



Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

January 31, 1991

Dr. Thomas Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC. 20555

Attn: Document Control Desk

Subject: Zion Nuclear Power Station Units 1 and 2
Facility License Nos. DPR-39 and DPR-48
Regulatory Guide 1.97 Containment Isolation
Valve Position Indication Supplemental Response.
NRC Docket Nos. 50-295 and 50-304

References: a) October 31, 1990 letter from
S. F. Stimac to U.S. NRC

b) July 30, 1990 letter from
R. A. Chrzanowski to T. E. Murley

Dear Dr. Murley:

Reference (a) provided the NRC a preliminary listing of the environmental qualification status and electrical power supply for containment isolation valve position indicators to satisfy Regulatory Guide 1.97 requirements. Commonwealth Edison has completed a review of that information.

The attached table documents Zion's compliance with R.G. 1.97 requirements for containment isolation valve position indication on a per penetration basis. For each penetration with at least one automatic isolation valve, the table provides information concerning environmental qualification and safety related electrical power supply for the valve position indication. In accordance with Zion's UFSAR penetration classification design, some penetrations are provided with a redundant containment isolation valve. The table identifies the redundant valve along with position indicator information concerning environmental qualification and power supply. As noted in reference (b), the redundancy requirements and the single failure criteria for Regulatory Guide 1.97 for Category 1 parameters are on a per penetration basis, and redundancy is not applicable to penetrations utilizing a check valve or a closed system as an isolation barrier.

In regard to seismic qualification, the table indicates which existing position indicators currently meet Regulatory Guide 1.97 requirements. These position indicators are seismically qualified. Many position indicators will need to be upgraded for environmental qualification reasons. These upgraded position indicators will also be seismically qualified.

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As noted in the attached table, there are eight solenoid operated valves with position indicators that are not supplied from redundant electrical power sources for each penetration. This design was utilized to ensure sufficient post accident sampling capability for hydrogen in accordance with NUREG-0737, Item II.F.1 Attachment 6. Nuclear Engineering will review the correspondence regarding this item to determine the previous NRC acceptance of this design in light of the present deviation from Regulatory Guide 1.97 for these penetrations. The results of this review will be forwarded to the NRC by March 15, 1991.

The attached table indicates approximately 85 valves per unit will require upgraded position indicators to meet the environmental qualification requirements of Regulatory Guide 1.97. Alternatively, existing position indicators may be qualified to meet the applicable environmental conditions. Where modifications are deemed necessary, they will typically consist of a replacement environmentally qualified limit switch, associated electrical connectors, and cable splices.

Based on our current refueling outage schedules, insufficient time exists to ensure modifications could be installed at the next refueling outages for each unit. Consequently, our proposed schedule is to begin installation of the modifications at the subsequent refueling outages (Z1R13, Z2R13) and complete them no later than the end of the following refueling outages (Z1R14, Z2R14) for each unit.

Please direct any questions regarding this matter to this office.

Very truly yours,



S. F. Stimac
Nuclear Licensing Administrator

cc: Regional Administrator - Region III
C. Patel - NRR
Senior Resident Inspector - Zion

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZI

PENETRATION #	LINE SERVICE	ISOLATION CLASS (NOTE 3)	UPSTREAM VALVE	EO REQUIRED	EO STATUS	POWER SUPPLY UNIT 1 (UNIT 2)	MEETS R.G. 1.97
			DOWNSTREAM VALVE (NOTE 1)	(NOTE 2)	(NOTE 2)		(NOTE 2)
P-1	fire protection water header	4	FCV-FP08	Yes	Yes/E	147(247)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-4	injection line from AIT	7	SI18801A	Yes	Yes	147(247)	Yes
			SI9032	N.A.	N.A.	N.A.	Yes
P-4	injection line from B4T	7	MOV-SI8801B	Yes	Yes	149(249)	Yes
			SI9032	N.A.	N.A.	N.A.	Yes
P-5	main steam line	4	HOV-MS0001	Yes	Yes/E	138(238)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-5	main steam line (bypass)	4	FCV-MS0082	Yes	Yes/E	137(237)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-6	main steam line	4	HOV-MS0002	Yes	Yes/E	139(239)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-6	main steam line (bypass)	4	FCV-MS0083	Yes	Yes/E	137(237)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-7	main steam line	4	HOV-MS0003	Yes	Yes/E	139(239)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-7	main steam line (bypass)	4	FCV-MS0084	Yes	Yes/E	137(237)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-8	main steam line	4	FCV-MS0004	Yes	Yes/E	137(237)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-8	main steam line (bypass)	4	FCV-MS0085	Yes	Yes/E	137(237)	Yes/E
			none	N.A.	N.A.	N.A.	N.A.
P-9	feedwater	4	none	N.A.	N.A.	N.A.	N.A.
			FCV-FW0018	Yes	Yes	148(248)	Yes

