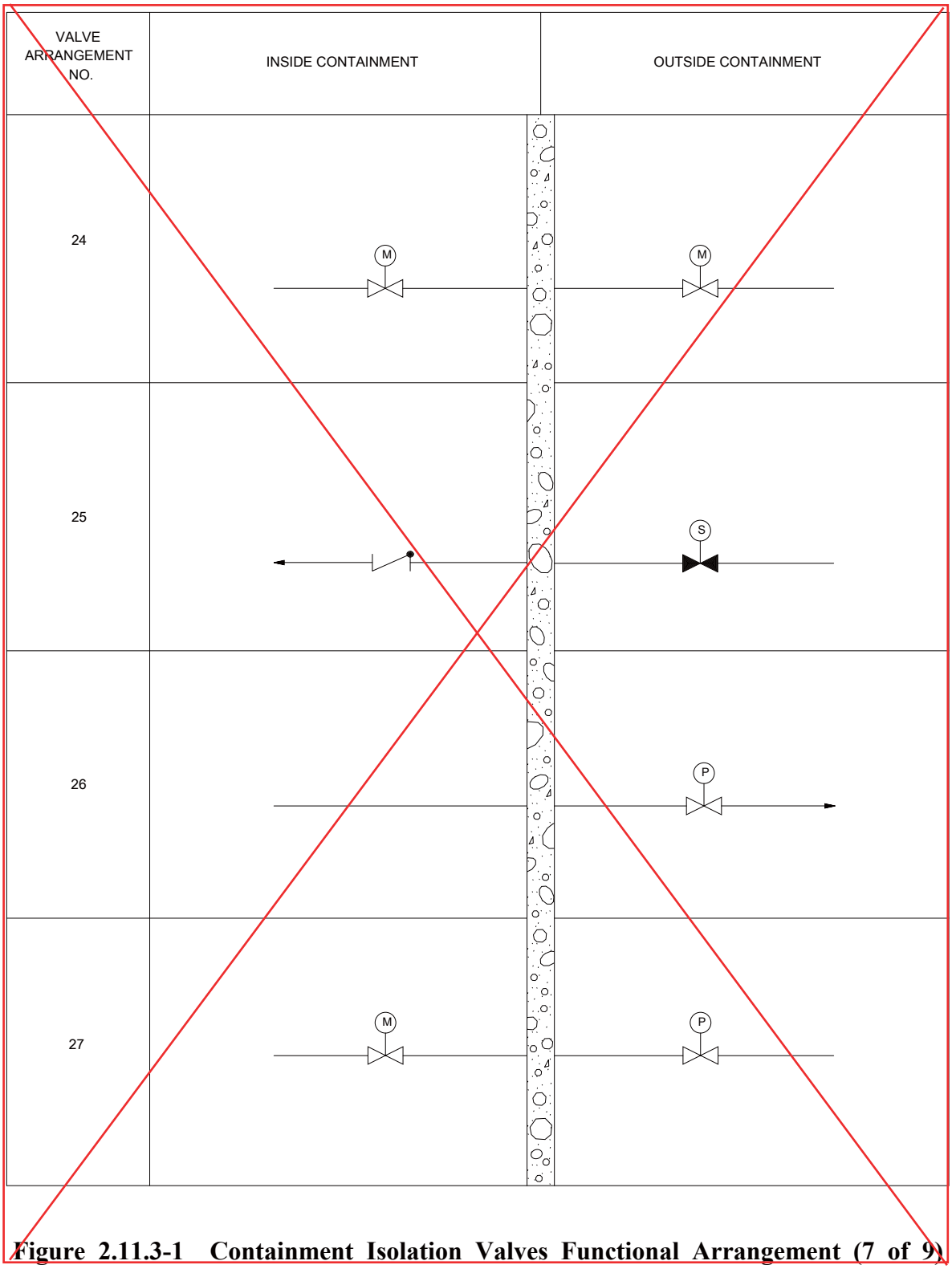


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (7 of 9)

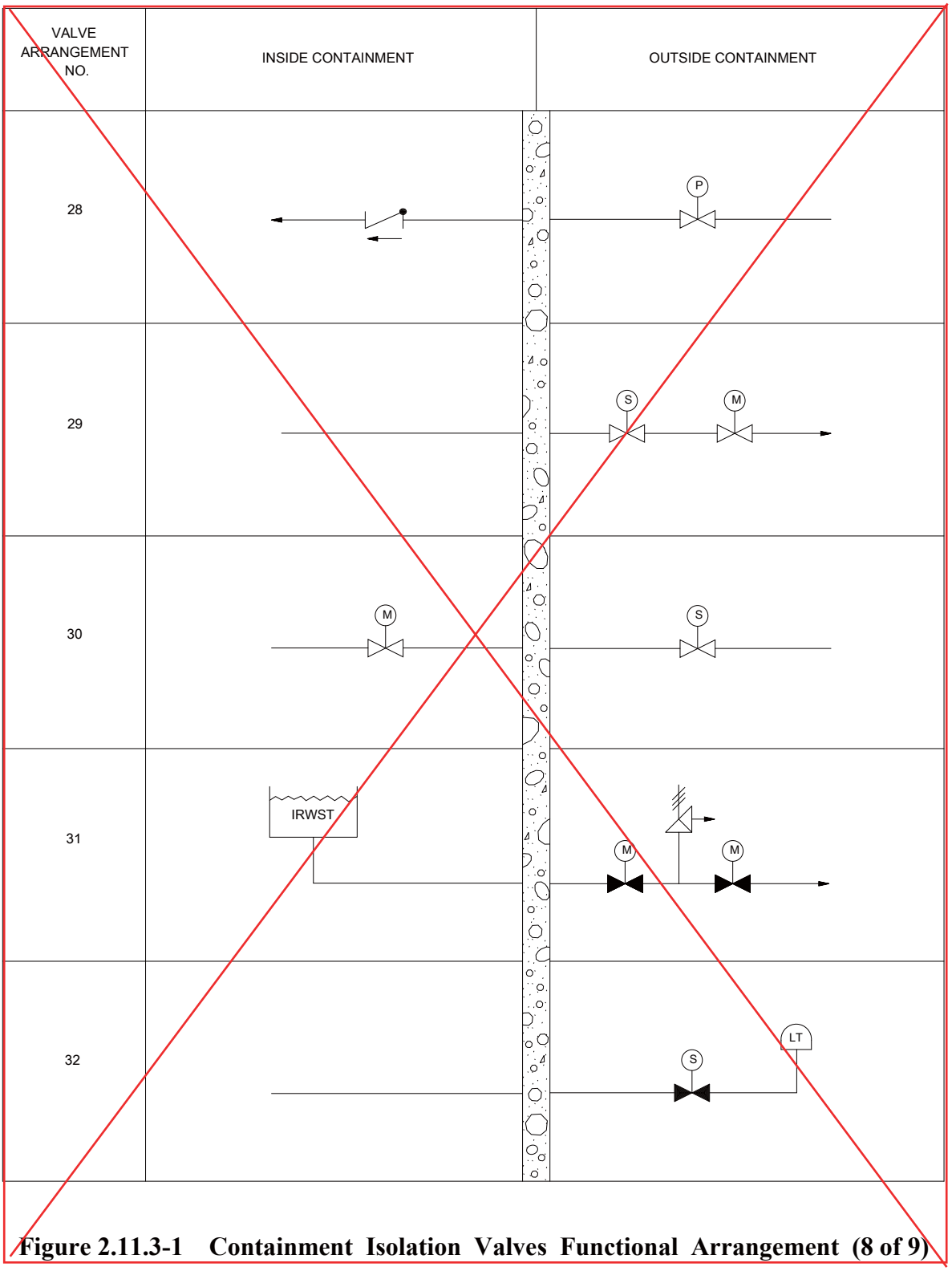


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (8 of 9)

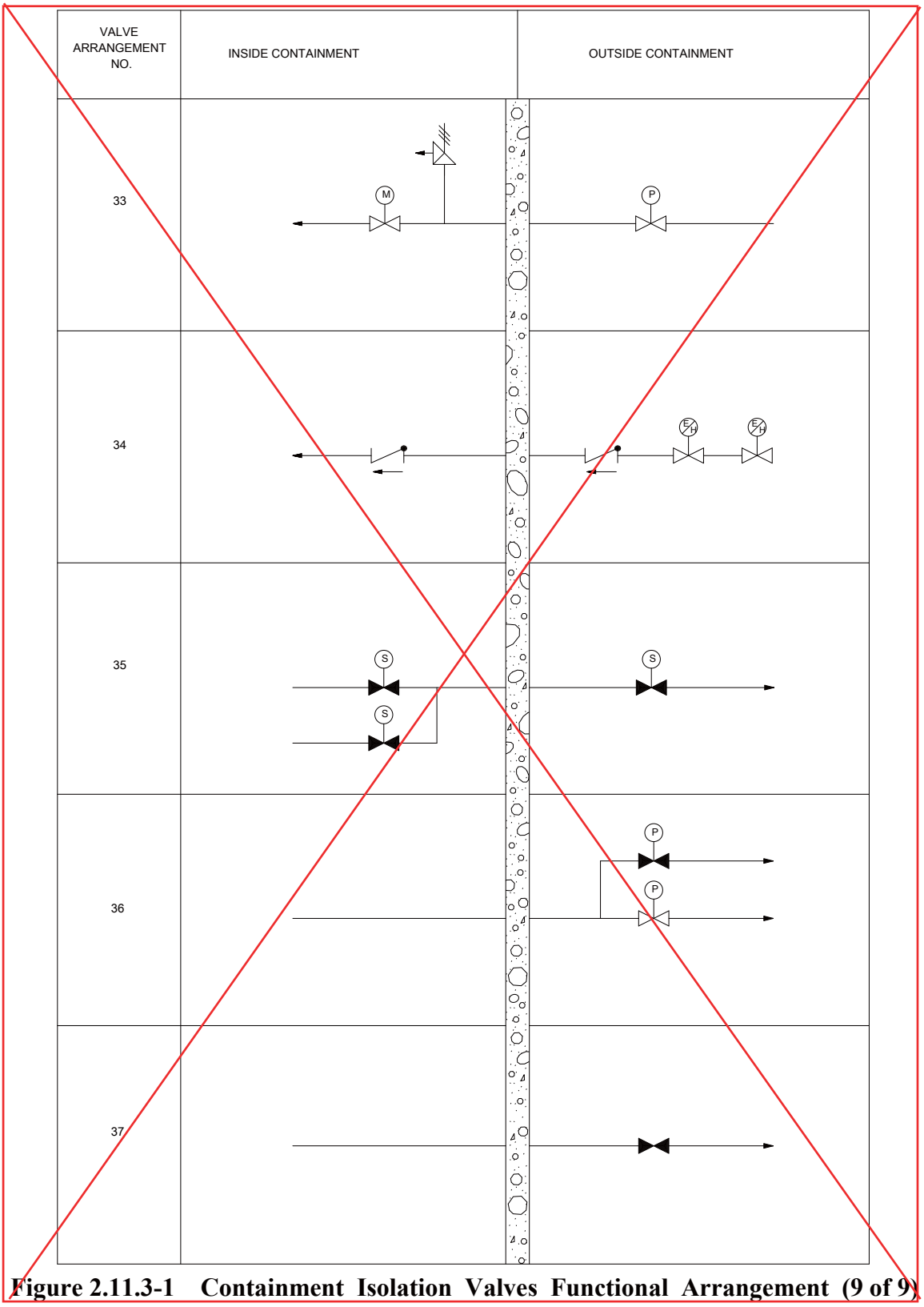
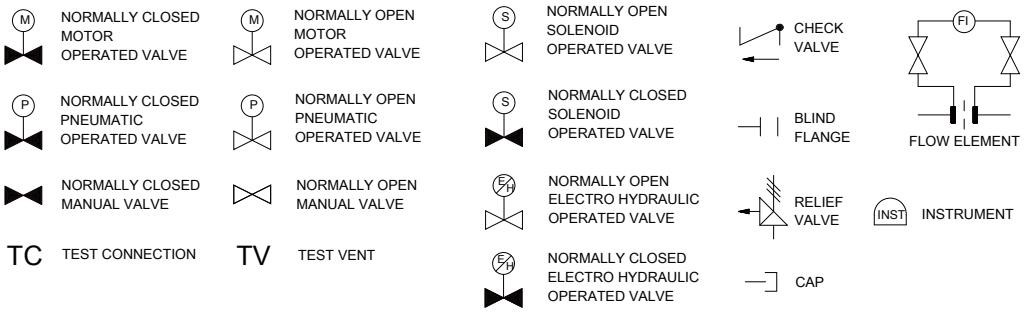


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (9 of 9)



* This test connection / vent may be located outside the containment due to the space limitation of the actual pipe arrangement

