ATTACHMENT 4

PUMP AND VALVE LISTS
FOR
SECOND 10-YEAR INTERVAL

This attachment includes separate reports that provide the information normally submitted as the IST Plan document for the update requirement. The first report is titled IST Valve Groups and it lists all the IST scoped valves which are grouped by like components as described in the Risk Informed Inservice Testing Program Description. As a result of the 10-year update to the OMa-1988 Code, this list also includes the relief valves which are now scoped in the IST program based on the requirements of the OM-1987 edition of Part 1.

The second report of this attachment is the listing of the testing requirements by group. This report shows the IST rank as determined by the Integrated Decision-making Process, the frequency tested under the previous edition of the Code, and the resulting risk informed test frequency. The table below provides a description of the frequency codes that are used in this report. Where applicable, a reference (i.e. CSJ-01) is added to indicate that the frequency is based on a cold shutdown or refueling outage justification.

IST FREQUENCY CODES			
Q	Once per Quarter	30MO	Every 30 months
CS	At Cold Shutdown	3YR	Every 3 years
2Y	Every 2 Years	54MO	Every 54 months
RF	Every 18 months	5YR	Every 5 years
R	Every 18 months	6YR	Every 6 years
6M	Every 6 months	36MO	Every 36 months
App J	Tested per Appendix J Option B		

The next report is a list of the ASME pumps included in the IST scope. This report shows the pumps divided in the groups for staggered testing. The pump safety function and the IST rank are displayed. Again, the previous frequency and the resulting risk-informed test frequency are shown.

Finally, the last report provides the cases where STP is taking exception to the code requirements for IST High rank components. These activities cannot be performed during normal power operations. The reasons for the testing exceptions and the proposed testing requirements are described. The report also includes the relief requests proposed by STP for situations where the ASME Code cannot be satisfied.

IST Valve Groups

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
AF01	Auxiliary Feedwater Supply to Steam Generator Inside Cntmt Isolation Check Valves											
	2S141TAF0119	A	5S141F00024	F-1	2	C	8	CHECK	SELF	CLOS	N/A	O
	2S141TAF0122	A	5S141F00024	H-1	2	C	8	CHECK	SELF	CLOS	N/A	O
	2S141TAF0121	A	5S141F00024	C-1	2	C	8	CHECK	SELF	CLOS	N/A	O
	2S141TAF0120	A	5S141F00024	D-1	2	C	8	CHECK	SELF	CLOS	N/A	O
AF02	Auxiliary Feedwater Supply to Steam Generator Outside Cntmt Isolation Stop Check MOVs											
	2S141TAF0085	A	5S141F00024	B-2	2	B/C	4	STOP C	MOTOR	CLOS	FAI	O/C
	2S141TAF0019	A	5S141F00024	G-2	2	B/C	4	STOP C	MOTOR	CLOS	FAI	O/C
	2S141TAF0065	A	5S141F00024	D-2	2	B/C	4	STOP C	MOTOR	CLOS	FAI	O/C
	2S141TAF0048	A	5S141F00024	F-2	2	B/C	4	STOP C	MOTOR	CLOS	FAI	O/C
AF03	Auxiliary Feedwater Supply to Steam Generator Flow Regulating MOVs											
	3S141ZAF7526	A	5S141F00024	H-3	3	B	4	GLOBE	MOTOR	OPEN	FAI	O
	3S141ZAF7525	A	5S141F00024	F-4	3	B	4	GLOBE	MOTOR	OPEN	FAI	O
	3S141ZAF7524	A	5S141F00024	D-4	3	B	4	GLOBE	MOTOR	OPEN	FAI	O
	3S141ZAF7523	A	5S141F00024	B-4	3	B	4	GLOBE	MOTOR	OPEN	FAI	O
AF04	Auxiliary Feedwater Turbine Trip and Trottle Valve (MS0514)											
	3S141XMS0514	A	5R169F00024	F-6	3	B	4	GLOBE	MOTOR	CLOS	FAI	O/C
AF05	Main Steam to Auxiliary Feedwater Turbine Warm-up Valve											
	D1AFFV0143	A	5R169F00024	G-8	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O/C
AF06	Auxiliary Feedwater Pump Discharge Cross-Tie Valves											
	A1AFFV7517	A	5S141F00024	F-5	3	B	4	GLOBE	AIR	OPEN	CLOS	O/C
	D1AFFV7518	A	5R169F00024	G-4	3	B	4	GLOBE	AIR	OPEN	CLOS	O/C
	C1AFFV7515	A	5S141F00024	B-5	3	B	4	GLOBE	AIR	OPEN	CLOS	O/C