TABLE
K.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	VALVE		EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY UNIT 1 (UNIT 2)	MEETS R.G. 1.97 (NOTE 2)
			UPSTREAM	DOWNSTREAM				
P-10	feedwater	4	None		N.A.	N.A.	N.A.	N.A.
			MOV-FW0017		Yes	Yes	149(249)	Yes
P-11	feedwater	4	None		N.A.	N.A.	N.A.	N.A.
			MCV-FWC019		Yes	Yes	149(249)	Yes
P-12	feedwater	4	None		N.A.	N.A.	N.A.	N.A.
			MOV-FW0016		Yes	Yes	147(247)	Yes
P-13	aux. feedwater	7	MOV-FW0050		Yes	Yes/E	148(248)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-13	aux. feedwater	7	MOV-FW0051		Yes	Yes/E	149(249)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-14	Nitrogen to W.G. Comp.	4	AOV-DT9157		Yes	Yes/E	DC Cab.111(211)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-14	RC Drain Tank to W.G. Comp.	4	AOV-DT9160A		Yes	Yes	DC Cab.111(211)	Yes
			ACV-DT9160B		Yes	Yes	DC Cab.112(212)	Yes
P-14	Nitrogen to PRT	4	AOV-RC8033		Yes	Yes/E	DC Cab.113(213)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-14	Service Air	3A	FCV-SA01B		Yes	Yes/E	148(248)	Yes/E
			FCV-SA01A		Yes	Yes/E	147(247)	Yes/E
P-15	Containment Sampling	2	SOV-PR26A		Yes	Yes/E	111(211)*	No*
			SOV-PR25A		Yes	Yes/E	111(211)*	No*
P-15	Containment Sampling	2	SOV-PR26B		Yes	Yes/E	112(212)*	No*
			SOV-PR25B		Yes	Yes/E	112(212)*	No*
P-15	Containment Sampling	2	SOV-PR26C		Yes	Yes/E	112(212)*	No*
			SOV-PR25C		Yes	Yes/E	112(212)*	No*

*See Note 4

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	VALVE		EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY UNIT 1 (UNIT 2)	MEETS R.G. 1.97 (NOTE 2)
			UPSTREAM	DOWNSTREAM				
P-15	Containment	2	SOV-PR25D		Yes	Yes/E	111(211)*	No*
	Sampling		SOV-PR25D		Yes	Yes/E	111(211)*	No*
P-16	Reactor Vessel	5	FCV-PR19A		Yes	Yes/E	147(247)	Yes/E
	Leak Detection		FCV-PR19B		Yes	Yes/E	148(248)	Yes/E
P-16	Reactor Vessel	5	FCV-PR20A		Yes	Yes/E	147(248)	Yes/E
	Leak Detection		FCV-PR20B		Yes	Yes/E	148(248)	Yes/E
P-16	Reactor Vessel	5	FCV-PR21A		Yes	Yes/E	147(247)	Yes/E
	Leak Detection		FCV-PR21B		Yes	Yes/E	148(248)	Yes/E
P-16	Reactor Vessel	5	FCV-PR22A		Yes	Yes/E	147(247)	Yes/E
	Leak Detection		FCV-PR22B		Yes	Yes/E	148(248)	Yes/E
P-16	Reactor Vessel	5	FCV-PR23A		Yes	Yes/E	147(247)	Yes/E
	Leak Detection		FCV-PR23B		Yes	Yes/E	148(248)	Yes/E
P-17	RCS to RHR	7	None		N.A.	N.A.	N.A.	N.A.
	Suction		MOV-RH8701		Yes	Yes/E	149(249)	Yes/E
P-19	Component	3B	MOV-CC9413B		Yes	Yes	148(248)	Yes
	Cooling to RCP		MOV-CC9413A		Yes	Yes	147(247)	Yes
P-22	Hot Leg	7	None		N.A.	N.A.	N.A.	N.A.
	Injection		MOV-RH9000		Yes	Yes	148(248)	Yes
P-23	CC Return	2	None		N.A.	N.A.	N.A.	N.A.
	From RCP		MOV-CC9414		Yes	Yes	149(249)	Yes
P-25	RCP Seal	2	None		N.A.	N.A.	N.A.	N.A.
	Water Return		MOV-VC8100		Yes	Yes	139(239)	Yes
P-29	Water Return From	4	None		N.A.	N.A.	N.A.	N.A.
	Excess Letdown HX		AOV-CC9437		Yes	Yes/E	122(212)	Yes/E

