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May 21, 1982

Mr. Dennis M. Crutchfield, Chief
Operating Reactor Branch #5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden 2
SEP Topic: VI-4, Containment Isolation System

NRC Docket 50-237

Reference: (a) D.M. Crutchfield letter to L. DelGeorge dated December 18, 1981
(b) T.J. Rausch letter to D.M. Crutchfield dated June 17, 1981
(c) D.L. Peoples letter to H.R. Denton dated February 25, 1980

Dear Mr. Crutchfield:

In response to reference (a) additional information is needed concerning primary containment isolation valves. Per your request various data is provided along with four basic areas that are reviewed; namely, administrative control over proper valve positioning, leak detection capability, manual and locked open valves, and the use of check valves as isolation valves outside containment.

Table 1 of the draft report, reference (a), has been reviewed, and the data requested to complete it is provided as Attachment A to this letter. The appropriate piping and instrument diagrams are also listed for reference. The final page of the attachment provides an explanation of the various codes and abbreviations used in tabulating the data.

As stated in reference (b), Dresden Station uses several methods of administrative control on test connections, vent lines, and capped branch lines. All valve lineups are performed according to the system valve checklist prior to power operation after refueling. Also, when operations require a valve position to be changed, an outage card is normally hung on the valve. This helps to ensure that the valve is returned to its proper position as the outage is cleared. There are some valves that are locked closed, but this practice is not considered necessary in all cases.

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The systems listed on page 11 of the draft report have been reviewed with respect to leak detection capability, the following comments are provided.

1. The LPCI 1501-5A, B, C, D and Core Spray 1402-3A, B valves (penetrations X-303A - D) are normally open suction valves to ECCS systems. Thus, they have no automatic isolation functions.

2. The LPCI 1501-22A, B (penetration X-116A, B) and Core Spray 1402-25A, B (penetration X-149A, B) valves are local leak rate tested each refueling outage in accordance with Technical Specification 4.7.2. and ASME Section XI, Subsection IWV-3420, with corrective action based on Subsection IWV-3420(g)(1).

3. The RBCCW 3702 and 3703 valves (penetrations X-123 and X-124) are part of a closed system. They are addressed in an Appendix J review, dated September 26, 1975 (G.J. Pliml to K.R. Goller), with additional information contained in a letter from M. Turbak to D.L. Ziemann, dated April 5, 1977. As stated in the foregoing references, the RBCCW system is neither part of the reactor coolant pressure boundary inside the containment nor connected directly to the containment atmosphere. Outside the containment, the RBCCW system is neither part of any other system's pressure boundary nor directly connected to the reactor building atmosphere. Both the supply and the return headers contain a single manually controlled motor operated isolation valve in accordance with 10 CFR 50, Criterion 57. A request for an exemption for these valves was based on the following:

   a. The special "closed loop inside the drywell/closed loop outside the drywell" construction of this system insures its integrity event with a single failure. The worst case accident, a catastrophic pipe failure on the return lines just inside the contained area, would eventually allow the containment atmosphere to enter the RBCCW system (after the header had drained back to the drywell), but it would still be contained within the closed loop outside the drywell.

   b. The Technical Specifications do not list these valves as "primary containment isolation valves".

   c. The FSAR states that isolation valves in lines which form a closed loop, either within or outside the containment, will not be separately leak tested.

   d. Extensive system modifications, including major valves in supply and return lines as well as test connections, would be required to make the system testable. These modifications would neither improve system safety nor affect containment integrity.

4. These areas are checked for external leakage once per shift by an operator and any abnormalities are logged.

The points stated in the draft report regarding manual and locked open valves are addressed as follows:

1. Contrary to what is stated on page 12 of the draft report, penetration X-119 contains clean demineralized water rather than service water supply lines. They are relatively small lines which are part of a low pressure/low temperature system. These valves (4327-500, 502 and 1916-500) are normally closed; the 4327-502 is locked closed. Proper positioning is maintained by means of administrative control.

2. As shown on Piping and Instrument Diagram M-51, valve 2301-71 is a stop check valve on line 2-2309-2". Similarly, valve 2301-74 is a stop check valve on line 2-2306-16". These valves are in series with the 34 and 45 valves, respectively, and are local leak rate tested each refueling outage in accordance with Technical Specification 4.7.2.f(2), ASME Section XI, Subsection 3420, and corrective actions are based on ASME Section XI, Subsection IWV-3420(g)(1).