	B1AFFV7516	A	5S141F00024	D-5	3	B	4	GLOBE	AIR	OPEN	CLOS	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
AF07	Auxiliary Feedwater Auto Recirc Valves											
	3S141TAF0036	A	5S141F00024	F-6	3	C	4	CHECK	SELF	CLOS	N/A	O
	3S141TAF0091	A	5S141F00024	B-6	3	C	4	CHECK	SELF	CLOS	N/A	O
	3S141TAF0058	A	5S141F00024	D-6	3	C	4	CHECK	SELF	CLOS	N/A	O
	3S141TAF0011	A	5S141F00024	H-5	3	C	4	CHECK	SELF	CLOS	N/A	O
AF08	Main Steam to AF Turbine Suction Stop Check MOV (MS0143)											
	2S141TMS0143	A	5S141F00024	H-8	2	B	4	STOP C	MOTOR	OPEN	FAI	O/C
AP01	RCS Hot Leg Sample to PASS Lab OCIVs											
	B1APFV2455	A	5Z549Z47501	E-7	2	A	1	GATE	SOLENO	CLOS	CLOS	C
	B1APFV2455A	A	5Z549Z47501	E-7	2	A	1	GATE	SOLENO	CLOS	CLOS	C
AP02	Cntmt Normal Sump to PASS Lab OCIVs											
	A1APFV2453	A	5Z549Z47501	G-7	2	A	1	GATE	SOLENO	CLOS	CLOS	C
AP03	RHR Sample to PASS Lab OCIVs											
	A1APFV2454	A	5Z549Z47501	F-7	2	A	1	GATE	SOLENO	CLOS	CLOS	C
AP04	PASS Waste Collection Unit Return to Pressurizer Relief Tank OCIV											
	C1APFV2458	A	5Z549Z47501	C-3	2	A	1	GATE	SOLENO	CLOS	CLOS	C
AP05	Containment Air Sample Supply and Return to PASS Lab OCIVs											
	C1APFV2457	A	5Z549Z47501	H-2	2	A	1	GATE	SOLENO	CLOS	CLOS	C
	C1APFV2456	A	5Z549Z47501	D-7	2	A	1	GATE	SOLENO	CLOS	CLOS	C
BA01	Breathing Air System Inside Cntmt Isolation Check Valve											
	2Q121TBA0006	P	5Q129F05044	H-4	2	A/C	1	CHECK	SELF	CLOS	N/A	C
BA02	Breathing Air System Outside Cntmt Isolation Manual Valve											
	2Q121TBA0004	P	5Q129F05044	G-4	2	A	1	BALL	MANUAL	CLOS	N/A	C
CC01	Thermal Relief for Penetration M-40 CCW return for the RCPs											
	2R201TCC0446	A	5R209F05021	B-1	2	A/C	1	CHECK	SELF	CLOS	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC02	CCW Supply to the RCP Thermal Barners (Double inlet check valves)											
	3R201TCC0327	A	5R209F05021	B-8	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0756	A	5R209F05021	E-4	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0321	A	5R209F05021	E-5	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0363	A	5R209F05021	B-5	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0346	A	5R209F05021	E-8	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0757	A	5R209F05021	B-5	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0758	A	5R209F05021	E-7	3	C	2	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0759	A	5R209F05021	B-8	3	C	2	CHECK	SELF	OPEN	N/A	O/C
CC03	Penetration M-40 CCW return for the RCPs											
	D1CCFV4493	A	5R209F05021	H-1	2	A	12	BUTTER	AIR	OPEN	CLOS	C
CC04	RHR Heat Exchanger - CCW Outlet Valves											
	A1CCFV4531	A	5R209F05017	G-2	3	B	16	BUTTER	AIR	CLOS	CLOS	O
	B1CCFV4548	A	5R209F05018	G-2	3	B	16	BUTTER	AIR	CLOS	CLOS	O
	C1CCFV4565	A	5R209F05019	G-2	3	B	16	BUTTER	AIR	CLOS	OPEN	O
CC05	Common Suction Header Isolation Valves (Trains A, B, & C) MOVs											
	3R201TCC0132	A	5R209F05020	C-7	3	B	24	BUTTER	MOTOR	EITH	FAI	O/C
	3R201TCC0052	A	5R209F05020	C-7	3	B	24	BUTTER	MOTOR	EITH	FAI	O/C
	3R201TCC0192	A	5R209F05020	B-7	3	B	24	BUTTER	MOTOR	EITH	FAI	O/C
CC06	Common Supply Header Isolation Valves (Trains A, B, & C)											
	3R201TCC0312	A	5R209F05020	E-7	3	B	24	BUTTER	MOTOR	EITH	N/A	O/C
	3R201TCC0314	A	5R209F05020	E-7	3	B	24	BUTTER	MOTOR	EITH	N/A	O/C
	3R201TCC0316	A	5R209F05020	F-7	3	B	24	BUTTER	MOTOR	EITH	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC07	CCW Heat Exchanger Outlet MOVs (Trains A, B, and C)											
	3R201TCC0643	A	5R209F05017	B-5	3	B	24	BUTTER	MOTOR	OPEN	FAI	O
	3R201TCC0647	A	5R209F05019	B-5	3	B	24	BUTTER	MOTOR	OPEN	FAI	O
	3R201TCC0645	A	5R209F05018	B-5	3	B	24	BUTTER	MOTOR	OPEN	FAI	O
CC08	CCW Heat Exchanger Bypass MOVs (Trains A, B, and C)											
	3R201TCC0644	A	5R209F05018	A-6	3	B	16	BUTTER	MOTOR	CLOS	FAI	O/C
	3R201TCC0646	A	5R209F05019	A-6	3	B	16	BUTTER	MOTOR	CLOS	FAI	O/C
	3R201TCC0642	A	5R209F05017	A-6	3	B	16	BUTTER	MOTOR	CLOS	FAI	O/C