*See Note 4

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE DOWNSTREAM VALVE (NOTE 1)	EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY	MEETS R.G. 1.97
						UNIT 1 (UNIT 2)	(NOTE 2)
P-30	RC Drain Tank To Gas Analyzer	2	AOV-DT9159A	Yes	Yes/E	DC Cab. 111(211)	Yes/E
			AOV-DT9159B	Yes	Yes/E	DC Cab. 112(212)	Yes/E
P-31	Containment Spray	7	MOV-CS0002	Yes	Yes	147(247)	Yes
			CS0005	N.A.	N.A.	N.A.	Yes
P-32	Service Water To RCFC	7	MOV-SW0002	No	N.A.	149(249)	Yes**
			None	N.A.	N.A.	N.A.	N.A.
P-32	Service Water to RCFC	7	None	N.A.	N.A.	N.A.	N.A.
			MOV-SW0003	No	N.A.	148(248)	Yes**
P-33	Water Return To RCP	2	MOV-CC685	Yes	Yes	147(247)	Yes
			MOV-CC9438	Yes	Yes	148(248)	Yes
P-38	Containment Spray	7	MOV-CS0006	Yes	Yes	149(249)	Yes
			CS0013	N.A.	N.A.	N.A.	Yes
P-39	Containment Spray	7	MOV-CS0004	Yes	Yes	148(248)	Yes
			CS0009	N.A.	N.A.	N.A.	Yes
P-40	SW from RCFC	7	None	N.A.	N.A.	N.A.	N.A.
			1MOV-SW0011	No	N.A.	149	Yes
P-40	SW from RCFC	7	None	N.A.	N.A.	N.A.	N.A.
			2MOV-SW0007	No	N.A.	249	Yes
P-42	Containment Sump Discharge	2	FCV-WD17A	Yes	Yes	147(247)	Yes
			FCV-WD17B	Yes	Yes	148(248)	Yes
P-43	RC Drain Pump Discharge	2	LCV-DT1003	Yes	Yes/E	DC Cab. 111(211)	Yes/E
			AOV-DT9170	Yes	Yes	DC Cab. 112(212)	Yes
P-44	Instrument Air to Containment	3A	FCV-IA01B	Yes	Yes/E	148(248)	Yes/E
			FCV-IA01A	Yes	Yes/E	147(247)	Yes/E