3. Service air supply valve 4609-501 (penetration X-120) is normally closed, contrary to what is shown on Piping and Instrument Diagram M-38. Its position is maintained by means of the valve checklist and the outage procedure.

In conclusion, the following comments are provided concerning the use of check valves as isolation valves.

1. These check valves and associated piping are inspected under the In-Service Inspection (ISI) Program in accordance with ASME Section XI, Subsection IWB-2411.

2. All check valves that are used as isolation valves are local leak rate tested in accordance with Technical Specification 4.7.2. and ASME Section XI, Subsection IWV-3420; any corrective actions are based on ASME Section XI, Subsection IWV-3420(g)(1).

3. With regard to the feedwater penetrations (X-107A and B), double isolation is provided. Both the 2-3204A-18" and the 2-3204B-18" lines have an inside check valve (58A and 58B, respectively) in series with the outside check valve in question.

Please address any questions you may have concerning this matter to this office.

One (1) signed original and thirty-nine (39) copies of this transmittal have been provided for your use.

Very truly yours,

Thomas J. Rausch
Nuclear Licensing
Administrator, Boiling
Water Reactors

SPPJ:mnh
1797D
cc: RIII Resident Inspector, Dresden
Gregg Cwalina, SEP Integrated Assessment Mgr.

ATTACHMENT A

PLANT Dresden UNIT 2

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 1 CONTINUED ON PAGE 2

Penetration Number	Line Size, In.	System	Is System An Engineered Safety Function?	Figure	Process Fluid	Isolation Valves: Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, Sec.	Power Source	Position Indication in Control Room	Positions: Normal	Shutdown	Post Accident	Power Failure	Essential System?	Comments
105A	20	Main Steam	N	12-1	S	203-1A	1	I	GB	AO	A	RM	3-5	A	D	O	O/C	C	C	Y	
105A	20					203-2A		O												Y	
105B	20					203-1B		I												Y	
105B	20					203-2B		O												Y	
105C	20					203-1C		I												Y	
105C	20					203-2C		O												Y	
105D	20					203-1D		I												Y	
105D	20					203-2D		O												Y	
106	2	Main Steam Drains	N	12-1	S/W	220-1	1	I	GT	MO	A	RM	35	AC	D	C	O	C	AI	N	
106	2	"	"	"	"	220-2	"	O	GB	"	"	"	"	DC	"	C	O	C	AI	N	
107A	18	Feedwater	N	14	W	220-58A	N	I	CK	P	RE	N	-	P	N	O	C	O/C	AI	Y	
107A	18					220-62A		O												Y	
107B	18					220-58B		I												Y	
107B	18					220-62B		O												Y	
107B	8	Reactor Water Cleanup	N	30	W	1201-7	3	O	GT	MO	A	RM	30	AC	D	O	O	C	AI	N	
108A	14	Isolation Condenser	N	28	S	1301-1	5	I	GT	MO	A	RM	30	AC	D	O	O	C	AI	Y	
108A	14				S	1301-2		O						DC		O	O			Y	
109B	12				W	1301-3		O						DC		C	C			Y	
109B	12				W	1301-4		I						AC		O	O			Y	
111A	16	Shutdown Cooling	N	32	W	1001-1A	3	I	GT	MO	A	RM	40	AC	D	C	O/C	C	AI	N	
111A	14					1001-2A		O						DC						N	
111B	16					1001-1B		I						AC						N	
111B	14					1001-2B		O						DC						N	
111B	14					1001-2C		O						DC						N	
103-A-D)	16	High Pressure Coolant Injection	Y	51	W	2301-35	4	O	GT	MO	A	RM	30	DC	D	C	C	C	AI	Y	
	16	" "	"	"	"	2301-36	"	O	"	"	"	"	"	"	"	"	"	"	"	Y	
113	8	Reactor Water Cleanup	N	32	W	1201-1	3	I	GT	MO	A	RM	30	AC	D	O	O	C	AI	N	
113	8					1201-2	3	O	GT	MO	A	RM	30	DC	D	O	C	C		N	
113	8					1201-3	3	O	GT	MO	A	RM	30	EC	D	C	O	C		N	
113	1					1201-32	N	O	GB	H	LM	N	-	H	N	C	C	C			