CC09	CCW return from the RCFCs, Inside Containment Isolation Valves (Trains A, B, and C)											
	2R201TCC0208	A	5R209F05019	D-4	2	A	14	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0147	A	5R209F05018	C-4	2	A	14	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0068	A	5R209F05017	C-4	2	A	14	BUTTER	MOTOR	OPEN	FAI	O/C
CC09A	CCW return from the RCFCs, Outside Containment Isolation Valves (Trains A, B, and C)											
	2R201TCC0210	A	5R209F05019	D-4	2	A	14	BUTTER	MOTOR	CLOS	FAI	O/C
	2R201TCC0069	A	5R209F05017	D-4	2	A	14	BUTTER	MOTOR	CLOS	FAI	O/C
	2R201TCC0148	A	5R209F05018	D-4	2	A	14	BUTTER	MOTOR	CLOS	FAI	O/C
CC10	CCW Supply (OCIV) to RHR Pump and Heat Exchanger - Trains A, B, and C											
	2R201TCC0182	A	5R209F05019	F-1	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0122	A	5R209F05018	E-2	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0012	A	5R209F05017	E-2	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
CC11	CCW Supply (OCIV) to Reactor Containment Fan Coolers - Trains A, B, and C											
	2R201TCC0057	A	5R209F05017	D-2	2	A	14	BUTTER	MOTOR	CLOS	FAI	O/C
	2R201TCC0197	A	5R209F05019	D-2	2	A	14	BUTTER	MOTOR	CLOS	FAI	O/C
	2R201TCC0136	A	5R209F05018	D-2	2	A	14	BUTTER	MOTOR	CLOS	FAI	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC12	CCW Return from RHR Pump and Heat Exchanger - Trains A, B, and C											
	2R201TCC0190	A	5R209F05019	H-4	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0189	A	5R209F05019	H-4	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0130	A	5R209F05018	G-4	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0129	A	5R209F05018	G-4	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0050	A	5R209F05017	G-4	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
	2R201TCC0049	A	5R209F05017	G-4	2	A	16	BUTTER	MOTOR	OPEN	FAI	O/C
CC13	Chilled Water Return from RCFCs Outside Cntmt. Isolation MOV (Trains A, B, and C)											
	2R201TCC0149	A	5R209F05018	C-4	2	A	8	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0070	A	5R209F05017	C-4	2	A	8	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0209	A	5R209F05019	C-4	2	A	8	BUTTER	MOTOR	OPEN	FAI	C
CC14	Chilled Water Supply to RCFCs Outside Cntmt. Isolation MOV (Trains A, B, and C)											
	2R201TCC0059	A	5R209F05017	D-2	2	A	14	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0199	A	5R209F05019	D-2	2	A	14	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0137	A	5R209F05018	D-2	2	A	14	BUTTER	MOTOR	OPEN	FAI	C
CC15	CCW Supply Header to Spent Fuel Pool Heat Exchanger, First and Second Isolation											
	3R201TCC0032	A	5R209F05020	E-6	3	B	18	BUTTER	MOTOR	EITH	FAI	C
	3R201TCC0447	A	5R209F05020	E-7	3	B	18	BUTTER	MOTOR	EITH	FAI	C
CC16	CCW Supply Header to Non-Safety Loads, First and Second Isolation											
	3R201TCC0235	A	5R209F05020	D-7	3	B	18	BUTTER	MOTOR	OPEN	N/A	C
	3R201TCC0236	A	5R209F05020	D-6	3	B	18	BUTTER	MOTOR	OPEN	N/A	C
CC17	CCW Supply to Excess Letdown Heat Exchanger Isolation MOV											
	3R201TCC0393	A	5R209F05021	G-3	3	B	4	BUTTER	MOTOR	OPEN	FAI	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC18	CCW Supply Header Isolation to Charging Pumps (Trains A, B, and C)										
	3R201TCC0771	A	5R209F05020	G-7	3 B	6	BUTTER	MOTOR	EITH	FAI	O/C
	3R201TCC0770	A	5R209F05020	G-7	3 B	6	BUTTER	MOTOR	EITH	FAI	O/C
	3R201TCC0768	A	5R209F05020	F-7	3 B	6	BUTTER	MOTOR	EITH	FAI	O/C
CC19	CCW Return Isolation from Charging Pumps (Trains A, B, and C)										
	3R201TCC0772	A	5R209F05020	B-7	3 B	6	BUTTER	MOTOR	EITH	FAI	O/C
	3R201TCC0775	A	5R209F05020	A-7	3 B	6	BUTTER	MOTOR	EITH	FAI	O/C
	3R201TCC0774	A	5R209F05020	B-7	3 B	6	BUTTER	MOTOR	EITH	FAI	O/C
CC20	CCW Supply to RCDT Ht. Exch. and Excess Letdown										
	3R201TCC0297	A	5R209F05021	G-7	3 B	6	BUTTER	MOTOR	EITH	N/A	C
CC21	CCW Supply to RCDT Ht. Exch.										