**See Note 5

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE		EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY UNIT 1(UNIT 2)	MEETS R.G. 1.97 (NOTE 2)
			DOWNSTREAM VALVE (NOTE 1)					
P-44	Air Sample From Containment	2	FCV-PR24A		Yes	Yes/E	INV-111(211)	Yes/E
			FCV-PR24B		Yes	Yes/E	INV-112(212)	Yes/E
P-48	Service Water To RCFC	7	MOV-SW0001		No	N.A.	1'8(248)	Yes**
			None		N.A.	N.A.	N.A.	N.A.
P-48	Service Water To RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SW0006		No	N.A.	148(248)	Yes**
P-51	Purge Air Into Containment	5	AOV-RV0002		No	N.A.	148(248)	Yes
			AOV-RV0001		Yes	Yes	147(247)	Yes
P-52	Purge Air From Containment	5	AOV-RV0003		Yes	Yes	147(247)	Yes
			AOV-RV0004		No	N.A.	148(248)	Yes
P-56	Hydrogen Recombines Return To Cont.	2	FCV-VF01A		Yes	Yes/E	147(247)	Yes/E
			FCV-VF01B		Yes	Yes/E	148(248)	Yes/E
P-60	Pressure And Vacuum Relief For Cont.	2	AOV-RV0005		Yes	Yes/E	147(247)	Yes/E
			AOV-RV0006		Yes	Yes/E	148(248)	Yes/E
P-68	Aux. Feedwater	7	MOV-FW0052		Yes	Yes/E	149(249)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-68	Aux. Feedwater	7	MOV-FW0053		Yes	Yes/E	148(248)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-69	Aux. Feedwater	7	MOV-FW0054		Yes	Yes/E	149(249)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-69	Aux. Feedwater	7	MOV-FW0055		Yes	Yes/E	148(248)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-71	Steam Generator Blowdown	4	None		N.A.	N.A.	N.A.	N.A.
			FCV-BD17		Yes	Yes/E	147(247)	Yes/E

**See Note 5

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE		EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY UNIT 1(UNIT 2)	MEETS R.G. 1.97 (NOTE 2)
			DOWNSTREAM VALVE (NOTE 1)					
P-72	Letdown	1	AOV-VC8152		Yes	Yes	DC Cab.111(211)	Yes
			AOV-VC8153		Yes	Yes	DC Cab.113(213)	Yes
P-74	Aux. Feedwater	7	MOV-FW0056		Yes	Yes/E	148(248)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-74	Aux. Feedwater	7	MOV-FW0057		Yes	Yes/E	149(249)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-75	Charging	3B	MOV-VC8106		Yes	Yes	149(249)	Yes
			MOV-VC8105		Yes	Yes	147(247)	Yes
P-76	Accumulator Nitrogen Supply	4	SI8933		N.A.	N.A.	N.A.	Yes
			AOV-SI8880		Yes	Yes/E	DC Cab.111(211)	Yes/E
P-76	Accumulator Tank Sample	2	AOV-SS9357A		Yes	Yes/E	DC Cab.111(211)	Yes/E
			AOV-SS9357B		Yes	Yes/E	DC Cab.112(212)	Yes/E
P-79	SW From RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			1MOV-SW0007		No	N.A.	148	Yes
P-79	SW From RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			2MOV-SW0011		No	N.A.	248	Yes
P-81	Aux. FW pp Steam Line Drain	2	FCV-VN02A		Yes	Yes/E	147(247)	Yes/E
			FCV-VN02B		Yes	Yes/E	148(248)	Yes/E
P-86	PRT to Gas Analyzer	4	AOV-RC8026		Yes	Yes/E	DC Cab.113(213)	Yes/E
			AOV-RC8025		Yes	Yes/E	DC Cab.112(212)	Yes/E
P-86	Pressurizer Steam Sample	1	AOV-SS9354A		Yes	Yes/E	DC Cab.111(211)	Yes/E
			AOV-SS9354B		Yes	Yes/E	DC Cab.112(212)	Yes/E
P-86	Pressurizer Liquid Sample	1	AOV-SS9355A		Yes	Yes/E	DC Cab.111(211)	Yes/E
			AOV-SS9355B		Yes	Yes/E	DC Cab.112(212)	Yes/E