PLANT Dresden UNIT 2

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 2 CONTINUED ON PAGE 3

Penetration Number	Line Size, In.	System	Is System An Engineered Safety Function?	Figure	Process Fluid	Isolation Valves: Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, Sec.	Power Source	Position Indication in Control Room	Positions: Normal	Positions: Shutdown	Positions: Post Accident	Positions: Power Failure	Essential System?	Comments
115A	10	High Pressure Coolant Injection	Y	51	S	2301-4	4	I	GT	MO	A	RM	25	AC	O	O	C	O/C	AI	Y	
115A	10	" "	"	"	"	2301-5	4	O	GT	MO	A	RM	25	DC	O	O	C	O/C	AI	Y	
116A	16	Low Pressure Coolant Injection	Y	29	W	1501-25A	N	I	CK	P	RF	N	-	P	D	C	C	O	AI	Y	
116A	16	" "	"	"	W	1501-22A	"	O	GT	MO	A	RM	-	AC	D	C	C	O/C	AI	Y	
116A	14	Shutdown Cooling	N	32		1001-5A	3	O	"	"	A	RM	40	AC			O/C	C		N	
116B	16	Low Pressure Coolant Injection	Y	29		1501-25B	N	I	CK	P	RF	N	-	P			C	O		Y	
116B	16	" "	"	"		1501-22B	"	O	GT	MO	A	RM	-	AC			C	O/C		Y	
116B	14	Shutdown Cooling	N	32		1001-5B	3	O	"	"	A	RM	40	AC			O/C	C		N	
117	3	Drywell Floor Drains	N	39	W	2001-105	2	I	GT	AO	A	RM	20	A	D	C	C	C		N	
117	3	" "				2001-106		O								C	C			N	
118	3	Drywell Equipment Drains				2001-5		O								O	O		C	N	
118	3	" " "				2001-6		O								O	O			N	
119	3	Demin. Water	N	35-1	W	4327-500	N	O	GT	H	LM	N	-	H	N	C	C	C	AI	N	
119	3			35-1		4327-502		I	GB											N	
119	2			31		1916-500		I	GB											N	
120	1	Service Air	N	38	A	4609-501	N	O	GB	H	LM	N	-	H	N	C	O	C	AI	N	
121	1	Instrument Air	N	37-2	A	1601-4B	N	O	GT	H	LM	N	-	H	N	O	O	O	AI	Y	
121	2	" "	"	"	"	4722	"	O	GB	AO	RM	"	"	A	D	"	"	"	C	Y	
122	3/4	Recirc. Sample Line	N	26-2	W	220-44	1	I	GB	AO	A	RM	"	"	"	"	"	C	"	N	
122	3/4	" " "	"	"	"	220-45	1	O	GB	"	A	RM	"	"	"	"	"	C	"	N	
123	6	Rx Building Closed Cooling Water	N	20	W	3702	N	O	GT	MO	RM	N	-	DC	D	O	O	O	AI	Y	
123	6					3769-500	N	I	CK	P	RF	N	-	H	N	O	O	O	AI	Y	
124	6					3703	N	O	GT	MO	RM	N	-	AC	D	O	O	O	AI	Y	
124	6					3706	N	O	GT	MO	RM	N	-	AC	D	O	O	O	AI	Y	
125	18	Pressure Suppression	N	25	A	1601-23	2	O	B	AO	A	RM	10	A	D	C	O/C	C	C	N	
125	18					1601-24	2		B				10							N	
125	2					1601-62	2		GB				15							N	
125	6					1601-63	2		B				10						O	N	
126	18		N			1601-21	2				A	RM	10	A	D	C	O/C	C	C	N	
304	18		"			1601-22	2				"	"	10	"	"	C	"	"	"	N	