	3R201TCC0392	A	5R209F05021	G-3	3 B	4	GATE	MOTOR	OPEN	FAI	C
CC22	CCW Supply to RCP Coolers Outside Cntmt Isolation MOVs										
	2R201TCC0291	A	5R209F05021	H-8	2 A	12	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0318	A	5R209F05021	H-8	2 A	12	BUTTER	MOTOR	OPEN	FAI	C
CC23	CCW Return from RCP Coolers, Cntmt Isolation MOVs										
	2R201TCC0404	A	5R209F05021	H-1	2 A	12	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0542	A	5R209F05021	B-1	2 A	12	BUTTER	MOTOR	OPEN	FAI	C
	2R201TCC0403	A	5R209F05021	B-1	2 A	12	BUTTER	MOTOR	OPEN	FAI	C
CC24	Chilled Water Return for the RCFCs, Outside Cntmt Isolation Valve (Trains A, B, and C)										
	C1CCFV0863	A	5R209F05017	C-4	2 A	8	BUTTER	AIR	OPEN	CLOS	C
	B1CCFV0862	A	5R209F05017	B-4	2 A	8	BUTTER	AIR	OPEN	CLOS	C
	A1CCFV0864	A	5R209F05017	C-4	2 A	8	BUTTER	AIR	OPEN	CLOS	C
CC25	CCW Supply Header to Post Accident Sampling System, First and Second Isolation										
	B1CCFV4541	A	5R209F05020	D-8	3 B	1.5	GATE	SOLENO	CLOS	CLOS	C
	A1CCFV4540	A	5R209F05020	D-7	3 B	1.5	GATE	SOLENO	OPEN	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC26	CCW Common Return Header to CCW Pump Suction Check Valve (Trains A, B, and C)										
	3R201TCC0191	A	5R209F05020 B-7	3	C	24	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0131	A	5R209F05020 C-7	3	C	24	CHECK	SELF	OPEN	N/A	O/C
	3R201TCC0051	A	5R209F05020 C-7	3	C	24	CHECK	SELF	OPEN	N/A	O/C
CC27	CCW Pump Discharge Check Valve to Common Supply Header (Trains A, B, and C)										
	3R201TCC0311	A	5R209F05020 E-7	3	C	24	CHECK	SELF	EITH	N/A	O
	3R201TCC0313	A	5R209F05020 E-7	3	C	24	CHECK	SELF	EITH	N/A	O
	3R201TCC0315	A	5R209F05020 F-7	3	C	24	CHECK	SELF	EITH	N/A	O
CC28	CCW Supply to RCFCs Inside Cntmt Isolation Check Valve (Trains A, B, and C)										
	2R201TCC0058	A	5R209F05017 D-2	2	A/C	14	CHECK	SELF	OPEN	N/A	O/C
	2R201TCC0138	A	5R209F05018 D-2	2	A/C	14	CHECK	SELF	OPEN	N/A	O/C
	2R201TCC0198	A	5R209F05019 D-2	2	A/C	14	CHECK	SELF	OPEN	N/A	O/C
CC29	CCW Supply to RHR Pump and Heat Exchanger Inside Cntmt Isolation Check Valve (Trains A, B, and C)										
	2R201TCC0123	A	5R209F05018 E-2	2	A/C	16	CHECK	SELF	CLOS	N/A	O/C
	2R201TCC0013	A	5R209F05017 E-2	2	A/C	16	CHECK	SELF	CLOS	N/A	O/C
	2R201TCC0183	A	5R209F05019 E-2	2	A/C	16	CHECK	SELF	CLOS	N/A	O/C
CC30	CCW Return for RCDT Heat Exchanger Check Valves										
	3R201TCC0541	A	5R209F05021 D-1	3	C	4	CHECK	SELF	OPEN	N/A	C
	3R201TCC0540	A	5R209F05021 D-1	3	C	4	CHECK	SELF	OPEN	N/A	C
CC31	CCW Return for Excess Letdown Heat Exchanger Check Valves										
	3R201TCC0402	A	5R209F05021 C-2	3	C	6	CHECK	SELF	OPEN	N/A	C
	3R201TCC0763	A	5R209F05021 C-2	3	C	6	CHECK	SELF	OPEN	N/A	C
CC32	CCW Supply to RCPs Inside Containment Isolation Check Valve										
	2R201TCC0319	A	5R209F05021 G-8	2	A/C	12	CHECK	SELF	OPEN	N/A	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC33	RCP Thermal Barrier Leak Isolation Valves											
	N1CCFV4626	A	5R209F05021	B-3	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4639	A	5R209F05021	E-6	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4638	A	5R209F05021	E-6	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4633	A	5R209F05021	E-3	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4627	A	5R209F05021	B-3	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4621	A	5R209F05021	B-6	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4620	A	5R209F05021	B-6	3	C	3	GLOBE	SELF	OPEN	OPEN	C
	N1CCFV4632	A	5R209F05021	E-3	3	C	3	GLOBE	SELF	OPEN	OPEN	C
CC34	Cross Connect Valves for CCW Supply and Return for Charging Pumps											
	A1CCFV4657	A	5R209F05020	A-7	3	B	6	BUTTER	AIR	CLOS	CLOS	C