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE		EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY UNIT 1 (UNIT 2)	MEETS R.G. 1.97 (NOTE 2)
			DOWNSTREAM VALVE	(NOTE 1)				
P-86	RC Loop	1	AOV-SS9356A		Yes	Yes/E	DC Cab.111(211)	Yes/E
	Sample		AOV-SS9356B		Yes	Yes/E	DC Cab.112(212)	Yes/E
P-88	Heating Water	5	FCV-RV111		Yes	Yes/E	147(247)	Yes/E
	Supply		FCV-RV112		Yes	Yes/E	148(248)	Yes/E
P-89	Heating Water	5	FCV-RV114		Yes	Yes/E	148(248)	Yes/E
	Return		FCV-RV113		Yes	Yes/E	147(247)	Yes/E
P-91	Steam Generator	4	AOV-BD0007		Yes	Yes/E	INV-112(212)	Yes/E
	Blowdown (S.G. BD)		None		N.A.	N.A.	N.A.	N.A.
P-91	S.G. BD	4	AOV-BD0008		Yes	Yes/E	INV-111(211)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-92	S.G. BD	4	AOV-BD0008		Yes	Yes/E (D)	INV-111(211)	Yes/E (D)
			None		N.A.	N.A.	N.A.	N.A.
P-92	S.G. BD	4	FCV-SS05		Yes	Yes/E	147(247)	Yes/E
	Sampling		None		N.A.	N.A.	N.A.	N.A.
P-93	S.G. BD	4	FCV-SS04		Yes	Yes/E	147(247)	Yes/E
	Sampling		None		N.A.	N.A.	N.A.	N.A.
P-93	S.G. BD	4	AOV-BD0006		Yes	Yes/E	INV-111(211)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-94	S.G. BD	4	AOV-BD0006		Yes	Yes/E (D)	INV-111(211)	Yes/E (D)
			None		N.A.	N.A.	N.A.	N.A.
P-94	S.G. BD	4	AOV-BD0005		Yes	Yes/E	INV-112(212)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-95	S.G. BD	4	AOV-ED0007		Yes	Yes/E (D)	INV-112(212)	Yes/E (D)
			None		N.A.	N.A.	N.A.	N.A.

TABLE
E.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE DOWNSTREAM VALVE (NOTE 1)	EQ REQUIRED	EQ STATUS	POWER SUPPLY	MEETS R.G. 1.97
				(NOTE 2)	(NOTE 2)	UNIT 1(UNIT 2)	(NOTE 2)
P-96	S.G. BD	4	AOV-BD0005	Yes	Yes/E (D)	INV-112(212)	Yes/E (D)
			None	N.A.	N.A.	N.A.	N.A.
P-97	S.C. BD	4	AOV-BD0003	Yes	Yes/E	INV-112(212)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.
P-98	S.G. BD	4	AOV-BD0001	Yes	Yes/E	INV-112(212)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.
P-102	Primary Water To PRT	4	AOV-RC8028	Yes	Yes/E	DC Cab.112(212)	Yes/E
			AOV-RC8029	Yes	Yes/E	DC Cab.113(213)	Yes/E
P-104	Steam to Aux FW pump	7	MOV-MS0006	Yes	Yes/E	148(248)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.
P-108	Cold leg injection from RHR	7	MOV-SI8809A	Yes	Yes	149(249)	Yes
			SI8957A	N.A.	N.A.	N.A.	Yes
P-110	Cold leg injection from RHR	7	MOV-SI8809B	Yes	Yes	148(248)	Yes
			SI8957B	N.A.	N.A.	N.A.	Yes
P-115	S.G. BD	4	AOV-BD0003	Yes	Yes/E (D)	INV-112(212)	Yes/E (D)
			None	N.A.	N.A.	N.A.	N.A.
P-115	S.G. BD	4	AOV-BD0004	Yes	Yes/E	INV-111(211)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.
P-116	S.G. BD	4	AOV-BD0004	Yes	Yes/E (D)	INV-111(211)	Yes/E (D)
			None	N.A.	N.A.	N.A.	N.A.
P-116	S.G. BD sampling	4	FCV-SS03	Yes	Yes/E	147(247)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.
P-117	S.G. BD sampling	4	FCV-SS02	Yes	Yes/E	147(247)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.