** This test connection may be located inside the bypass loop due to the space limitation of actual pipe arrangement

*** The draining of the CIVs utilizes the nearby piping low point drain

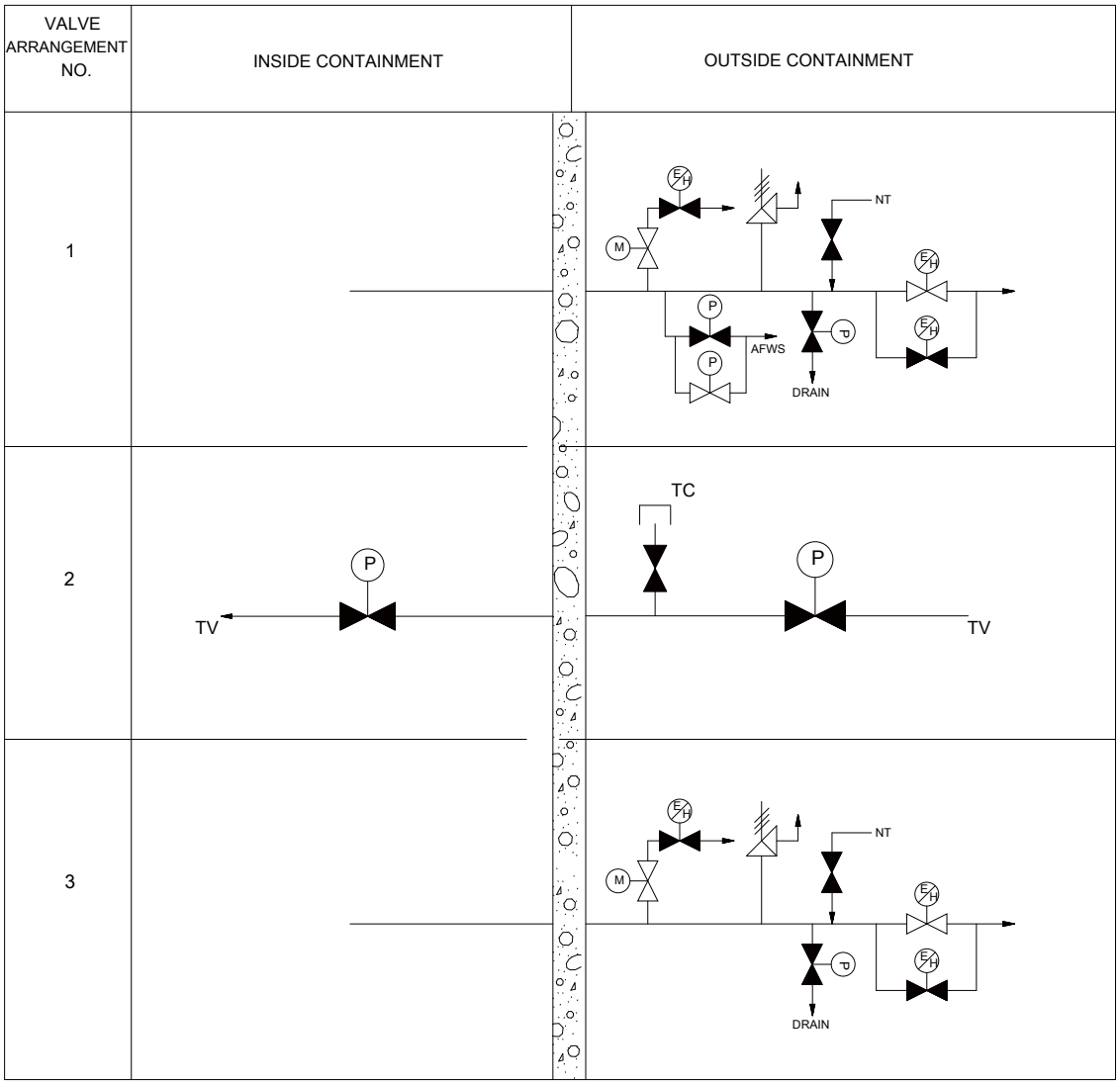


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 1 of 9)

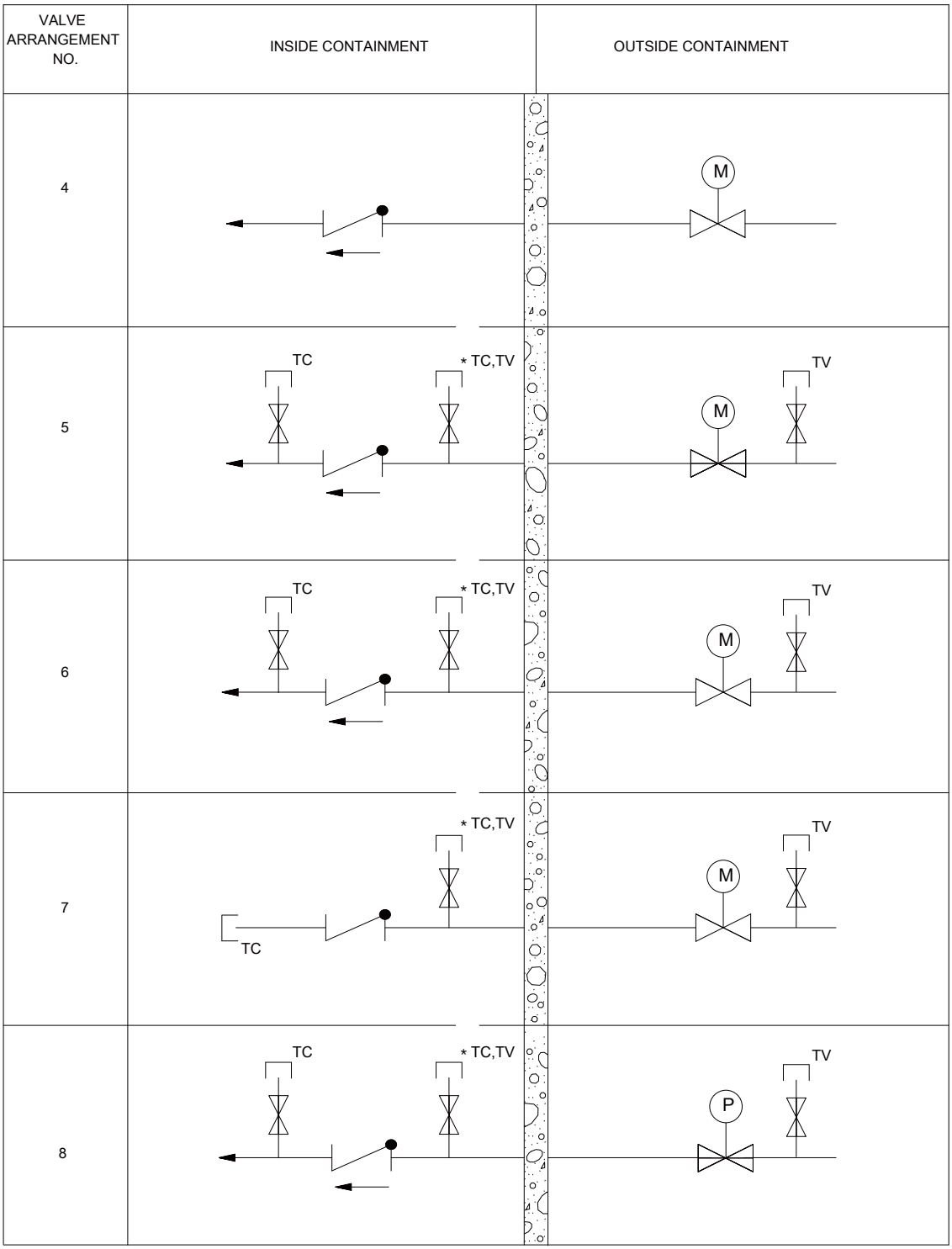


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 2 of 9)

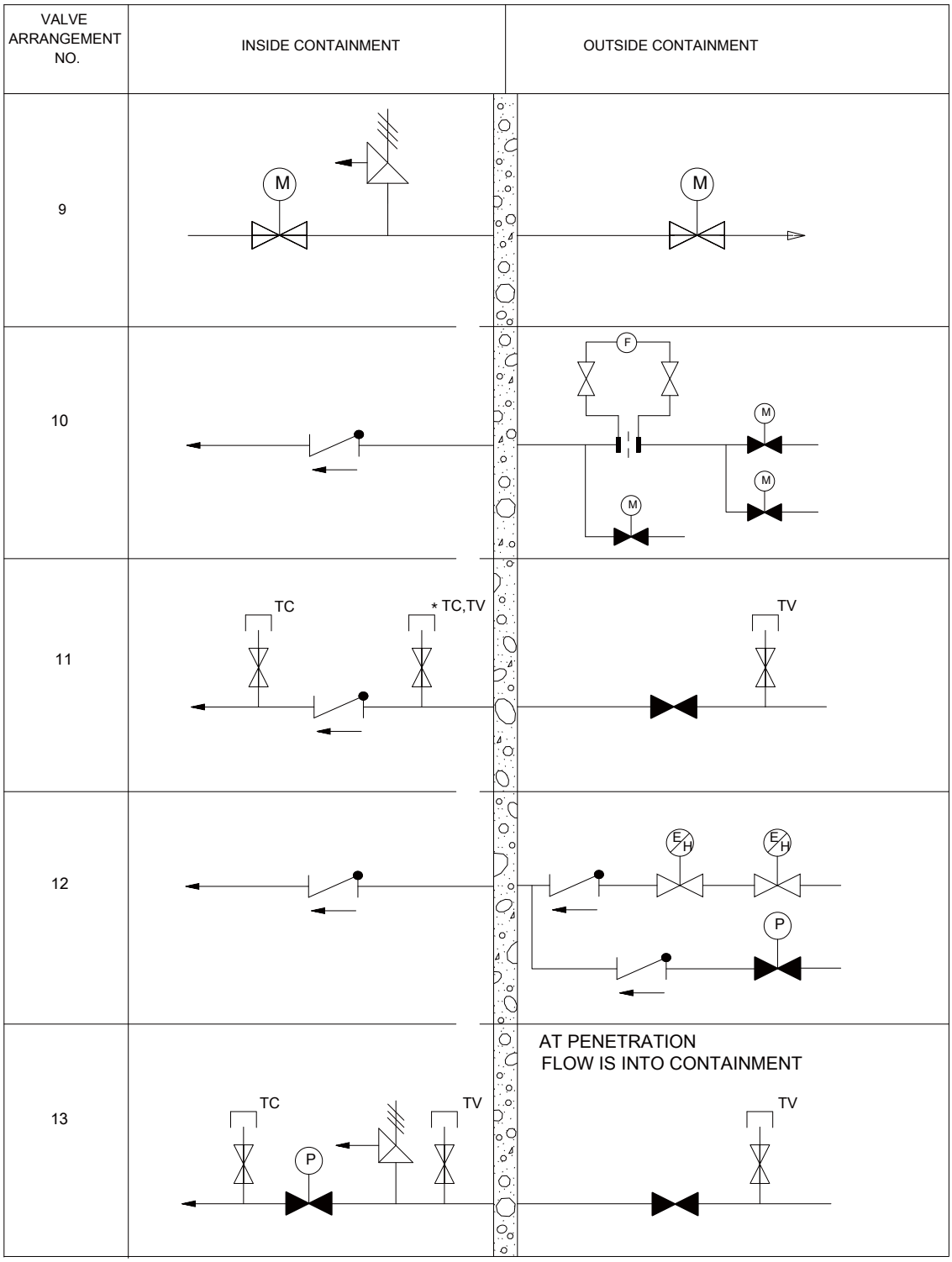


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 3 of 9)

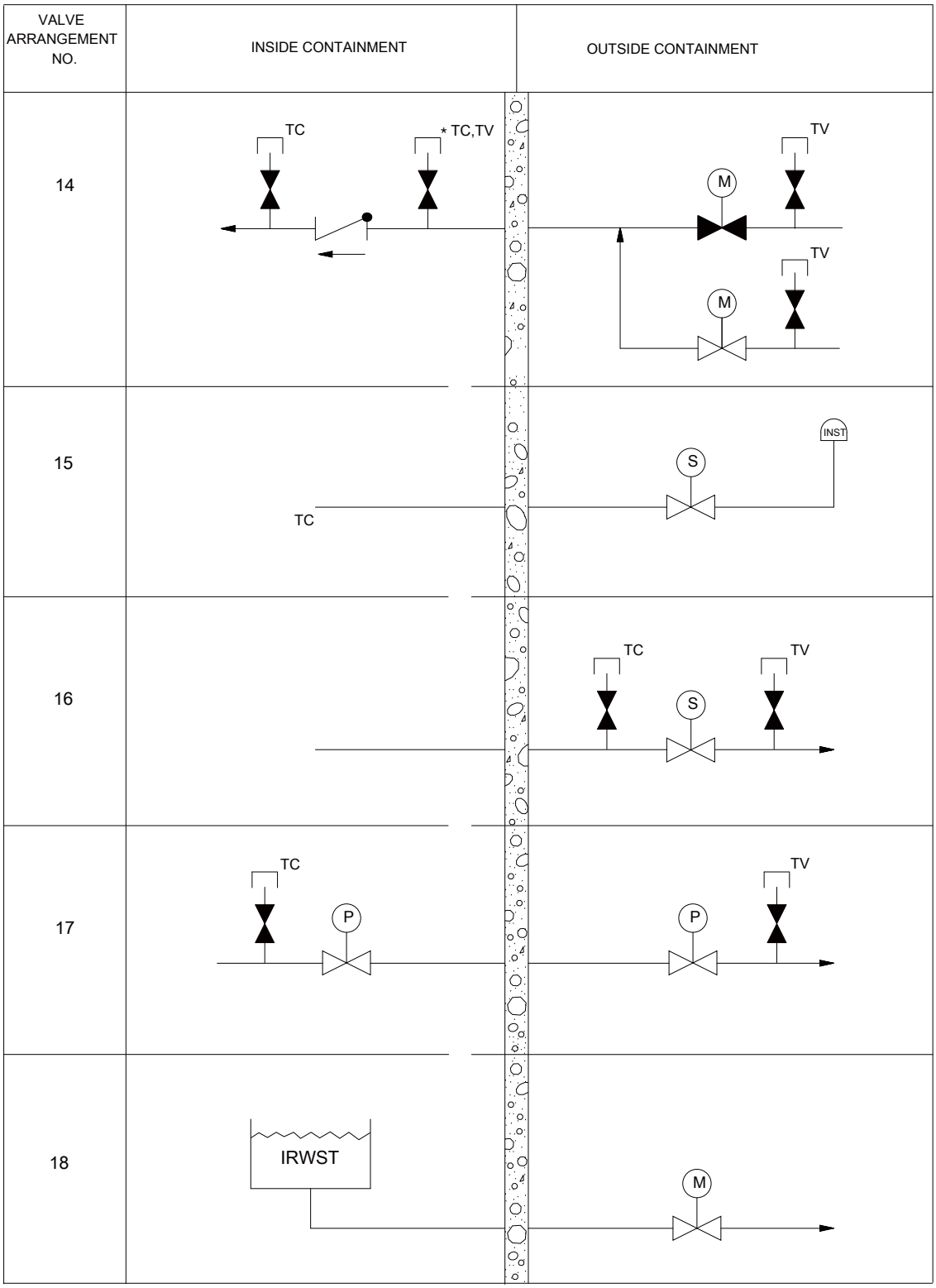


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 4 of 9)