	A1CCFV4656	A	5R209F05020	G-7	3	B	6	BUTTER	AIR	OPEN	CLOS	C
CC35	CCW Common Return Header Pressure Relief Valve											
	N1CCPSV4492	A	5R209F05020	B7	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
CC36	CCW Heat Exchangers A, B, C Outlet Pressure Relief Valves											
	N1CCPSV4521	A	5R209F05019	B6	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4511	A	5R209F05017	B5	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4516	A	5R209F05018	B6	3	C	1	RELIEF	SELF	CLOS	N/A	O
CC37	RHR Heat Exchanger A, B, C CCW Return Pressure Relief Valves											
	N1CCPSV4549	A	5R209F05018	G2	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4532	A	5R209F05017	G2	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4566	A	5R209F05019	G2	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
CC38	RHR Pump A, B, C CCW Return Pressure Relief Valves											
	N1CCPSV4567	A	5R209F05019	G3	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4550	A	5R209F05018	G3	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4533	A	5R209F05017	G3	3	C	1	RELIEF	SELF	CLOS	N/A	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST		VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC39	RCFC 11(21)A, B, C Chilled Water/CCW Return Pressure Relief Valves											
	N1CCPSV4573	A	5R209F05019	C3	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4571	A	5R209F05019	E4	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4556	A	5R209F05018	C4	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4554	A	5R209F05018	E4	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4539	P	5R209F05017	E4	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4537	A	5R209F05017	E4	3	C	1.5	RELIEF	SELF	CLOS	N/A	O
CC40	CCP A, B, C Lube Oil and AHU Coolers CCW Return Pressure Relief Valves											
	N1CCPSV4580	A	5R209F05020	G6	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4588	A	5R209F05020	G5	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4582	A	5R209F05020	G4	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4613	A	5R209F05020	E2	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4584	A	5R209F05020	G5	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4586	A	5R209F05020	G3	3	C	1	RELIEF	SELF	CLOS	N/A	O
CC41	RCP A, B, C Upper and Lower Lube Oil Cooler CCW Return Pressure Relief Valves											
	N1CCPSV4618	A	5R209F05021	B6	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4622	A	5R209F05021	C3	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4624	A	5R209F05021	B3	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4628	A	5R209F05021	F3	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4630	A	5R209F05021	E3	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4634	A	5R209F05021	F6	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4636	A	5R209F05021	E6	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4616	A	5R209F05021	C6	3	C	1	RELIEF	SELF	CLOS	N/A	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CC42	RCP A, B, C, D Thermal Barrier CCW Return Pressure Relief Valves										
	N1CCPSV4638	A	5R209F05021	D6	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4620	A	5R209F05021	A6	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4632	A	5R209F05021	D3	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4626	A	5R209F05021	A3	3 C	1	RELIEF	SELF	CLOS	N/A	O
CC43	RCP and Heat Exchangers CCW Return Header Pressure Relief Valves										
	N1CCPSV4639	A	5R209F05021	C2	3 C	3	RELIEF	SELF	CLOS	N/A	O
CC44	RCP A, B, C, D Upper and Lower Motor Air Cooler CCW Return Pressure Relief Valves										