TABLE
R.G. 1.97 CONTAINMENT ISOLATION VALVES
POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE		EQ REQUIRED (NOTE 2)	EQ STATUS (NOTE 2)	POWER SUPPLY UNIT 1 (UNIT 2)	MEETS R.G. 1.97 (NOTE 2)
			DOWNSTREAM VALVE (NOTE 1)					
P-117	S.G. BD	4	AOV-BD0002		Yes	Yes/E	INV-111(211)	Yes/E
			None		N.A.	N.A.	N.A.	N.A.
P-118	S.G. BD	4	AOV-BD0002		Yes	Yes/E (D)	INV-111(211)	Yes/E (D)
			None		N.A.	N.A.	N.A.	N.A.
P-118	S.G. BD	4	AOV-BD0001		Yes	Yes/E (D)	INV-112(212)	Yes/E (D)
			None		N.A.	N.A.	N.A.	N.A.
P-119	SW from RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SW0009		No	N.A.	147(247)	Yes
P-120	SW from RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SW0008		No	N.A.	149(249)	Yes
P-121	Service Water to RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SW0004		No	N.A.	149(249)	Yes**
P-121	Service Water to RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SW0005		No	N.A.	148(248)	Yes**
P-122	SW from RCFC	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SW0010		No	Yes	149(249)	Yes
P-124	SI pump to hot leg inject	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SI9011A		Yes	Yes	147(247)	Yes
P-125	SI pump to cold leg inject	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SI8802		Yes	Yes	148(248)	Yes
P-126	SI pump to hot leg inject	7	None		N.A.	N.A.	N.A.	N.A.
			MOV-SI9011B		Yes	Yes	148(248)	Yes

TABLE
 R.G. 1.97 CONTAINMENT ISOLATION VALVES
 POSITION INDICATION FOR ZION STATION

PENETRATION #	LINE SERVICE	ZION FSAR PENETRATION CLASS (NOTE 3)	UPSTREAM VALVE	EQ REQUIRED	EQ STATUS	POWER SUPPLY	MEETS R.G. 1.97
			DOWNSTREAM VALVE (NOTE 1)	(NOTE 2)	(NOTE 2)	UNIT 1 (UNIT 2)	(NOTE 2)
P-127	Steam to Aux. FW pump	7	MOV-MS0005	Yes	Yes/E	147(247)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.
P-128	Steam to Aux. FW FW pump	7	MOV-MS0011	Yes	Yes/E	149(249)	Yes/E
			None	N.A.	N.A.	N.A.	N.A.

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TABLE

R.G. 1.97 CONTAINMENT ISOLATION VALVES

POSITION INDICATION FOR ZION STATION

NOTES:

1. Containment isolation valves are as listed in Tech Specs. Manual valves with no position indicators are not applicable for R.G. 1.97 concerns and therefore are not discussed. Where the leading digit of the valve number is left off, the valve information applies to both Zion Station units. Redundancy for R.G. 1.97 application, is satisfied by one channel of position indication on each of two valves in series. If the redundant valve is a check valve, there is no position indication for the redundant valve which is adequate per R.G. 1.97. If the first three characters of a valve listed are neither MOV, AOV, FCV, HOV, nor SOV, then the valve is a check valve. MOV means motor operated valve. AOV and FCV mean air operated valves. HOV means hydraulic operated valve. SOV means solenoid operated valve.
2. The responses can be yes, no, not applicable (N.A.), or yes with EQ fix (Yes/E). Sometimes a single valve serves two penetrations which leads to a duplicate (D) entry for upgrading the same valve position indicator for EQ (ie. Yes/E (D)). Where "EQ required" is identified as NO, the associated equipment is located in a mild environment.
3. FSAR section 6.0 provides an extensive description of Zion Station penetrations and containment isolation valves. Attachment A of this Table provides a copy of Zion FSAR (updated) pages 6.6-2 and 6.6-3 which describe the various penetration classes.
4. The hydrogen analyzer system which these valves serve was added in response to NUREG-0737. The power supply arrangement was chosen to ensure that sampling will be available from two of the four lines even if one of the power sources fail. This design has the pair of valves on a line powered from the same source. Two of the four lines are powered from one source and two lines are powered from another. These SOV valves are located in half inch air sample lines with penetration pressurization (PP) air used to ensure proper containment isolation. These SOV valves have a manual isolation downstream that is outside of the containment and outside of the piping penetration area that can be locally closed if SOV isolation is not confirmed.
5. Only local indication and control is available for these six SW valves which are in a mild environment. The valves are post-accident service valves which must be open during accidents.