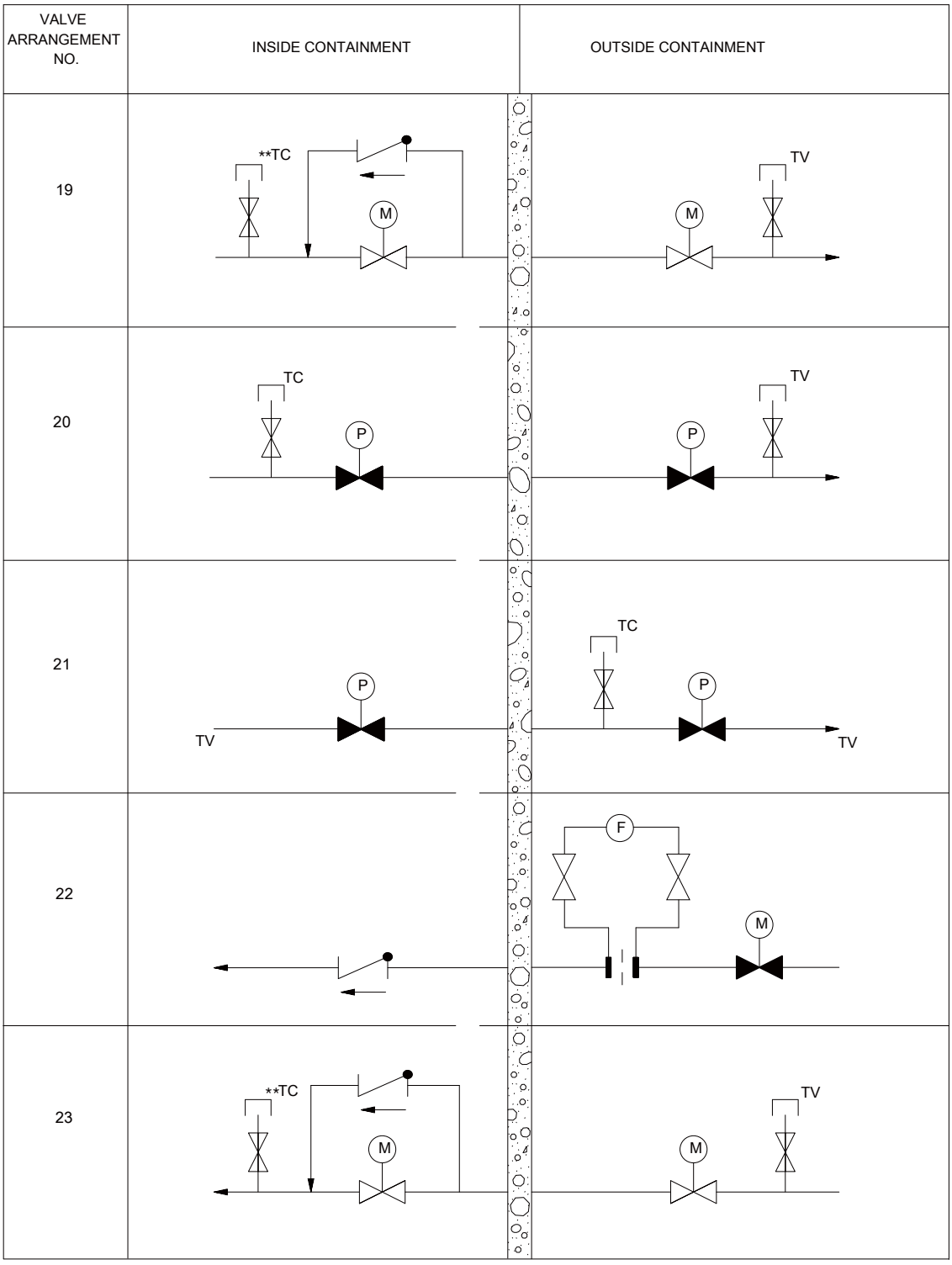


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 5 of 9)

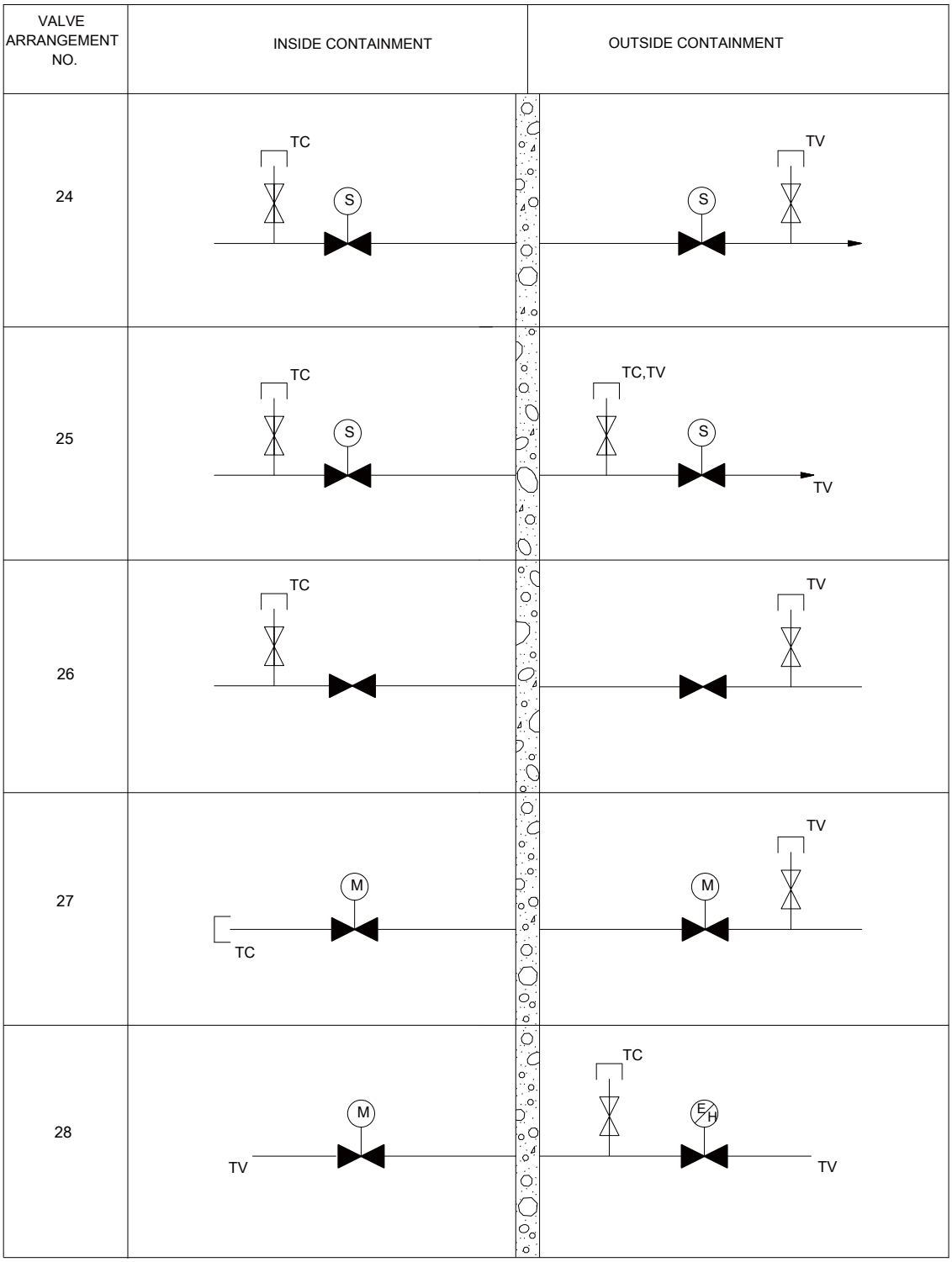


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 6 of 9)

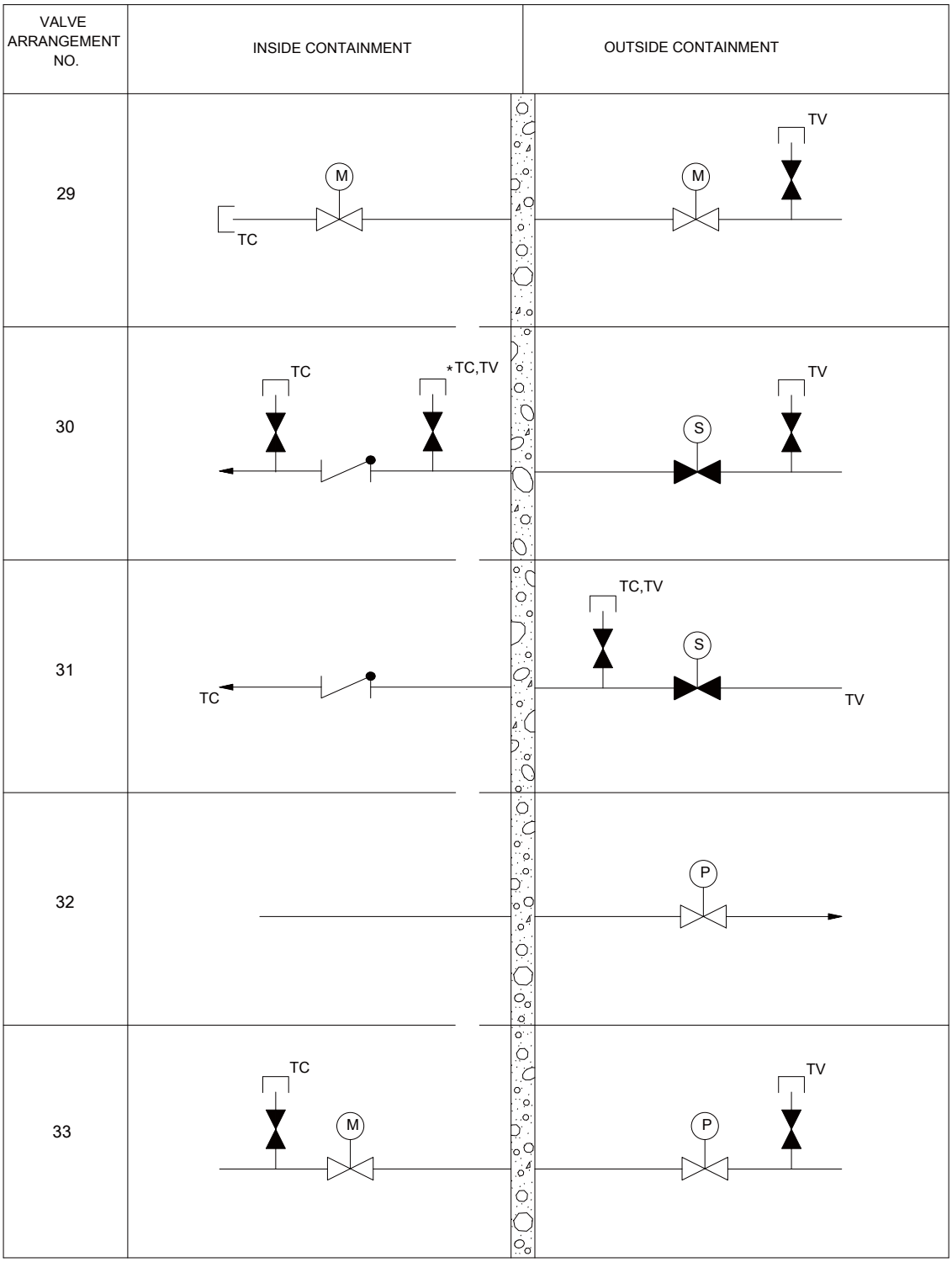


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 7 of 9)

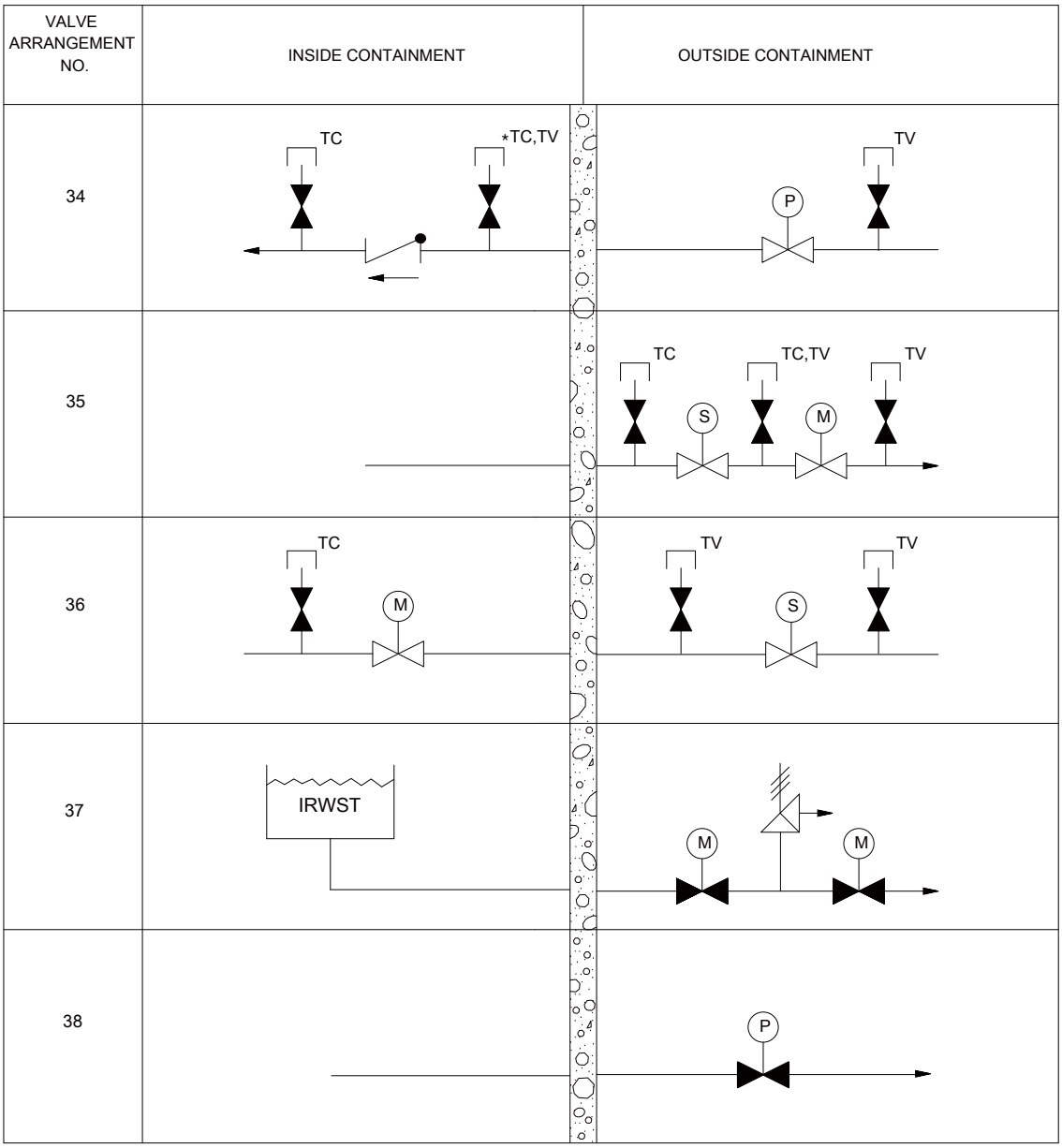


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 8 of 9)