PLANT Dresden UNIT 2

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 3 CONTINUED ON PAGE 4

Penetration Number	Line Size, In.	System	Is System An Engineered Safety Function?	Figure	Process Fluid	Isolation Valves: Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, Sec.	Power Source	Position Indication in Control Room	Positions: Normal	Shutdown	Post Accident	Power Failure	Essential System?	Comments
304	18	Pressure Suppression	N	25	A	1601-56	2	O	B	AO	A	RM	10	A	D	O	O/C	C	C	N	
130	1½	Standby Liquid Control	Y	33	BW	1101-15	N	I	CK	P	RF	N	-	P	N	C	C	O/C	AI	Y	
130	1½	" "	"	"	"	1101-16	"	O	CK	P	"	"	-	"	"	C	C	O/C	AI	Y	
	¾	Pressure Suppression	N	25	A	1601-4A	N	O	GB	N	LM	N	-	H	N	O	O	O	AI	Y	
	¾					1601-4B														Y	
	¾					1601-4C														Y	
	¾					1601-4D														Y	
139D	½	Drywell Pneumatic	N	37-2	A	4720	2	O	GT	AO	A	RM	10	A	O	O	O	C	C	N	
139D	½	" "	"	"	"	4721	2	O	"	"	A	RM	10	A	D	O	O	C	C	N	
139B	½	Control Rod Drive Hydraulics	N	34	W	399-504	N	O	GB	N	LM	N	-	H	N	C	C	C	AI	N	
139B	1	" " "	"	"	"	399-506	N	O	GT	N	LM	N	-	H	N	O	O	O	"	N	
143	½	Drywell Air Sampling	N	25	A	9205A	2	O	GT	AO	A	RM	5	A	D	O	O	C	C	N	
143	1					9205B	2	O												N	
143						9206A	2	O												N	
143						9206B	2	O												N	
143	½					8501-5A		O												N	
143	½					8501-5B		O												N	
	½					8507-500	N	O	GT	N	LM	N	-	H	N	O	O	O	AI		
						8507-501															
						8507-502															
						8507-503															
						8507-504															
						8507-505															
						8507-506															
						8507-507															
						8507-508															
						8507-509															
						8507-510															
						8507-511															
						8507-512															

PLANT Dresden UNIT 2

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 4 CONTINUED ON PAGE 5

Penetration Number	Line Size, In.	System	Is System An Engineered Safety Function?	Figure	Process Fluid	Isolation Valves: Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, Sec.	Power Source	Position Indication in Control Room	Positions: Normal	Shutdown	Post Accident	Power Failure	Essential System?	Comments
	½	Drywell Air Sampling	N	25	A	8507-513	N	O	GT	N	LM	N	-	H	N	O	O	O	AI		
						8507-514															
						8507-515															
						8507-516															
						8507-517															
						8507-518															
						8507-519															
						8507-520															
						8507-521															
	½	Drywell Air Sampling	N	25	There is also an equal number of valves in series with 8507-500 through 8507-521 that are not numbered but have similar characteristics.																
144	4	Control Rod Drive Hydraulics	N	34	W	0301-95	N	O	CK	P	RF	N	-	P	N	C	C	C	C	N	
144	4	" " "	"	"	"	0301-98	"	I	CK	P	RF	N	-	P	N	C	C	C	C	N	
145	10	Low Pressure Coolant Injection	Y	29	W	1501-27B	*	O	GT	MO	A	RM	-	AC	D	C	C	O	AI	N	
145	10	" " "	"	"	"	1501-28B	*	O	GT	MO	A	RM	-	AC	D	C	C	O	AI	N	
147	2½	Rx Head Cooling	N	26-1	W	205-27	N	I	CK	P	RF	N	-	P	N	C	C	C	AI	N	
147	2½	" "	"	"	"	205-24	2	O	GT	MO	A	RM	15	AC	D	C	C	C	AI	N	
149A	10	Core Spray	Y	27	W	1402-9A	N	I	CK	P	RF	N	-	P	D	C	C	O	AI	Y	
149A						1402-25A		O	GT	MO	A	RM	-	AC						Y	
149B						1402-9B		I	CK	P	RF	N	-	P						Y	
149B						1402-25B		O	GT	MO	A	RM	-	AC						Y	
150A		Low Pressure Coolant Injection	Y	29	W	1501-27A	*	O	GT	MO	A	RM	-	AC	D	C	C	O/C	AI	N	
150A		" " "	"	"	"	1501-28A	*	O	"	"	"	"	"	"	"	"	"	"	"	"	
204	1	Drywell Air Sample System	N	25	A	8501-3A	2	O	GT	AO	A	RM	5	A	D	O	O	C	C	N	
204	1	" " "	"	"	"	8501-3B	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
126	1½	Pressure Suppression	N	25	A	1601-59	2	O	GB	AO	A	RM	15	A	D	O	O/C	C	C	N	
304	1½					1601-57			"	MO				DC							
126	4					1601-55			B	AO				A							
304	1½					1601-58			GB												
304	20					1601-20A	N		B				-			C	C	O/C		Y	