	N1CCPSV4645	A	5R209F05021	D7	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4645A	A	5R209F05021	C7	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4646A	A	5R209F05021	C3	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4647	A	5R209F05021	G3	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4647A	A	5R209F05021	F3	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4648	A	5R209F05021	G6	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4648A	A	5R209F05021	F6	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CCPSV4646	A	5R209F05021	D3	3 C	1	RELIEF	SELF	CLOS	N/A	O
CCPP	Component Cooling Water Pumps										
	3R201NPA101A										
CH01	EAB Control Room Envelope Air Handling Unit Outlet Temperature Valve (Trains A, B, and C)										
	C1CHTV9496A	A	3V119V10002	F-1	3 B	2	BUTTER	AIR	THRO	OPEN	O
	A1CHTV9476A	A	3V119V10002	F-7	3 B	2	BUTTER	AIR	THRO	OPEN	O
	A1CHTV9476B	A	3V119V10002	E-7	3 B	2	BUTTER	AIR	THRO	CLOS	C
	B1CHTV9486A	A	3V119V10002	F-4	3 B	2	BUTTER	AIR	THRO	OPEN	O
	B1CHTV9486B	A	3V119V10002	E-4	3 B	2	BUTTER	AIR	THRO	CLOS	C
	C1CHTV9496B	A	3V119V10002	E-1	3 B	2	BUTTER	AIR	THRO	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CH02	EAB Main Supply Air Handling Unit Outlet Temperature Valve (Trains A, B, and C)										
	A1CHTV9477A	A	3V119V10002	C-6	3 B	4	BUTTER	AIR	THRO	OPEN	O
	A1CHTV9477B	A	3V119V10002	C-6	3 B	4	BUTTER	AIR	THRO	CLOS	C
	B1CHTV9487A	A	3V119V10002	C-4	3 B	4	BUTTER	AIR	THRO	OPEN	O
	C1CHTV9497B	A	3V119V10002	C-1	3 B	4	BUTTER	AIR	THRO	CLOS	C
	C1CHTV9497A	A	3V119V10002	C-1	3 B	4	BUTTER	AIR	THRO	OPEN	O
	B1CHTV9487B	A	3V119V10002	C-4	3 B	4	BUTTER	AIR	THRO	CLOS	C
CH05	Train A, B, C Essential Chilled Water Expansion Tank Pressure Relief Valves										
	N1CHPSV9481	A	5V119V10001	E7	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9491	A	5V119V10001	C7	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9471	A	5V119V10001	H7	3 C	1	RELIEF	SELF	CLOS	N/A	O
CH06	Train A, B, C Essential Chilled Water Expansion Tank Nitrogen Supply Pressure Relief Valves										
	N1CHPSV9471A	A	5V119V10001	H7	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9481A	A	5V119V10001	E7	3 C	1	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9491A	A	5V119V10001	C7	3 C	1	RELIEF	SELF	CLOS	N/A	O
CH07	Essential Chilled Water Chiller 11(21) A, B, C Outlet Pressure Relief Valves										
	N1CHPSV9493	A	5V119V10001	B6	3 C	3	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9483	A	5V119V10001	E6	3 C	3	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9473	A	5V119V10001	G6	3 C	3	RELIEF	SELF	CLOS	N/A	O
CH08	Essential Chilled Water Chiller 12(22) A, B, C Outlet Pressure Relief Valves										
	N1CHPSV9514	A	5V119V10001	B4	3 C	4	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9508	A	5V119V10001	E4	3 C	4	RELIEF	SELF	CLOS	N/A	O
	N1CHPSV9502	A	5V119V10001	G4	3 C	4	RELIEF	SELF	CLOS	N/A	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CM01	RCB Air Sample Select Valves for Cntmt Hydrogen Monitoring System										
	C1CMFV4130	A	5Z169Z00046	D-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
	C1CMFV4131	A	5Z169Z00046	C-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
	C1CMFV4103	A	5Z169Z00046	E-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
	A1CMFV4126	A	5Z169Z00046	E-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
	A1CMFV4125	A	5Z169Z00046	F-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
	A1CMFV4124	A	5Z169Z00046	F-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
	A1CMFV4100	A	5Z169Z00046	G-6	2 B	1	GATE	SOLENO	EITH	CLOS	O
	C1CMFV4129	A	5Z169Z00046	D-6	2 B	1	GATE	SOLENO	CLOS	CLOS	O