Note 3 of Table
R.G. 1.97 Containment Isolation Valves
Position Indication for Zion Station

6.6.2.1 Penetration Classifications

6.6.2.1.1 Class 1 - Outgoing Lines, Reactor Coolant System

Normally operating outgoing lines connecting to the Reactor Coolant System are provided with at least two automatic trip valves in series located outside the containment. Automatic seal water injection is provided for lines in this classification.

6.6.2.1.2 Class 2 - Outgoing Lines

Normally operating outgoing lines not connected to the Reactor Coolant System, and not missile protected or which can otherwise communicate with the containment atmosphere following an accident, are provided at a minimum with two automatic trip valves in series outside the containment. Automatic seal water injection is provided for lines in this classification which are not vital to plant operation following an accident. Manual seal water injection is provided for lines which remain in service for a time, or are used periodically, subsequent to an accident.

6.6.2.1.3 Class 3 - Incoming Lines

- A. Incoming lines connected to open systems outside the containment and not missile protected, or which can otherwise communicate with the containment atmosphere following an accident are provided with one of the following arrangements outside the containment:
1. Two automatic trip valves in series, with automatic seal water injection. This arrangement is provided for lines which are not necessary to plant operation after an accident.
 2. Two manual isolation valves in series, with manual seal water injection. This arrangement is provided for lines which remain in service for a time, or are used periodically, subsequent to an accident.
- B. Incoming lines connected to closed systems outside the containment, and not missile protected or which can otherwise communicate with the containment atmosphere are provided, at a minimum, with one check valve or normally closed isolation valve located either inside or outside the containment. The closed piping system outside the containment provides the necessary isolation redundancy. Most lines in this category are provided with additional isolation valves which satisfy particular systems or safeguards requirements. Seal water injection is provided for certain lines in this category.

Note 3 of Table
R.G. 1.97 Containment Isolation Valves
Position Indication For Zion Station

6.6.2.1.4 Class 4 - Missile Protected

Incoming and outgoing lines which penetrate the containment and are connected to closed systems inside the containment and protected from missiles throughout their length are provided with at least one manual isolation valve located outside the containment. Seal water injection is not required for this class of penetration.

6.6.2.1.5 Class 5 - Normally Closed Lines Penetrating the Containment

Lines which penetrate the containment and which can be opened to containment atmosphere, but which are normally closed during reactor operation are provided with two isolation valves in series, either inside or outside the containment. In certain cases a blind flange or closed system outside the containment is utilized as the second barrier in lieu of an isolation valve.

6.6.2.1.6 Class 6 - Special Service

The ventilation purge duct penetrations, the containment access opening, and the fuel transfer tube are special cases.

Each ventilation purge duct penetration is provided with two butterfly valves which are closed automatically upon a containment isolation or a containment high radiation signal. One valve is located inside and one valve is located outside the containment at each penetration.

The equipment access closure is a bolted, gasketed closure which is sealed during reactor operation. The personnel air locks consist of two doors in series with mechanical interlocks to assure that one door is closed at all times. Each air lock door and the equipment closure are provided with double gaskets to permit pressurization between the gaskets by the Penetration Pressurization System.

The fuel transfer tube penetration inside the containment is designed to present a missile protected and pressurized double barrier between the containment atmosphere and the atmosphere outside the containment. The penetration closure is treated in a manner similar to the equipment access hatch. A positive pressure is maintained between these gaskets to complete the double barrier between the containment atmosphere and the inside of the fuel transfer tube. The interior of the fuel transfer tube is not pressurized. Seal water injection is not required for this penetration.

6.6.2.1.7 Class 7 - Lines Required for Post-Accident Service

Lines which are required for post-accident service have power operated valves which are either normally open and must remain open during an accident or are normally closed and must be opened should an accident occur. For such lines a minimum one valve outside the containment is provided for containment isolation when the system is no longer required.