PLANT Dresden UNIT 2

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 5 CONTINUED ON PAGE 6

Penetration Number	Line Size, In.	System	Is System An Engineered Safety Function?	Figure	Process Fluid	Isolation Valves: Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, Sec.	Power Source	Position Indication in Control Room	Positions: Normal	Shutdown	Post Accident	Power Failure	Essential System?	Comments
304	20	Pressure Suppression	N	25	A	1601-20B	N	O	B	AO	A	RM	-	A	D	C	C	O/C	C	Y	
304	20					1601-31B			CK	P	RF	N	-	P	N	C	C	O/C	AI	Y	
304	20					1601-31B														Y	
309A	½	Torus Air Sampling	N	25	A	8501-1A	2	O	GT	AO	A	RM	5	A	D	O	O	C		N	
309A	½	" "	"	"	"	8501-1B	"	"	"	"	"	"	"	"	"	"	"	"		"	
310A	14	Low Pressure Coolant Injection	Y	29	W	1501-20A	*	O	GT	MO	A	RM	-	AC	D	C	C	C	AI	N	
310A						1501-38A			GB												
310B						1501-20B			GT												
310B						1501-38B			GB												
310A	3					1501-13A	N		GT												
310B	3					1501-13B	N		GT												
310A	8	Core Spray	Y	27	W	1402-4A	*	O	GB	MO	A	RM	-	AC	D	C	C	C	AI	N	
310A	8	" "	"	"	"	1402-38A	N	"	GT	"	"	"	"	"	"	O	O	"	"	"	
310A	4	High Pressure Coolant Injection	Y	51	W	2301-40	N	O	CK	P	RF	N	-	P	N	C	C	C	AI	Y	
310A	4					2301-14			GB	MO	A	RM		DC	D						
310A	1					2301-53			RV	P	OP	N		P	N						
311A	6	Low Pressure Coolant Injection	Y	29	W	1501-18A	*	O	GB	MO	A	RM	-	AC	D	C	C	C	AI	N	
311A	6					1501-19A			GT												
311B	6					1501-18B			GB												
311B	6					1501-19B			GT												
312	2	High Pressure Coolant Injection	Y	51	W	2301-71	N	O	SCV	P	RF	LM	-	H/P	N	O	O	O	AI	Y	
312	2	" " "	"	"	"	2301-34	"	"	CK	"	"	N	"	P	"	"	"	"	"	"	
317A	16	High Pressure Coolant Injection	Y	51	W	2301-45	N	O	CK	P	RF	N	-	P	N	O	O	O	AI	Y	
317A	16	" " "	"	"	"	2301-74	"	"	SCV	"	"	LM	"	H/P	"	"	"	"	"	"	
318	18	Pressure Suppression	N	25	A	1601-60	2	O	B	AO	A	RM	10	A	D	C	O/C	C	C	N	
318	18	" "	"	"	"	1601-61	"	"	GT	"	"	"	15	"	"	"	"	"	"	"	
101	1	Drywell Air Sampling	N	25	A	9207B	2	O	GT	AO	A	RM	5	A	D	O	O	C	C	N	
101	1					9207A															
101	1					9208B															
101	1					9208A															