CM02	Cntmt Hydrogen Monitoring System Inside and Outside CIVs										
	A1CMFV4135	A	5Z169Z00046	F-5	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	C1CMFV4136	A	5Z169Z00046	D-5	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	C1CMFV4134	A	5Z169Z00046	C-5	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	C1CMFV4104	A	5Z169Z00046	D-4	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	A1CMFV4128	A	5Z169Z00046	E-5	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	A1CMFV4127	A	5Z169Z00046	E-4	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	A1CMFV4101	A	5Z169Z00046	F-4	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
	C1CMFV4133	A	5Z169Z00046	C-4	2 A	1	GATE	SOLENO	CLOS	CLOS	O/C
CS01	Containment Spray Pump Discharge Outside Cntmt Isolation MOVs										
	2N101XCS0001B	A	5N109F05037	E-6	2 A	8	GATE	MOTOR	CLOS	FAI	O/C
	2N101XCS0001A	A	5N109F05037	G-6	2 A	8	GATE	MOTOR	CLOS	FAI	O/C
	2N101XCS0001C	A	5N109F05037	C-6	2 A	8	GATE	MOTOR	CLOS	FAI	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CS02	Containment Spray Header Inside Cntmt Isolation Check Valves											
	2N101XCS0002	A	5N109F05037	G-7	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	2N101XCS0004	A	5N109F05037	E-8	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	2N101XCS0005	A	5N109F05037	D-8	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	2N101XCS0006	A	5N109F05037	C-7	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
CV01	Reactor Coolant Auxiliary Spray Valve											
	N1CVLV3119	A	5R179F05	F-7	1	B	2	GLOBE	AIR	CLOS	CLOS	O
CV02	Centrifugal Charging Pump Minimum Recirc. Control Valves											
	N1CVFCV0201	A	5R179F05007	C-6	2	B	2	GLOBE	AIR	EITH	OPEN	O
	N1CVFCV0202	A	5R179F05007	D-6	2	B	2	GLOBE	AIR	EITH	OPEN	O
CV03	RCS Letdown Line Inside Cntmt Isolation Bypass Check Valve (CV0022)											
	2R171TCV0022	A	5R179F05005	H-3	2	A/C	0 75	CHECK	SELF	CLOS	N/A	O/C
CV04	RCS Seal Water Return Inside Cntmt Isolation Bypass Check Valve (CV0078)											
	2R171TCV0078	A	5R179F05005	F-3	2	A/C	0.75	CHECK	SELF	CLOS	N/A	O/C
CV05	(CV0346,351) BAT Pump recirc valves											
	3R171TCV0346	A	5R179F05009	D-5	3	C	0.75	CHECK	SELF	EITH	N/A	O
	3R171TCV0351	A	5R179F05009	E-6	3	C	0.75	CHECK	SELF	EITH	N/A	O
CV06	RCP Seal Injection Check Valve (Class 1 Boundary Isolation)											
	1R171TCV0037B	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0037A	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0036B	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0036C	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0036D	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0037D	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0037C	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C
	1R171TCV0036A	A	5R179F05005	C-7	1	C	2	CHECK	SELF	OPEN	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CV07	Seal Injection to RCPs Inside Cntmt Isolation Check Valves											
	2R171TCV0034A	A	5R179F05005	C-8	2	A/C	2	CHECK	SELF	OPEN	N/A	O/C
	2R171TCV0034C	A	5R179F05005	C-8	2	A/C	2	CHECK	SELF	OPEN	N/A	O/C
	2R171TCV0034B	A	5R179F05005	C-8	2	A/C	2	CHECK	SELF	OPEN	N/A	O/C
	2R171TCV0034D	A	5R179F05005	C-8	2	A/C	2	CHECK	SELF	OPEN	N/A	O/C
CV08	Boric Acid Polishing Return to Boric Acid Tank											
	3R171TCV0638	A	5R179F05009	F-6	3	C	2	CHECK	SELF	OPEN	N/A	C
	3R171TCV0637	A	5R179F05009	F-5	3	C	2	CHECK	SELF	OPEN	N/A	C
	3R171TCV0636	A	5R179F05009	E-5	3	C	2	CHECK	SELF	OPEN	N/A	C
	3R171TCV0635	A	5R179F05009	E-5	3	C	2	CHECK	SELF	OPEN	N/A	C
CV09	Centrifugal Charging Pump Minimum Recirc. Check Valves											