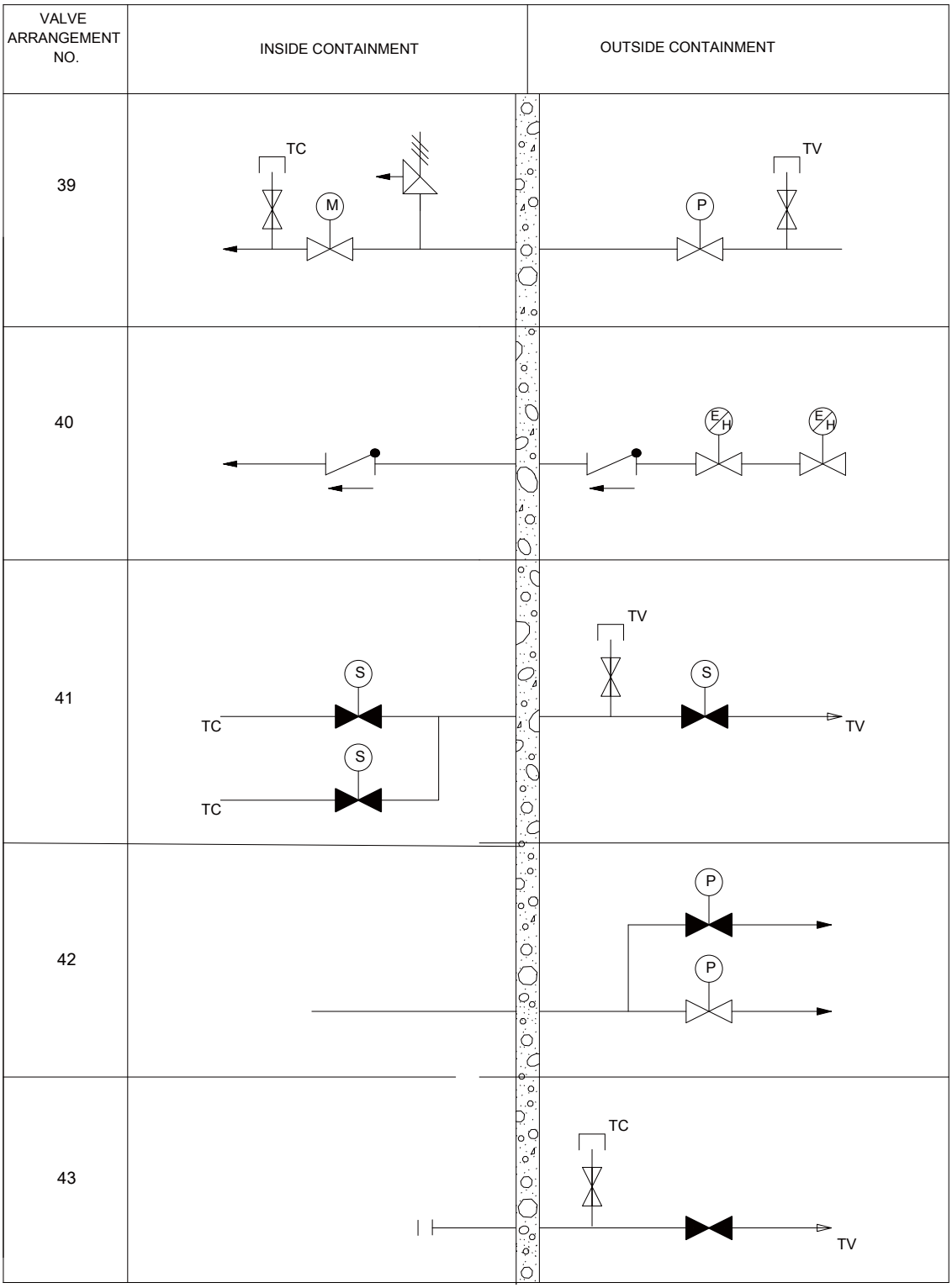


Figure 2.11.3-1 Containment Isolation Valves Functional Arrangement (Sheet 9 of 9)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.:	**357-8344**
SRP Section:	**06.02.04 – Containment Isolation System**
Application Section:	**6.2.4**
Date of RAI Issue:	**01/05/2016**

Question No. 06.02.04-11

Describe inspections, tests, analyses and acceptance criteria (ITAAC) for verification of containment isolation valve (CIV) placement

10 CFR 52.47(b)(1) requires that a DC application contain the proposed ITAAC that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the design certification is built and will operate in accordance with the design certification.

DCD Tier 1, Table 2.11.3-2 “Containment Isolation System ITAAC”, provides the ITAAC for the CIVs. How will this ITAAC, as written, ensure that the supplied as-built piping distances from the outer CIV to the containment will be such that the valves are located as close to containment as practical? (i.e. describe any inspections, tests, or acceptance criteria which will confirm that the as built piping distances will not exceed those listed in DCD Tier 2, Table 6.2.4-1).

In addition, indicate the associated containment penetration numbers in DCD Tier 1, Table 2.11.3-1 "Containment Isolation System Component List."

Response

GDCs 55, 56, and 57 require that isolation valves outside containment should be located as close to containment as practical. The APR1400 design has incorporated this design concept into the location of the containment isolation valves and has reflected the locations in the piping analyses performed. However, in applying the graded approach for piping design and analysis, only specific piping lines that penetrate containment are in the scope of the program and are required to be analyzed. Acceptable containment isolation valve location is assured through the overall design and piping analysis program. The length of pipe between containment and the outboard isolation valve indicated in DCD Tier 2, Table 6.2.4-1 does not necessarily represent a bounding condition for each piping line listed. Therefore, including verification of as-built piping distances as a prescriptive ITAAC item is not meaningful nor practical for a subjective criteria

such as locating isolation valves as close as practical to containment and the graded approach for piping analysis that has been implemented for the APR1400.

The revised DCD Tier 2, Table 6.2.4-1 shown in the attachment associated with this response also addresses the comments made in response to RAI 306-8240 Question 06.02.06-9 and Question 06.02.04-9 of this RAI.

Containment penetration numbers will be added in DCD Tier 1, Table 2.11.3-1 as indicated in the attachment associated with this response.

The revised DCD Tier 1, Table 2.11.3-1 shown in the attachment associated with this response also addresses the comments made to Question 06.02.04-9 of this RAI.

Impact on DCD

DCD Tier 2, Table 6.2.4-1 and DCD Tier 1, Table 2.11.3-1 will be revised as shown in the attachment to this response.

- DCD Tier 2, Table 6.2.4-1 (Attachment 1)
- DCD Tier 1, Table 2.11.3-1 (Attachment 2)

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environmental Report.

Table 6.2.4-1 (1 of 15)

List of Containment Penetrations and System Isolation Positions

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
1	Main steam line #1 from SG #1 [8]	PC0611	3	MS-091	15	10.3.2-1	Globe	Steam	82.2 [16]	Outside	Out	1	O	C	C	C	P	MSIS	A,R,M	A	No	[9]	Nonessential	
			30.9	MS-012	5		Gate		85.8 [16]	Outside		(57)	O	C	C	C	EH	MSIS	A,R,M				Nonessential	
			6	MS-1302	-		Safety		30.8 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1304	-		Safety		34.3 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1306	-		Safety		36.8 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1308	-		Safety		40.3 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1310	-		Safety		42.8 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			16	MS-102	-		Angle		65.1 [16]	Outside			C	C	C	C	EH	-	R,M				Nonessential	
			1	MS-1257	-		Globe		[17]	Outside			LC	-	LC	-	HW	-	M					
			4	MS-016	10		Gate		91.8 [16]	Outside			C	C	C	C	EH	MSIS	R,M				Nonessential	
2	Main steam line #2 from SG #1 [8]	PC0612	3	MS-090	15	10.3.2-1	Globe	Steam	79.3 [16]	Outside	Out	3	O	C	C	C	P	MSIS	A,R,M	A	No	[9]	Nonessential	
			30.9	MS-011	5		Gate		80.4 [16]	Outside		(57)	O	C	C	C	EH	MSIS	A,R,M				Nonessential	
			6	MS-1301	-		Safety		30.5 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1303	-		Safety		34.0 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1305	-		Safety		36.5 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1307	-		Safety		40.0 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1309	-		Safety		42.5 [16]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			16	MS-101	-		Angle		67.7 [16]	Outside			C	C	C	C	EH	-	R,M				Nonessential	
			8	MS-0110	5		Globe		53.4 [16]	Outside			C	O	C	O	P	AFAS	A,R,M				Essential	
			1	MS-1030	-		Globe		[17]	Outside			LC	-	LC	LC	HW	-	M					
			4	MS-015	10		Gate		89.5 [16]	Outside			C	C	C	C	EH	MSIS	A,R,M				Nonessential	
			1	MS-0112	15		Globe		[17]	Outside			O	O	O	O	P	-	A,R,M				Essential	

Table 6.2.4-1 (2 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
3	Main steam line #1 from SG #2 [8]	PC0622	3	MS-093	15	10.3.2-1	Globe	Steam	[17]	Outside	Out	3	O	C	C	C	P	MSIS	A,R,M	A	No	[9]	Nonessential	
			30.9	MS-014	5		Gate		[17]	Outside		(57)	O	C	C	C	EH	MSIS	A,R,M				Nonessential	
			6	MS-1312	-		Safety		[17]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1314	-		Safety		[17]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1316	-		Safety		[17]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1318	-		Safety		[17]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			6	MS-1320	-		Safety		[17]	Outside			C	-	C	C	-	SV setpoint	-				Nonessential	
			16	MS-104	-		Angle		[17]	Outside			C	C	C	C	EH	-	R,M				Nonessential	
			8	MS-109	5		Globe		[17]	Outside			C	O	C	O	P	AFAS	A,R,M				Essential	
			1	MS-111	15		Globe		[17]	Outside			O	O	O	O	P	-	A,R,M				Essential	
			4	MS-018	10		Gate		[17]	Outside			C	C	C	C	EH	MSIS	A,R,M				Nonessential	
			1	MS-1051	-		Globe		[17]	Outside			LC	-	LC	LC	HW	-	M					

Table 6.2.4-1 (3 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
4	Main steam line #2 from SG #2 [8]	PC0621	30.9 6 6 6 6 6 16 1 4 3	MS-013 MS-1311 MS-1313 MS-1315 MS-1317 MS-1319 MS-103 MS-1073 MS-017 MS-092	5 - - - - - - - 10 15	10.3.2-1	Gate Safety Safety Safety Safety Safety Angle Globe Gate Globe	Steam	[17] [17] [17] [17] [17] [17] [17] [17] [17] [17]	Outside Outside Outside Outside Outside Outside Outside Outside Outside Outside	Out	1 (57)	O C C C C C C LC C O	C - - - - - C - C C	C C C C C C C LC C C	C C C C C C C LC C C	EH - - - - - EH HW EH P	MSIS SV setpoint SV setpoint SV setpoint SV setpoint SV setpoint - - MSIS MSIS	A,R,M - - - - - R,M M R,M A,R,M	A	No	[9]	Nonessential Nonessential Nonessential Nonessential Nonessential Nonessential Nonessential Nonessential Nonessential Nonessential	
5	Main feedwater to downcomer nozzle SG #1	PC0512	10 10	FW-131 FW-132	5 5	10.4.7-1	Gate Gate	Water	31.2[16] 15.7[16]	Outside Outside	In	12 (57)	O O	C C	C C	O/C O/C	EH EH	MSIS MSIS	A,R,M A,R,M	A	No	[9]	Nonessential Nonessential	
6	Main feedwater to downcomer nozzle SG #2	PC0522	10 10	FW-133 FW-134	5 5	10.4.7-1	Gate Gate	Water	[17] [17]	Outside Outside	In	12 (57)	O O	C C	C C	O/C O/C	EH EH	MSIS MSIS	A,R,M A,R,M	A	No	[9]	Nonessential Nonessential	
7	Main feedwater to economizer nozzles for SG #1	PC0511	24 24	FW-121 FW-122	5 5	10.4.7-1	Gate Gate	Water	25.2 [16] 16.9[16]	Outside Outside	In	40 (57)	O O	C C	C C	O/C O/C	EH EH	MSIS MSIS	A,R,M A,R,M	A	No	[9]	Nonessential Nonessential	
8	Main feedwater to economizer nozzles for SG #2	PC0521	24 24	FW-123 FW-124	5 5	10.4.7-1	Gate Gate	Water	[17] [17]	Outside Outside	In	40 (57)	O O	C C	C C	O/C O/C	EH EH	MSIS MSIS	A,R,M A,R,M	A	No	[9]	Nonessential Nonessential	
9	Chemical injection	PC0512 PC0522	1 1	FW-138 FW-139	15 15	10.4.7-1	Globe Globe	Mixed chemical (15 wt% ethanlo amine and 2 wt% hydrazine)	[17] [17]	Outside Outside	In	12 (57)	C C	C C	C C	C C	P P	MSIS MSIS	A,R,M A,R,M	A	No	-	Nonessential Nonessential	