PLANT Dresden UNIT 2

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

Penetration Number	Line Size, In.	System	Is System An Engineered Safety Function?	Figure	Process Fluid	Isolation Valves: Valve Number	Isolation Signal Code(s)	Location	Type	Actuator	Primary Actuation Mode	Secondary Actuation Mode	Full Closure Time, Sec.	Power Source	Position Indication in Control Room	Positions: Normal	Shutdown	Post Accident	Power Failure	Essential System?	Comments
303-	2	LPCI Pump Motor Cooling	Y	29	W	1599-13A	NA	O	RV	P	OP	N	NA	N	N	C	C	C	C	Y	
(A-D)	2					1599-13B															
	2					1599-13C															
	2					1599-13D															
	14	LPCI Pump Suction	Y	29	W	1501-5A	NA	O	GT	MO	NA	NA	-	AC	D	O	O	O	AI	Y	
	14					1501-5B															
	14					1501-5C															
	14					1501-5D															
204E	1	ACAD	Y	707-1	A	2599-2B	6	O	GB	AO	A	RM	-	A	D	C	C	O/C	C	N	
202V	1	"	"	"	"	2599-23A	NA	"	CK	P	RF	N	NA	P	N	"	"	"	NA	"	
310E	8	Core Spray Test	Y	27	W	1402-4B	*	O	GB	MO	A	RM	-	AC	D	C	C	C	AI	N	
310E	1½	Core Spray Pump Minimum Flow	Y	27	W	1402-38B	N	O	GT	MO	A	RM	-	AC	D	O	O	C	AI	N	
139E	3/4	C.R.D. to Recirc.	N	26-2	W	220-112A	NA	I	GB	H	LM	N	NA	H	N	O	C	O	NA	N	
139E	3/4	" "	"	"	"	220-112B	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
125	1	ACAD	Y	707-1	A	2599-4A	NA	O	GB	AO	RM	LM	-	A	D	C	C	O/C	AI	N	
125	1					2599-4B	"		"	"	"	"	"	"	"	"			"	"	
202V	1					2599-2A	6		"	"	A	RM	"	"	"				C	"	
204E	1					2599-23B	NA		CK	P	RF	N	NA	P	N				NA	N	
316A	1					2599-24A	"		"	"	"	"	"	"	"				"	"	
204E	1					2599-24B	"		"	"	"	"	"	"	"				"	"	
316A	1					2599-3A	6		GB	AO	A	RM	-	A	D				C	"	
316E	1					2599-3B	"		"	"	"	"	"	"	"				"	"	

PRIMARY CONTAINMENT ISOLATION SYSTEM DATA

PAGE 7 CONTINUED ON PAGE FINAL

ABBREVIATIONS

Essential System

N = No
Y = Yes

Engineered Safety Function

N = No
Y = Yes

Position Indication in Control Room

D = Direct
I = Indirect
N = None
Others stated in Table

Fluid

A = Air (sometimes Nitrogen)
S = Steam
W = Water
BW = Borated Water
Others stated in Table

Isolation Valve Location

I = Inside Containment
O = Outside Containment
Others stated in Table

Isolation Valve Actuation Mode

A = Automatic
OP = Overpressure
RF = Reverse Flow
RM = Remote Manual
LM = Local Manual
N = None
Others stated in Table

Isolation Valve Positions

AI = As Is
C = Closed
O = Open
O/C = Open or Closed, depending on plant conditions
NA = Not Applicable
Others stated in Table

Isolation Valve Type

B = Butterfly
BCK = Ball Check
BL = Ball
CK = Check
DCV = Diaphragm Control Valve
GB = Globe
GT = Gate
RV = Relief
SCV = Stop Check
SV = Solenoid
VB = Vacuum Breaker
XV = Explosive
Others stated in Table

Isolation Valve Power Source

A = Air
AC = AC
DC = DC
H = Hand
P = Process Fluid
Others stated in Table

Isolation Valve Actuator

AO = Air
MO = Motor
SO = Solenoid
N = None
H = Hand
P = Process Fluid
Others stated in Table

Isolation Signal Codes (Utility Supply)

Code or Group	Parameter(s) Sensed for Isolation	Setpoint (Unit)
1	Rx Low Low Water Level	-59"
	Main Steam Line High Radiation	3x Normal
	Main Steam Line High Flow	120%
	Main Steam Line Tunnel High Temperature	200°F
	Main Steam Line Low Pressure	850 psig in "Run" mode
2	High Drywell Pressure	+2 psig
	Low Rx Water Level	+8"
3	Low Rx Water Level	+8"
4	HPCI Steam Line High Flow	300%
	High Temp. in Vicinity of HPCI Steam Line	200°F
	Low Rx Pressure	100 psig
5	High Isolation Condenser Steam Line Flow	300%
	High Isolation Condenser Line Flow	300%
6	High Drywell Pressure	43 PSIA

* = ECCS Actuation
N = None
NA = Not Applicable