APR1400 DCD TIER 2

Table 6.2.4-1 (4 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
10	Motor-driven AFW pump PP02A discharge	PC0118	6 6	AF-0043 AF-1007A	14 -	10.4.9-1	Gate Check	Demi. Water	(17) -	Outside Inside	In	4 (57)	O C	AI -	O C	O/C O/C	E -	ESF-AFAS/ DPS-AFAS/ DMA-AFAS	A,R,M -	A	No	(9)	Essential	
11	Motor-driven AFW pump PP02B discharge	PC0228	6 6	AF-0044 AF-1007B	14 -	10.4.9-1	Gate Check	Demi. Water	(17) -	Outside Inside	In	4 (57)	O C	AI -	O C	O/C O/C	E -	ESF-AFAS/ DPS-AFAS/ DMA-AFAS -	A,R,M -	A	No	(9)	Essential	
12	Turbine-driven AFW pump PP01A discharge	PC0129	6 6	AF-0045 AF-1008A	14 -	10.4.9-1	Gate Check	Demi. Water	(17) -	Outside Inside	In	4 (57)	O C	AI -	O C	O/C O/C	E -	ESF-AFAS/ DPS-AFAS/ DMA-AFAS -	A,R,M -	A	No	(9)	Essential	
13	Turbine-driven AFW pump PP01B discharge	PC0119	6 6	AF-0046 AF-1008B	14 -	10.4.9-1	Gate Check	Demi. Water	(17) -	Outside Inside	In	4 (57)	O C	AI -	O C	O/C O/C	E -	ESF-AFAS/ DPS-AFAS/ DMA-AFAS -	A,R,M -	A	No	(9)	Essential	
14	Safety injection pump #4 Discharge	PC0212	4 4	SI-616 SI-113	10 -	6.3.2-1	Globe Check	Borated Water	(17) -	Outside Inside	In	22 (55)	C C	AI -	C C	O O	E -	SIAS -	A,R,M -	A	No	(18)	Essential	
15	Safety injection pump #2 discharge	PC0214	10 1 4 12	SI-600 SI-602 SI-626 SI-123	10 10 10 -	6.3.2-1	Globe Globe Globe Check	Borated Water	(17) (17) (17) -	Outside Outside Outside Inside	In	10 (55)	C C C C	AI AI AI -	C C C O	O/C O O O	E E E -	- - SIAS -	R,M R,M A,R,M -	A	No	(18)	Essential	
16	Safety injection pump #3 discharge	PC0122	4 4	SI-636 SI-133	10 -	6.3.2-1	Globe Check	Borated Water	(17) -	Outside Inside	In	22 (55)	C C	AI -	C C	O O	E -	SIAS	A,R,M -	A	No	(18)	Essential	
17	Safety injection pump #1 discharge	PC0124	10 1 4 12	SI-601 SI-603 SI-646 SI-143	10 10 10 -	6.3.2-1	Globe Globe Globe Check	Borated Water	(17) (17) (17) -	Outside Outside Outside Inside	In	10 (55)	C C C C	AI AI AI -	C C C O	O/C O O O	E E E -	- - SIAS -	R,M R,M A,R,M -	A	No	(18)	Essential	
18	SCS pump #2 suction	PC0215	16 8 16	SI-654 SI-189 SI-656	160- - 80	6.3.2-1	Gate Relief Gate	Borated Water	- - (17)	Inside Inside Outside	Out	9 (55)	LC C LC	AI - AI	O C O	O/C C O/C	E - E	- RV setpoint -	R,M - R,M	A	No	(10)	Essential	
19	SCS pump #1 suction	PC0125	16 8 16	SI-653 SI-179 SI-655	160 - 80	6.3.2-1	Gate Relief Gate	Borated Water	- - (17)	Inside Inside Outside	Out	9 (55)	LC C LC	AI - AI	O C O	O/C C O/C	E - E	- RV setpoint -	R,M - R,M	A	No	(10)	Essential	

Table 6.2.4-1 (5 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
20	Hot leg injection loop #2	PC0213	4 4	SI-331 SI-533	10 -	6.3.2-1	Globe Check	Borated Water	(17) -	Outside Inside	In	22 (55)	LC C	AI -	LC C	O/C O/C	E -	- -	R,M -	A	No	(18)	Essential	
21	Hot leg injection loop #1	PC0123	4 4	SI-321 SI-523	10 -	6.3.2-1	Globe Check	Borated Water	(17) -	Outside Inside	In	22 (55)	LC C	AI -	LC C	O/C O/C	E -	- -	R,M -	A	No	(18)	Essential	
22	Containment spray pump #2 discharge	PC0226	14 14	CS-004 CS-1008	15 -	6.2.2-1	Gate Check	Borated Water	(17) -	Outside Inside	In	5 (56)	LC C	AI -	LC C	O/C O/C	E -	CSAS -	A,R,M -	C	Yes	-	Essential	
23	Containment spray pump #1 discharge	PC0116	14 14	CS-003 CS-1007	15 -	6.2.2-1	Gate Check	Borated Water	(17) -	Outside Inside	In	5 (56)	LC C	AI -	LC C	O/C O/C	E -	CSAS -	A,R,M -	C	Yes	-	Essential	
24	Safety injection pump #1 suction	-	20	SI-304	60	6.3.2-1	Gate	Borated Water	(17)	Outside	Out	18 (56)	LO	AI	LO	LO	E	-	R,M	A	No	(11)	Essential	
25	Safety injection pump #2 suction	-	20	SI-305	60	6.3.2-1	Gate	Borated Water	(17)	Outside	Out	18 (56)	LO	AI	LO	LO	E	-	R,M	A	No	(11)	Essential	
26	Safety injection pump #3 and containment spray pump #1 suction	-	20	SI-308	60	6.3.2-1	Gate	Borated Water	(17)	Outside	Out	18 (56)	LO	AI	LO	LO	E	-	R,M	A	No	(11)	Essential	
27	Safety injection pump #4 and containment spray pump #2 suction	-	20	SI-309	60	6.3.2-1	Gate	Borated Water	(17)	Outside	Out	18 (56)	LO	AI	LO	LO	E	-	R,M	A	No	(11)	Essential	
28	SIS division 1 miniflow return to IRWST	PC0111	10 10 4	SI-300 SI-100 SI-302	50 - 20	6.3.2-1	Gate Check Gate	Borated Water	(17) - (17)	Outside Inside Outside	In	14 (56)	C C LO	AI - AI	C C LO	C O LO	E - E	- - -	R,M - R,M	C	Yes	-	Essential	

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Table 6.2.4-1 (6 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
29	SIS division 2 miniflow return to IRWST	PC0221	10 10 4	SI-301 SI-101 SI-303	50 - 20	6.3.2-1	Gate Check Globe	Borated Water	[17] - [17]	Outside Inside Outside	In	14 (56)	C C LO	AI - AI	C C LO	C O LO	E - E	- - -	R,M - R,M	C	Yes	-	Essential	
30	Return header from SI tanks	PC0301	2 2 3/4	SI-682 SI-293 SI-474	5 - -	6.3.2-1	Globe Globe Relief	Borated Water	- [17] -	Inside Outside Inside	In	13 (55)	C LC C	C - -	O/C O/C C	C LC C	P HW -	SIAS - RV setpoint	A,R,M M -	C	Yes	-	Nonessential	
31	CCW supply to letdown heat exchanger	PC0162	8 8 3/4	CC-0296 CC-0297 CC-1685	40 40 -	9.2.2-1	Butterfly Butterfly Check	Deminer-alized water with corrosion inhibitors	[17] - -	Outside Inside Inside	In	23 (56)	O O O	AI AI -	O O O	C C C	E E -	CIAS CIAS -	A,R,M A,R,M -	C	Yes	-	Nonessential	
32	CCW return from letdown heat exchanger	PC0163	8 8 3/4	CC-0301 CC-0302 CC-1686	40 40 -	9.2.2-1	Butterfly Butterfly Check	Deminer-alized water with corrosion inhibitors	- [17] -	Inside Outside Inside	Out	19 (56)	O O C	AI AI -	O O C	C C C	E E -	CIAS CIAS -	A,R,M A,R,M -	C	Yes	-	Nonessential	
33	CCW supply to RCP coolers 1A, 1B, 2A, and 2B	PC0137	10 10	CC-231 CC-1099	50 -	9.2.2-1	Butterfly Check	Deminer-alized water with corrosion inhibitors	[17] -	Outside Inside	In	6 (56)	O O	AI -	O O	C C	E -	CCWSTLLAS -	A,R,M -	C	Yes	-	Nonessential	
34	CCW return from RCP coolers 1A, 1B, 2A, and 2B	PC0138	10 10 3/4	CC-0250 CC-0249 CC-1100	50 50 -	9.2.2-1	Butterfly Butterfly Check	Deminer-alized water with corrosion inhibitors	[17] - -	Outside Inside Inside	Out	19 (56)	O O C	AI AI -	O O C	C C C	E E -	CCWSTLLAS CCWSTLLAS -	A,R,M A,R,M -	C	Yes	-	Nonessential	
35	CVCS IRWST boron recovery return	PC0131	3 3	CV-509 CV-189	5 -	9.3.4-1	Gate Check	Borated Water	[17] -	Outside Inside	In	5 (56)	O/C O/C	AI -	O/C O/C	C C	E -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
36	Shutdown purification line to letdown heat exchanger	PC0403	2 2	CV-362 CV-363	- -	9.3.4-1	Gate Check	Primary Coolant	[17] -	Outside Inside	In	11 (55)	LC C	- -	O/C O/C	LC C	HW -	- -	M -	C	Yes	-	Nonessential	

Table 6.2.4-1 (7 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
37	Letdown to purification system	PC0402	2 2	CV-523 CV-522	5 5	9.3.4-1	Globe[1] Globe[1]	Primary Coolant	[17] -	Outside Inside	Out	17 (55)	O O	C C	C C	C C	P P	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Essential	
38	CVCS charging line	PC0230	3 3	CV-524 CV-747	5 -	9.3.4-1	Globe Check	Primary Coolant	[17] -	Outside Inside	In	6 (55)	O O	AI -	C C	O O	E -	- -	R,M -	C	Yes	-	Essential	
39	RCP seal injection	PC0255	2 2	CV-255 CV-835	5 -	9.3.4-1	Globe Check	Primary Coolant	[17] -	Outside Inside	In	6 (55)	O O	AI -	O O	O O	E -	- -	R,M -	C	Yes	-	Essential	
40	RCP seal return flow	PC0305	1 1	CV-505 CV-506	5 5	9.3.4-1	Globe Globe	Primary Coolant	[17] -	Outside Inside	Out	17 (55)	O O	C C	C C	C C	P P	CSAS CSAS	A,R,M A,R,M	C	Yes	-	Nonessential	
41	RDT flow to RDPs	PC0232	3 3	CV-561 CV-560	5 5	9.3.4-1	Globe[1] Globe[1]	Primary Coolant	[17] -	Outside Inside	Out	20 (56)	O/C O/C	C C	O/C O/C	C C	P P	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
42	Resin sluice supply to reactor Drain Tank	PC0306	1½ 1½	CV-580 CV-494	5 -	9.3.4-1	Gate[1] Check	Demi. Water	[17] -	Outside Inside	In	8 (56)	C C	C -	C C	C C	P -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
43	Service air supply	PC0144	3 3	SA-001 SA-1401	15 -	9.3.1-2	Globe Check	Compressed Air	[17] -	Outside Inside	In	8 (56)	C C	C -	O O	C C	P -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
44	Instrument air supply	PC0145	2 2½	IA-020 IA-1601	15 -	9.3.1-1	Globe Check	Compressed Air	[17] -	Outside Inside	In	34 (56)	O O/C	C -	O O/C	C C	P -	CSAS -	A,R,M -	C	Yes	-	Nonessential	
45	Refueling pool cleanup suction line	PC0239	6 6	FC-1143 FC-1142	- -	9.1.3-1	Gate Gate	Borated Water	[17] -	Outside Inside	Out	26 (56)	LC LC	- -	O/C O/C	LC LC	HW HW	- -	M M	C	Yes	-	Nonessential	
46	Refueling pool cleanup return header	PC0240	10 10	FC-1144 FC-1145	- -	9.1.3-1	Gate Check	Borated Water	[17] -	Outside Inside	In	11 (56)	LC -	- -	O/C -	LC -	HW -	- -	M -	C	Yes	-	Nonessential	
47	SIT sample line	PC0311	3/4 3/4	PX-020 PX-021	15 15	9.3.2-1	Globe Globe	Borated Water	[17] -	Outside Inside	Out	24 (55)	C C	C C	C C	C C	S S	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
48	Pressurizer liquid sample line	PC0408	3/4 3/4	PX-0003 PX-0004	15 15	9.3.2-1	Globe Globe	Primary coolant	[17] -	Outside Inside	Out	24 (55)	O/C O/C	C C	C C	C C	S S	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
49	Pressurizer steam space sample line	PC0409	3/4 3/4	PX-0005 PX-0006	15 15	9.3.2-1	Globe Globe	Primary coolant	[17] -	Outside Inside	Out	24 (55)	O/C O/C	C C	C C	C C	S S	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	

Table 6.2.4-1 (8 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
50	Hot leg sample line	PC0310	3/4 3/4	PX-0001 PX-0002	15 15	9.3.2-1	Globe Globe	Primary coolant	[17] -	Outside Inside	Out	24 (55)	O/C O/C	C C	C C	O/C O/C	S S	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
51	SG #1 blowdown cold leg sample	PC0332	3/4	PS-0035	15	-	Gate[12]	Secondary Coolant	[17]	Outside	Out	38 (57)	O/C	C	C	C	P	CIAS/MSIS AFAS/HRAS	A,R,M	A	No	[9]	Nonessential	
52	SG#1 blowdown hot leg sample	PC0331	3/4 3/4	PS-0031 PS-0257	15 15	- -	Gate[12] Gate[12]	Secondary Coolant	[17] [17]	Outside Outside	Out	42 (57)	O O/C	C C	C C	C C	P P	CIAS/MSIS AFAS/HRAS CIAS/MSIS AFAS	A,R,M	A	No	[9]	Nonessential	
53	SG #1 downcomer Sample	PC0333	3/4	PS-0033	15	-	Gate[12]	Secondary Coolant	[17]	Outside	Out	32 (57)	O	C	C	C	P	CIAS/MSIS AFAS/HRAS	A,R,M	A	No	[9]	Nonessential	
54	SG #2 blowdown cold leg sample	PC0437	3/4	PS-0036	15	-	Gate[12]	Secondary Coolant	[17]	Outside	Out	38 (57)	O/C	C	C	C	P	CIAS/MSIS AFAS/HRAS	A,R,M	A	No	[9]	Nonessential	
55	SG #2 blowdown hot leg sample	PC0311	3/43/4	PS-0032 PS-0258	1515	-	Gate[12] Gate[12]	Secondary Coolant	[17] [17]	Outside Outside	Out	42 (57)	OO/C	CC	CC	CC	PP	CIAS/MSIS AFAS/HRAS CIAS/MSIS AFAS	A,R,M	A	No	[9]	Nonessential	
56	SG #2 downcomer sample	PC0436	3/4	PS-0034	15	-	Gate[12]	Secondary Coolant	[17] -	Outside	Out	32 (57)	O	C	C	C	P	CIAS/MSIS AFAS/HRAS	A,R,M	A	No	[9]	Nonessential	
57	Contain-ment high volume purge supply system	PC0250	48 48	VQ-0011 VQ-0012	5 5	9.4.6-2	Butterfly[12] Butterfly[12]	Outside Air	[17] -	Outside Inside	In	28 (56)	C C	C C	C C	C C	EH E	CIAS/CPIAS CIAS/CPIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
58	Contain-ment high volume purge exhaust system	PC0249	48 48	VQ-0013 VQ-0014	5 5	9.4.6-2	Butterfly[12] Butterfly[12]	Containment Atmosphere	- [17]	Inside Outside	Out	28 (56)	C C	C C	C C	C C	E EH	CIAS/CPIAS CIAS/CPIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
59	Contain-ment low volume purge supply system	PC0247	8 8	VQ-0031 VQ-0032	5 5	9.4.6-2	Butterfly[13] Butterfly[13]	Outside Air / Containment Atmosphere	[17] -	Outside Inside	In	2 (56)	C C	C C	C C	C C	P P	CIAS/CPIAS CIAS/CPIAS	A,R,M A,R,M	C	Yes	-	Nonessential	

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Table 6.2.4-1 (9 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
60	Contain-ment low volume purge supply system	PC0246	8 8	VQ-0033 VQ-0034	5 5	9.4.6-2	Butterfly[13] Butterfly[13]	Containment Atmosphere	- (17)	Inside Outside	out	21 (56)	C C	C C	C C	C C	P P	CIAS/CPIAS CIAS/CPIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
61	SG #1 blowdown to blowdown flash tank	PC0911	8 8	SD-0005 SD-0007	40 40	10.4.8-1	Gate Gate	Secondary Coolant	(17) (17)	Outside Outside	Out	35 (57)	O O	C C	O O	C C	P E	MSIS/CIAS/ DPS-AFAS/ AFAS MSIS/CIAS/ DPS-AFAS /AFAS HRAS/ BFTHHLAS	A,R,M A,R,M	A	No	(9)	Nonessential	
62	SG #2 blowdown to blowdown flash Tank	PC0912	8 8	SD-0006 SD-0008	40 40	10.4.8-1	Gate Gate	Secondary Coolant	(17) (17)	Outside Outside	Out	35 (57)	O O	C C	O O	C C	P E	MSIS/CIAS/ DPS-AFAS /AFAS MSIS/CIAS/ DPS-AFAS /AFAS HRAS/ BFTHHLAS	A,R,M A,R,M	A	No	(9)	Nonessential	
63	SG wet layup recirculation return to SG #1	PC0134	4 4	SD-1113 SD-1115	- -	10.4.8-1	Gate Check	Secondary Coolant	(17) -	Outside Inside	In	11 (56)	LC C	- -	O/C O/C	LC C	HW -	- -	M -	C	Yes		Nonessential	
64	SG wet layup recirculation return to SG #2	PC0233	4 4	SD-1114 SD-1116	- -	10.4.8-1	Gate Check	Secondary Coolant	(17) -	Outside Inside	In	11 (56)	L/C O	- -	O/C O/C	LC C	HW -	- -	M -	C	Yes		Nonessential	
65	Fire Protection water supply to containment Line #2	PC0253	6 6	FP-0030 FP–1440	30 -	9.5.1-1	Globe[12] Check	Fresh water	(17) -	Outside Inside	In	8 (56)	C O	C -	C C	C C	P -	CIAS -	A,R,M -	C	Yes		Nonessential	(14)
67	PCW supply to containment ventilation units	PC0152	12 12	WI-0013 WI-1043	50 -	9.2-7-2	Gate[12] Check	Chilled water	(17) -	Outside Inside	In	34 (56)	O O	C -	O O	C C	P -	CIAS -	A,R,M -	C	Yes		Nonessential	(14)

Table 6.2.4-1 (10 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
68	PCW return from containment ventilation units	PC0151	12 12 3/4	WI-0012 WI-0015 WI-0014	50 50 -	9.2.7-2	Gate[12] Gate[12] Relief	Chilled water	[17] - -	Outside Inside Inside	Out	39 (56)	O O C	C AI -	O O C	C C C	P E -	CIAS CIAS RV setpoint	A,R,M A,R,M -	C	Yes		Nonessential	[14]
69	Containment radiation monitor (inlet)	PC0319	3/4 3/4	PR-432 PR-431	15 15	-	Gate[12] Gate[12]	Containment Atmosphere	[17] -	Outside Inside	Out	29 (56)	O O	AI AI	O O	C C	E E	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
70	Containment radiation monitor (outlet)	PC0319	3/4 3/4	PR-434 PR-1433	15 -	-	Gate[12] Check	Containment Atmosphere	[17] -	Outside Inside	In	7 (56)	O O	AI -	O O	C C	E -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
71	Containment pressure sensing line	PC0330 PC0260 PC0308 PC0404 PC0330 PC0260	3/4 3/4 3/4 3/4 3/4 3/4	CM-17 CM-18 CM-19 CM-20 CM-21 CM-22	OPEN OPEN OPEN OPEN OPEN OPEN	-	Globe Globe Globe Globe Globe Globe	Containment Atmosphere	[17] [17] [17] [17] [17] [17]	Outside Outside Outside Outside Outside Outside	Out Out Out Out Out Out	15 (56)	O O O O O O	O O O O O O	O O O O O O	O O O O O O	S S S S S S	- - - - 	R,M R,M R,M R,M R,M R,M	C	Yes	-	Essential	
72	Deleted																							
73	Nitrogen supply to safety injection tanks and RDT	PC0318	1 1	NT-0004 NT-1016	15 -	-	Globe] Check	Nitrogen Gas	[17] -	Outside Inside	In	34 (55)	O O/C	C -	O O/C	C C	P -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
74	Containment air sample	PC0312	1/2 1/2	PX-0041 PX-0042	15 15	9.3.2-1	Gate Gate	Containment Atmosphere	- [17]	Inside Outside	Out	27 (56)	C C	A1 A1	C C	O/C O/C	E E	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
75	Containment drain sump pump discharge line	PC0141	4 4	DE-0006 DE-0005	20 20	9.3.3-1	Globe Globe	Primary Coolant	[17] -	Outside Inside	Out	33 (56)	O O	C AI	O O	C C	P E	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	
76	Containment air sample	PC0312	1/2 1/2	PX-0043 PX-1020	15 -	9.3.2-1	Gate Check	Containment Atmosphere	[17] -	Outside Inside	In	5 (56)	C C	A1 -	C C	O/C O/C	E -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
77	Reactor drain tank gas space to GWMS	PC0307	1 1	GW-0002 GW-0001	15 15	11.3-1	Globe Globe	Gas	[17] -	Outside Inside	In/Out	36 (56)	O O	C AI	O O	C C	S E	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Nonessential	

Table 6.2.4-1 (11 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
78	Sample return to containment	PC0313	3/4 3/4	PX-0053 PX-1005	15 -	9.3.2-1	Globe Check	Borated Water	[17] -	Outside Inside	In	30 (56)	C C	C -	C -	O/C O/C	S -	CIAS -	A,R,M -	C	Yes	-	Nonessential	
79	Non-condensible gas exhaust to containment	PC0242	6 6	CA-0013 CA-1023	30 -	10.4.2-1	Gate Check	Inleakage Air	[17] -	Outside Inside	In	5 (56)	C C	AI -	C C	O/C O/C	E -	CIAS -	A,R,M	C	Yes	-	Nonessential	
80	Channel A containment monitor suction from Containment	PC0330	1/2 1/2 1/2	CM-001 CM-003 CM-023	15 15 15	-	Globe Globe Globe	Containment Atmosphere (Combustible Gas)	- [17] -	Inside Outside Inside	Out	41 (56)	C C C	C C C	C C C	O/C O/C O/C	S S S	CIAS CIAS CIAS	A,R,M A,R,M A,R,M	C C C	Yes Yes Yes	-	Essential	
81	Channel A containment monitor discharge to containment	PC0308	1/2 1/2	CM-009 CM-1013	15 -	-	Globe Check	Containment Atmosphere (Combustible Gas)	[17] -	Outside Inside	In	31 (56)	C C	C -	C C	O/C O/C	S -	CIAS -	A,R,M -	C	Yes	-	Essential	
82	Channel B containment monitor suction from containment	PC0260	1/2 1/2 1/2	CM-002 CM-004 CM-024	15 15 15	-	Globe Globe Globe	Containment Atmosphere (Combustible Gas)	- [17] -	Inside Outside Inside	Out	41 (56)	C C C	C C C	C C C	O/C O/C O/C	S S S	CIAS CIAS CIAS	A,R,M A,R,M A,R,M	C C C	Yes Yes Yes	-	Essential	
83	Channel B containment monitor discharge to containment	PC0404	1/2 1/2	CM-010 CM-1014	15 -	-	Globe Check	Containment Atmosphere (Combustible Gas)	[17] -	Outside Inside	In	31 (56)	C C	C -	C C	O/C O/C	S -	CIAS -	A,R,M -	C	Yes	-	Essential	
84	Channel A IRWST monitor Suction from IRWST	PC0308	1/2 1/2	CM-011 CM-013	15 15	-	Globe Globe	Containment Atmosphere (Combustible Gas)	- [17]	Inside Outside	Out	25 (56)	C C	C C	C C	O/C O/C	S S	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Essential	
85	Channel B IRWST monitor suction IRWST	PC0404	1/2 1/2	CM-012 CM-014	15 15	-	Globe Globe	Containment Atmosphere (Combustible Gas)	- [17]	Inside Outside	Out	25 (56)	C C	C C	C C	O/C O/C	S S	CIAS CIAS	A,R,M A,R,M	C	Yes	-	Essential	
86	IRWST to boric acid makeup pump	-	4 4	IW-005 IW-006	20 20	6.8-3	Gate Gate	Borated Water	[17] [17]	Outside Outside	Out	37 (56)	O/C	A1	O/C	O/C	E	CIAS CIAS	A,R,M A,R,M	A	No	[11]	Nonessential	
87	Auxiliary steam supply	PC0143	2 ½ 2 ½	AS-1016 AS-1017	N/A N/A	10.4.10-1	Globe Globe	Steam	[17] -	Outside Inside	In	26 (56)	LC LC		LC LC	LC LC	HW HW	-	M M	C	Yes	-	Nonessential	
88	ECSBS supply line	PC0135	6 6	CS-1013 CS-1014	- -	6.2.2-1	Gate Check	Air	[17] -	Outside Inside	In	11 (56)	LC C	- -	LC C	O/C O/C	- -	- -	M -	C	Yes	-	Nonessential	

Table 6.2.4-1 (12 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
89	IRWST level instrument upper tap isolation	PC0350 PC0349 PC0351 PC0352	1 1 1 1	IW-010 IW-022 IW-024 IW-026	15 15 15 15	6.8-3	Globe Globe Globe Globe	Borated Water	[17] [17] [17] [17]	Outside Outside Outside Outside	Out	16 (56)	O O O O	O O O O	O O O O	O O O O	S S S S	- - - -	R,M R,M R,M R,M	C	Yes	-	Essential	
90	IRWST level instrument lower tap isolation	-	1 1 1 1	IW-011 IW-023 IW-025 IW-027	15 15 15 15	6.8-3	Globe Globe Globe Globe	Borated Water	[17] [17] [17] [17]	Outside Outside Outside Outside	Out	16 (56)	O O O O	O O O O	O O O O	O O O O	S S S S	- - - -	R,M R,M R,M R,M	A	No	Note 11	Essential	
91	HVT Level Instrument isolation	PC0344 - PC0345 - PC0346 - PC0347 - PC0348 -	1 1 1 1 1 1 1 1 1 1	IW-012 IW-013 IW-014 IW-015 IW-016 IW-017 IW-028 IW-029 IW-030 IW-031	15 15 15 15 15 15 15 15 15 15	6.8-3	Globe Globe Globe Globe Globe Globe Globe Globe Globe Globe	Borated Water	[17] [17] [17] [17] [17] [17] [17] [17] [17] [17]	Outside Outside Outside Outside Outside Outside Outside Outside Outside Outside	Out	16 (56)	O O O O O O O O O O	O O O O O O O O O O	O O O O O O O O O O	O O O O O O O O O O	S S S S S S S S S S	- - - - - - - - - -	R,M R,M R,M R,M R,M R,M R,M R,M R,M R,M	C	Yes	-	Essential	
92	Reactor cavity instrument isolation	PC0340 - PC0341 - PC0342 - PC0343 -	1 1 1 1 1 1 1 1	IW-018 IW-019 IW-020 IW-021 IW-032 IW-033 IW-034 IW-035	15 15 15 15 15 15 15 15	6.8-3	Globe Globe Globe Globe Globe Globe Globe Globe	Borated Water	[17] [17] [17] [17] [17] [17] [17] [17]	Outside Outside Outside Outside Outside Outside Outside Outside	Out	16 (56)	O O O O O O O O	O O O O O O O O	O O O O O O O O	O O O O O O O O	S S S S S S S S	- - - - - - - -	R,M R,M R,M R,M R,M R,M R,M R,M	C	Yes	-	Essential	
93	Fuel Transfer Tube	-	-	-	-	-	Flange	-	-	-	-	44(-)	C	-	C	C	-	-	M	B	No	-	-	
94	Personnel airlock	-	-	-	-	-	-	-	-	-	-	45(-)	-	-	-	-	-	-	-	B	No	-	-	
95	Equip. Hatch	-	-	-	-	-	-	-	-	-	-	46(-)	-	-	-	-	-	-	-	B	No	-	-	
96	(Electric)	EC3-001	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
97	(Electric)	EC3-002	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
98	(Electric)	EC3-003	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
99	(Electric)	EC3-004	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
100	(Electric)	EC3-005	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
101	(Electric)	EC3-006	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	

Table 6.2.4-1 (13 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
102	(Electric)	EC3-007	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
103	(Electric)	EC3-008	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
104	(Electric)	EC3-009	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
105	(Electric)	EC3-010	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
106	(Electric)	EC3-011	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
107	(Electric)	EC3-012	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
108	(Electric)	EC3-013	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
109	(Electric)	EC3-014	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
110	(Electric)	EC3-015	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
111	(Electric)	EC3-016	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
112	(Electric)	EC3-017	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
113	(Electric)	EC3-018	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
114	(Electric)	EC3-019	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
115	(Electric)	EC3-020	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
116	(Electric)	EC3-021	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
117	(Electric)	EC3-022	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
118	(Electric)	EC4-001	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
119	(Electric)	EC4-002	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
120	(Electric)	EC4-003	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
121	(Electric)	EC4-004	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
122	(Electric)	EC4-005	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
123	(Electric)	EC4-006	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
124	(Electric)	EC4-007	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
125	(Electric)	EC4-008	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
126	(Electric)	EC4-009	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
127	(Electric)	EC4-010	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
128	(Electric)	EC4-011	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
129	(Electric)	EC4-012	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
130	(Electric)	EC4-013	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
131	(Electric)	EC4-014	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
132	(Electric)	EC4-015	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
133	(Electric)	EC4-016	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	

Table 6.2.4-1 (14 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)[15]	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)[2]	Valve Position[3]				Actuator Type[4]	Actuation Signal[5]	Type[6]	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line[7]	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
134	(Electric)	EC4-017	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
135	(Electric)	EC4-018	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
136	(Electric)	EC4-019	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
137	(Electric)	EC4-020	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
138	(Electric)	EC4-021	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
139	(Electric)	EC4-022	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
140	(Electric)	EC4-023	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
141	(Electric)	EC4-024	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
142	(Electric)	EC4-025	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
143	(Electric)	EC4-026	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
144	(Electric)	EC4-027	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
145	(Electric)	EC4-028	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
146	(Electric)	EC4-029	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
147	(Electric)	EC4-030	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
148	(Electric)	EC4-031	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
149	(Electric)	EC4-032	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
150	(Electric)	EC4-033	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
151	(Electric)	EC4-034	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
152	(Electric)	EC4-035	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
153	(Electric)	EC4-036	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
154	(Electric)	EC4-037	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
155	(Electric)	EC4-038	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
156	(Electric)	EC4-039	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
157	(Electric)	EC4-040	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
158	(Electric)	EC4-041	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
159	(Electric)	EC4-042	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
160	(Electric)	EC4-043	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
161	(Electric)	EC4-044	_		_	_	_	_	_	_	_	47(-)	_	_	_	_	_	_	_	B	No	_	_	
162	Containment low volume purge supply system	PC166	10	VQ-2024	_	9.4.6-2	Gate	Containment Atmosphere	[17]	Inside Outside	Out	43(56)	C	C	C	C	-	-	M	C	Yes	-	Nonessential	for ILRT/SIT air supply & exhaust connection
163	Containment low volume purge supply system	PC417	1	VQ-2014	_	9.4.6-2	Globe	Containment Atmosphere	[17]	Inside Outside	Out	43(56)	C	C	C	C	-	-	M	C	Yes	-	Nonessential	for ILRT/SIT pressure gauge connection
164	Containment low volume purge supply system	PC316	1	VQ-2016	_	9.4.6-2	Globe	Containment Atmosphere	[17]	Inside Outside	Out	43(56)	C	C	C	C	-	-	M	C	Yes	-	Nonessential	for ILRT verification test connection

Table 6.2.4-1 (15 of 15)

Item No.	Service	Pene-traion No	Line Size (in)	Valve No.	Closure Time (sec)	Figure No.	Valve Type	Fluid	Length of Pipe(ft)(15)	Location Relative to Containment	Flow Direction Relative to Containment	Valve Arrangement (GDC)(2)	Valve Position(3)				Actuator Type(4)	Actuation Signal(5)	Type(6)	Type Test	Type-C Test	Justifi-cation for Not Testing	Essential/ Nonessential Line(7)	Remark
													Normal	Fail Safe	Shut-down	Acci-dent								
165	(Spare)	PC0154	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
166	(Spare)	PC0156	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
167	(Spare)	PC0164	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
168	(Spare)	PC0165	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
169	(Spare)	PC0168	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
170	(Spare)	PC0169	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
171	(Spare)	PC0235	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
172	(Spare)	PC0235	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
173	(Spare)	PC0248	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
174	(Spare)	PC0257	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
175	(Spare)	PC0258	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
176	(Spare)	PC0261	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	
177	(Spare)	PC0263	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_	_	No	No	_	_	

(1) Valve closure time is established based on system considerations, but all valves stroke to their designated position upon actuation as soon as practicable. An upper limit of 60 seconds as shown in the table is used in stroke time determination except for the low volume purge system supply and exhaust valves, which are required to close in 30 seconds per Subsection 15.6.5.2. Valve closure time is shown for these valves, which receive a CIAS. CIAS signal generation time is not included in the valve closure times shown in this table.

(2) Valve arrangements are shown in Figure 6.2.4-1.

(3) Valve position abbreviations

O – Open C - Closed

O/C – Open or Closed LO - Locked Open#

LC – Locked Closed# AI - Fails-As-Is

If other than handwheel-operated manual valve, valve actuator operability is controlled by administrative means(e.g., removing actuator power, air supply, using key-controlled switch).

(4) Actuator type abbreviations

E – motor operated (electric powered)

P – pneumatically operated (compressed air powered), except as qualified by Note 13

HW – manual handwheel operated

S – solenoid operator

EH – electro hydraulic operated

(5) Definition of actuation signals

CIAS – containment isolation actuation signal

AFAS – auxiliary feedwater actuation signal

DPS AFAS – diverse protection system auxiliary feedwater actuation signal

HRAS – high radiation actuation signal

HHAS – high humidity actuation signal

SIAS – safety injection actuation signal

CSAS – containment spray actuation signal

MSIS – main steam isolation signal

BFTHHLAS – blowdown flash tank high-high level actuation signal

CCWSTLLAS – component cooling water surge tank low low level actuation signal

CPIAS – containment purge isolation actuation signal

All of above signals are engineered safety feature (ESF) signals and classified as ESF valves except HRAS, HHAS, CCWLLSTAS, BFTHHLAS, and DPS AFAS.

(6) Abbreviations for actuation signal types

A – automatically initiated

R – remotely initiated

M – manually initiated

(7) Essential lines are lines that are required for safe shut down of the reactor or to mitigate the consequences of an accident. Nonessential lines are either be locked closed through manual valves or automatically isolated upon a CIAS or approved automatic signal unless the line is provided with a regulatory exemption.

(8) Main steam isolation valves are piston-operated, using process fluid.

(9) The main steam, main feedwater, auxiliary feedwater, sample and blowdown lines are all connected to the secondary side of the steam generator, which is kept at a higher pressure than the primary side soon after a LOCA occurs. Any leakage between the primary and secondary sides of the steam generators is directed inward to the containment. Refer to Table 3.9-15 for qualitative in-service leakage testing to periodically access valve degradation.

(10) The shutdown cooling system (SCS), which functions to remove reactor decay heat during shutdown, are operated during Type-A tests to maintain the unit in a safe condition.

(11) An effective fluid seal on these penetrations is provided by the IRWST (in-containment refueling water storage tank).

(12) Maximum valve closure time on CIAS is 60 sec.

(13) Maximum valve closure time on CIAS is 30 sec.

(14) During Type-A test, the fire protection system (FP) is operated to supply fire water for fire protection and plant chilled water system (WI) is operated to supply chilled water for containment fan cooler (RCFC), when required.

(15) The value is the length of pipe from containment penetration anchor to outermost isolation valve (or the maximum length that is not exceeded in further design)

(16) The value in the length of pipe is the scope of DCD in accordance with the graded approach.

(17) The value in the length of pipe is out of scope of DCD in accordance with the graded approach.

(18) An effective fluid seal is maintained on these penetrations by safety injection pump (SIP) or shutdown cooling pump (SCP) during post-accident conditions. During normal operation, an effective fluid seal is maintained by the static head of the IRWST acting through the safety injection piping, safety injection filling tanks (SIFTs) that are to fill SIS piping in accordance with Technical Specification surveillance requirements, and check valves located at downstream of safety injection and shutdown cooling pumps. The fluid seal within the pipe would preclude release of containment atmosphere to the environs.

Table 2.11.3-1 (1 of 23)

Containment Isolation System Components List

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
Auxiliary Feedwater System													
AFW-V0043	MOV	PC0118	4	14	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	DPS-AFAS1 DMA-AFAS1 ESF-AFAS1	Close	As-is
AFW-V0044	MOV	PC0228	4	14	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	DPS-AFAS2 DMA-AFAS2 ESF-AFAS2	Close	As-is
AFW-V0045	MOV	PC0129	4	14	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	DPS-AFAS1 DMA-AFAS1 ESF-AFAS1	Close	As-is
AFW-V0046	MOV	PC0119	4	14	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	DPS-AFAS2 DMA-AFAS2 ESF-AFAS2	Close	As-is

Table 2.11.3-1 (2 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
AFW-V1007A	Check	PC0118	4	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
AFW-V1007B	Check	PC0228	4	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
AFW-V1008A	Check	PC0129	4	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
AFW-V1008B	Check	PC0119	4	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
Auxiliary Steam System													
AS-V1016	Manual	PC0143	26	-	Outside	2	I	No/No	No/No	No/No	-	Close	-
AS-V1017	Manual	PC0143	26	-	Inside	2	I	No/No	No/No	No/No	-	Close	-
Condenser Vacuum System													
CA-V0013	MOV	PC0242	5	30	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
CA-V1023	Check	PC0242	5	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
Component Cooling Water System													
CC-V231	MOV	PC0137	6	50	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CCWSTLLAS	Normal Open/Close	As-is
CC-V1099	Check	PC0137	6	-	Inside	2	I	-/Yes	No/No	No/No	-	Normal Open/Close	-
CC-V0249	MOV	PC0138	19	50	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CCWSTLLAS	Normal Open/Close	As-is

Table 2.11.3-1 (3 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
CC-V0250	MOV	PC0138	19	50	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CCWSTLLAS	Normal Open/Close	As-is
CC-V1100	Check	PC0138	19	-	Inside	2	I	-/ Yes	No/No	No/No	-	Close	-
CC-V0296	MOV	PC0162	23	40	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
CC-V297	MOV	PC0162	23	40	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
CC-V1685	Check	PC0162	23	-	Inside	2	I	-/ Yes	No/No	No/No	-	Close	-
CC-V301	MOV	PC0163	19	40	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
CC-V302	MOV	PC0163	19	40	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
CC-V1686	Check	PC0163	19	-	Inside	2	I	-/ Yes	No/No	No/No	-	Close	-
Containment Monitoring System													
CM-V001	SOV	PC0330	41	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V002	SOV	PC0260	41	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V003	SOV	PC0330	41	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V004	SOV	PC0260	41	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close

Table 2.11.3-1 (4 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
CM-V009	SOV	PC0308	31	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V010	SOV	PC0404	31	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V011	SOV	PC0308	25	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V012	SOV	PC0404	25	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V013	SOV	PC0308	25	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V014	SOV	PC0404	25	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V023	SOV	PC0330	41	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V024	SOV	PC0260	41	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CM-V1013	Check	PC0308	31	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
CM-V1014	Check	PC0404	31	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
CM-V17	SOV	PC0330	15	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Open
CM-V18	SOV	PC0260	15	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Open
CM-V19	SOV	PC0308	15	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Open

Table 2.11.3-1 (5 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
CM-V20	SOV	PC0404	15	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Open
CM-V21	SOV	PC0330	15	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Open
CM-V22	SOV	PC0260	15	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Open
Containment Spray System													
CS-V003	MOV	PC0116	5	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CSAS	Normal Open/Close	As-is
CS-V004	MOV	PC0226	5	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CSAS	Normal Open/Close	As-is
CS-V1007	Check	PC0116	5	-	Inside	2	I	-/Yes	No/No	No/No	-	Normal Open/Close	-
CS-V1008	Check	PC0226	5	-	Inside	2	I	-/Yes	No/No	No/No	-	Normal Open/Close	-
CS-V1013	Manual	PC0135	11	-	Outside	2	I	-/-	No/No	No/No	-	Normal Open/Close	-
CS-V1014	Check	PC0135	11	-	Inside	2	I	-/-	No/No	No/No	-	Normal Open/Close	-

Table 2.11.3-1 (6 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
Chemical and Volume Control System													
CV-V189	Check	PC0131	5	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
CV-V255	MOV	PC0255	6	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	As-is
CV-V362	Manual	PC0403	11	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
CV-V363	Check	PC0403	11	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
CV-V494	Check	PC0306	8	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
CV-V505	AOV	PC0305	17	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CSAS	Close	Close
CV-V506	AOV	PC0305	17	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CSAS	Close	Close
CV-V509	MOV	PC0131	5	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
CV-V522	AOV	PC0402	17	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CV-V523	AOV	PC0402	17	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CV-V524	MOV	PC0230	6	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	As-is

Table 2.11.3-1 (7 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
CV-V560	AOV	PC0232	20	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CV-V561	AOV	PC0232	20	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CV-V580	AOV	PC0306	8	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
CV-V747	Check	PC0230	6	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
CV-V835	Check	PC0255	6	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
Radioactive Drain System													
DE-V0005	MOV	PC0141	33	20	Inside	2	I	Yes/ Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
DE-V0006	AOV	PC0141	33	20	Outside	2	I	Yes/ Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
Spent Fuel Pool Cooling and Cleanup System													
FC-V1142	Manual	PC0239	26	-	Inside	2	I	-/-	No/No	No/No	-	Close	-
FC-V1143	Manual	PC0239	26	-	Outside	2	I	-/-	No/No	No/No	-	Close	-
FC-V1144	Manual	PC0240	11	-	Outside	2	I	-/-	No/No	No/No	-	Close	-
FC-V1145	Check	PC0240	11	-	Inside	2	I	-/-	No/No	No/No	-	Close	-

Table 2.11.3-1 (8 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
Fire Protection System													
FP-V0030	AOV	PC0253	8	30	Outside	2	I	Yes/ Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
FP-V1440	Check	PC0253	8	-	Inside	2	I	No/ Yes	No/No	No/No	-	Close	-
Feedwater System													
FW-V121	E/H	PC0511	40	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V122	E/H	PC0511	40	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V123	E/H	PC0521	40	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V124	E/H	PC0521	40	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V131	E/H	PC0512	12	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V132	E/H	PC0512	12	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V133	E/H	PC0522	12	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V134	E/H	PC0522	12	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V138	SOV	PC0512	12	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
FW-V139	SOV	PC0522	12	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close

Table 2.11.3-1 (9 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
Gaseous Radwaste System													
GW-V0001	MOV	PC0307	36	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
GW-V0002	SOV	PC0307	36	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
Instrument Air System													
IA-V020	AOV	PC0145	34	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
IA-V1601	Check	PC0145	34	-	Inside	2	I	No/Yes	No/No	No/No	-	Close	-
In-Containment Water Storage System													
IW-V005	MOV	-	37	20	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
IW-V006	MOV	-	37	20	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
IW-V010	SOV	PC0350	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V011	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V012	SOV	PC0344	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V013	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V014	SOV	PC0345	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open

Table 2.11.3-1 (10 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
IW-V015	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V016	SOV	PC0346	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V017	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V018	SOV	PC0340	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V019	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V020	SOV	PC0341	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V021	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open/Close	Open
IW-V022	SOV	PC0349	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V023	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V024	SOV	PC0351	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V025	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V026	SOV	PC0352	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V027	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open

Table 2.11.3-1 (11 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
IW-V028	SOV	PC0347	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V029	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V030	SOV	PC0348	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V031	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V032	SOV	PC0342	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V033	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V034	SOV	PC0343	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
IW-V035	SOV	-	16	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
Main Steam System													
MS-V0109	AOV	PC0622	3	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	ESF-AFAS-2 DPS-AFAS-2	Normal Close/Open	Open
MS-V0110	AOV	PC0612	3	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	ESF-AFAS-1 DPS-AFAS-1	Normal Close/Open	Open
MS-V0111	AOV	PC0622	3	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open	Open

Table 2.11.3-1 (12 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
MS-V0112	AOV	PC0612	3	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Open	Open
MS-V1030	Manual	PC0612	3	-	Outside	2	I	Yes/Yes	No/No	No/No	-	-	-
MS-V1257	Manual	PC0611	1	-	Outside	2	I	Yes/Yes	No/No	No/No	-	-	-
MS-V1073	Manual	PC0621	1	-	Outside	2	I	Yes/Yes	No/No	No/No	-	-	-
MS-V1051	Manual	PC0622	3	-	Outside	2	I	Yes/Yes	No/No	No/No	-	-	-
MS-V011	E/H	PC0612	3	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS DMA-MSIS	Close	Close
MS-V012	E/H	PC0611	1	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS DMA-MSIS	Close	Close
MS-V013	E/H	PC0621	1	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS DMA-MSIS	Close	Close
MS-V014	E/H	PC0622	3	5	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS DMA-MSIS	Close	Close
MS-V015	E/H	PC0612	3	10	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V016	E/H	PC0611	1	10	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V017	E/H	PC0621	1	10	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V018	E/H	PC0622	3	10	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close

Table 2.11.3-1 (13 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
MS-V090	AOV	PC0612	3	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V091	AOV	PC0611	1	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V092	AOV	PC0621	1	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V093	AOV	PC0622	3	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	MSIS	Close	Close
MS-V101	E/H	PC0612	3	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Close
MS-V102	E/H	PC0611	1	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Close
MS-V103	E/H	PC0621	1	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Close
MS-V104	E/H	PC0622	3	-	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Close	Close
MS-V1301	Safety V/V	PC0612	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1302	Safety V/V	PC0611	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1303	Safety V/V	PC0612	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1304	Safety V/V	PC0611	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1305	Safety V/V	PC0612	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-

Table 2.11.3-1 (14 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
MS-V1306	Safety V/V	PC0611	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1307	Safety V/V	PC0612	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1308	Safety V/V	PC0611	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	Close
MS-V1309	Safety V/V	PC0612	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	Close
MS-V1310	Safety V/V	PC0611	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1311	Safety V/V	PC0621	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1312	Safety V/V	PC0622	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1313	Safety V/V	PC0621	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1314	Safety V/V	PC0622	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1315	Safety V/V	PC0621	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1316	Safety V/V	PC0622	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1317	Safety V/V	PC0621	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1318	Safety V/V	PC0622	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-

Table 2.11.3-1 (15 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
MS-V1319	Safety V/V	PC0621	1	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
MS-V1320	Safety V/V	PC0622	3	-	Outside	2	I	-/Yes	No/No	No/No	-	Close	-
Nitrogen System													
NT-V0004	SOV	PC0318	34	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
NT-V1016	Check	PC0318	34	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
Process Sampling System													
PR-V1433	Check	PC0319	7	-	Inside	2	I	-/Yes	No/No	No/No	-	-	-
PR-V431	MOV	PC0319	29	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
PR-V432	MOV	PC0319	29	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
PR-V434	MOV	PC0319	7	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
Radiation Monitoring System													
PS-V0031	SOV	PC0331	42	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
PS-V0032	SOV	PC0311	42	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
PS-V0033	SOV	PC0333	32	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close

Table 2.11.3-1 (16 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
PS-V0034	SOV	PC0436	32	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
PS-V0035	SOV	PC0332	38	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
PS-V0036	SOV	PC0437	38	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
PS-V0257	SOV	PC0331	42	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
PS-V0258	SOV	PC0311	42	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS, AFAS, MSIS	Close	Close
Primary Sampling System													
PX-V0001	SOV	PC0310	24	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0002	SOV	PC0310	24	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0003	SOV	PC0408	24	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0004	SOV	PC0408	24	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0005	SOV	PC0409	24	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0006	SOV	PC0409	24	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0020	SOV	PC0311	24	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close

Table 2.11.3-1 (17 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
PX-V0021	SOV	PC0311	24	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V0041	MOV	PC0312	27	15	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
PX-V0042	MOV	PC0312	27	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
PX-V0043	MOV	PC0312	5	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
PX-V1020	Check	PC0312	5	-	Inside	2	I	Yes/Yes	No/No	No/No	-	Close	-
PX-V0053	SOV	PC0313	30	15	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	CIAS	Close	Close
PX-V1005	Check	PC0313	30	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-
Service Air System													
SA-V001	AOV	PC0144	8	15	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
SA-V1401	Check	PC0144	8	-	Inside	2	I	No/Yes	No/No	No/No	-	Close	Close
Steam Generator Blowdown System													
SD-V0005	AOV	PC0911	35	40	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	MSIS/CIAS/ DPS-AFAS /AFAS	Close	Close
SD-V0006	AOV	PC0912	35	40	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	MSIS/CIAS/ DPS-AFAS /AFAS	Close	Close

Table 2.11.3-1 (18 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
SD-V0007	MOV	PC0911	35	40	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	MSIS/CIAS/ DPS-AFAS /AFAS	Close	Close
SD-V0008	MOV	PC0912	35	40	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	MSIS/CIAS/ DPS-AFAS /AFAS	Close	Close
SD-V1113	Manual	PC0134	11	-	Outside	2	I	No/No	No/No	No/No	-	Close	-
SD-V1114	Manual	PC0233	11	-	Inside	2	I	No/No	No/No	No/No	-	Close	-
SD-V1115	Check	PC0134	11	-	Outside	2	I	No/Yes	No/No	No/No	-	Close	-
SD-V1116	Check	PC0233	11	-	Inside	2	I	No/Yes	No/No	No/No		Close	-
Safety Injection System/Shutdown Cooling System													
SI-V100	Check	PC0111	14	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V101	Check	PC0221	14	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V113	Check	PC0212	22	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V123	Check	PC0214	10	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V133	Check	PC0122	22	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-

Table 2.11.3-1 (19 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
SI-V143	Check	PC0124	10	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V179	Relief	PC0125	9	-	Inside	2	I	No/Yes	No/No	No/No	RV Setpoint	Close	-
SI-V189	Relief	PC0215	9	-	Inside	2	I	No/Yes	No/No	No/No	RV Setpoint	Close	-
SI-V293	Manual	PC0301	13	-	Outside	2	I	No/No	No/No	No/No	-	Close	-
SI-V300	MOV	PC0111	14	50	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Close	As-is
SI-V301	MOV	PC0221	14	50	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Close	As-is
SI-V302	MOV	PC0111	14	20	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Open/ Close	As-is
SI-V303	MOV	PC0221	14	20	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Open/ Close	As-is
SI-V304	MOV	-	18	60	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Open/Close	As-is
SI-V305	MOV	-	18	60	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Open/Close	As-is
SI-V308	MOV	-	18	60	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Open/Close	As-is
SI-V309	MOV	-	18	60	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Open/Close	As-is

Table 2.11.3-1 (20 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
SI-V321	MOV	PC0123	22	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V331	MOV	PC0213	22	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V474	Relief	PC0301	13	-	Inside	2	I	No/Yes	No/No	No/No	RV Setpoint	Close	-
SI-V523	Check	PC0123	22	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V533	Check	PC0213	22	-	Inside	2	I	No/Yes	No/No	No/No	-	Normal Close/Open	-
SI-V600	MOV	PC0214	10	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/ Open	As-is
SI-V601	MOV	PC0124	10	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/ Open	As-is
SI-V602	MOV	PC0214	10	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V603	MOV	PC0124	10	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V616	MOV	PC0212	22	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	SIAS, DPS-SIAS	Normal Close/Open	As-is
SI-V626	MOV	PC0214	10	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	SIAS, DPS-SIAS	Normal Close/Open	As-is
SI-V636	MOV	PC0122	22	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	SIAS, DPS-SIAS	Normal Close/Open	As-is

Table 2.11.3-1 (21 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
SI-V646	MOV	PC0124	10	10	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	SIAS, DPS-SIAS	Normal Close/Open	As-is
SI-V653	MOV	PC0125	9	160	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V654	MOV	PC0215	9	160	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V655	MOV	PC0125	9	80	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V656	MOV	PC0215	9	80	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	-	Normal Close/Open	As-is
SI-V682	AOV	PC0301	13	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	SIAS, DPS-SIAS	Close	Close
Reactor Containment Building Purge System													
VQ-V0011	E/H	PC0250	28	5	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	Close
VQ-V0012	MOV	PC0250	28	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	As-is
VQ-V0013	MOV	PC0249	28	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	As-is
VQ-V0014	E/H	PC0249	28	5	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	Close

Table 2.11.3-1 (22 of 23)

Item No.(1)	Valve Type	Pene-traion No	Arrangement No.(3)	Closure Time (sec)	Location Relative to Containment	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir.	Control/ Display at MCR	Control/ Display at RCR	Control Signal (4)	Active Safety Function	Loss of Motive Power Position
VQ-V0031	AOV	PC0247	2	5	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	Close
VQ-V0032	AOV	PC0247	2	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	Close
VQ-V0033	AOV	PC0246	21	5	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	Close
VQ-V0034	AOV	PC0246	21	5	Outside	2	I	Yes/No	Yes/Yes	Yes/Yes	CIAS ESF-CPIAS	Close	Close
Plant Chilled Water System													
WI-V0012	AOV	PC0151	39	50	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
WI-V0013	AOV	PC0152	34	50	Outside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	Close
WI-V0014	Relief	PC0151	39	-	Inside	2	I	-/Yes	No/No	No/No	-	-	-
WI-V0015	MOV	PC0151	39	50	Inside	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As-is
WI-V1043	Check	PC0152	34	-	Inside	2	I	-/Yes	No/No	No/No	-	Close	-