	2R171TCV0234B	A	5R179F05007	D-6	2	C	3	CHECK	SELF	EITH	N/A	O
	2R171TCV0234A	A	5R179F05007	B-6	2	C	3	CHECK	SELF	EITH	N/A	O
CV10	Reactor Coolant Auxiliary Spray Inlet Check Valve (CV0009)											
	1R171TCV0009	A	5R179F05005	F-8	1	C	2	CHECK	SA	CLOS	N/A	O
CV11	CVCS SEAL WATER INJECTION FLOW CONTROL VALVE											
	C1CVHCV0218	A	5R179F05007	B-7	2	B	2	GLOBE	AIR	CLOS	OPEN	O
CV12	Letdown Orifice Header Isolation Valve											
	C1CVFV0011	A	5R179F05005	G-6	2	B	3	GLOBE	AIR	OPEN	CLOS	C
CV13	RCS Charging Flow Control Valve											
	A1CVFCV0205	A	5R179F05009	E-7	2	B	3	GLOBE	AIR	EITH	OPEN	O
CV14	Manual Alternate Borate Check Valve											
	2R171XCV0639	A	5R179F05007	E-4	2	C	2	CHECK	SELF	CLOS	N/A	O/C
CV15	Charging Header Check Valve (CV671)											
	2R171XCV0671	A	5R179F05007	B-6	2	C	2	CHECK	SELF	CLOS	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CV16	Boric Acid Supply to Concentrated BA Polishing Demineralizer Isolation Valves										
	B1CVFV8400B	A	5R179F05009	C-8	3 B	2	DIAPHR	AIR	OPEN	CLOS	C
	A1CVFV8400A	A	5R179F05009	D-8	3 B	2	DIAPHR	AIR	OPEN	CLOS	C
CV19	RCS Charging Outside Cntmt Isolation MOV										
	2R171XCV0025	A	5R179F05005	G-3	2 A	4	GATE	MOTOR	OPEN	FAI	O/C
CV20	RCS Letdown Isolation (Class 1 Boundary Isolation)										
	1R171XCV0465	A	5R179F05005	G-8	1 B	4	GATE	MOTOR	OPEN	FAI	C
	1R171XCV0468	A	5R179F05005	G-7	1 B	4	GATE	MOTOR	OPEN	FAI	C
CV21	Centrifugal Charging Pump Discharge Isolation MOVs										
	2R171XCV8377A	A	5R179F05007	B-6	2 B	3	GATE	MOTOR	OPEN	FAI	O/C
	2R171XCV8377B	A	5R179F05007	D-6	2 B	3	GATE	MOTOR	OPEN	FAI	O/C
CV22	Volume Control Tank Outlet Isolation MOVs										
	2R171XCV0112B	A	5R179F05007	E-4	2 B	6	GATE	MOTOR	EITH	FAI	
	2R171XCV0113A	A	5R179F05007	E-4	2 B	6	GATE	MOTOR	EITH	FAI	
CV23	Reactor Water Storage Tank to Charging Pump Suction Header Isolation MOVs										
	2R171XCV0112C	A	5R179F05007	C-4	2 B	6	GATE	MOTOR	EITH	FAI	
	2R171XCV0113B	A	5R179F05007	C-4	2 B	6	GATE	MOTOR	EITH	FAI	
CV24	Alternate Boric Acid Make-Up Supply Isolation MOV (CV0218)										
	2R171XCV0218	A	5R179F05007	B-3	2 B	4	GATE	MOTOR	CLOS	FAI	O
CV25	RCS Normal and Alternate Charging Flow Isolation MOVs										
	2R171XCV0003	A	5R179F05005	G-7	2 B	4	GATE	MOTOR	EITH	FAI	O/C
	2R171XCV0006	A	5R179F05005	F-7	2 B	4	GATE	MOTOR	CLOS	FAI	O/C
CV26	RCS Letdown Inside and Outside Cntmt Isolation MOVs										
	2R171XCV0024	A	5R179F05005	H-3	2 A	4	GATE	MOTOR	OPEN	FAI	C
	2R171XCV0023	A	5R179F05005	H-3	2 A	4	GATE	MOTOR	OPEN	FAI	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CV27	RCP Seal Injection Outside Cntmt Isolation MOVs											
	2R171TCV0033D	A	5R179F05005	C-8	2	A	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2R171TCV0033C	A	5R179F05005	C-8	2	A	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2R171TCV0033B	A	5R179F05005	C-8	2	A	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2R171TCV0033A	A	5R179F05005	C-8	2	A	2	DIAPHR	MOTOR	OPEN	FAI	O/C
CV28	Reactor Coolant Pump Seal Water Supply MOV (CV8348)											
	2R171XCV8348	A	5R179F05007	B-6	2	B	2	GLOBE	MOTOR	CLOS	FAI	O
CV29	RCP Seal Water Return Inside and Outside Cntmt Isolation MOVs											
	2R171TCV0079	A	5R179F05005	E-3	2	A	2	DIAPHR	MOTOR	OPEN	FAI	C
	2R171TCV0077	A	5R179F05005	E-3	2	A	2	DIAPHR	MOTOR	OPEN	FAI	C
CV30	RCS Excess Letdown Heat Exchanger Inlet Isolation MOVs (Class 1 Boundary Isolation)											
	1R171TCV0083	A	5R179F05005	F-5	1	B	1	DIAPHR	MOTOR	EITH	FAI	C
	1R171TCV0082	A	5R179F05005	F-5	1	B	1	DIAPHR	MOTOR	EITH	FAI	C
CV31	CVCS Alternate Immediate Boration Isolation Valve (CV0221)											
	2R171TCV0221	A	5R179F05007	E-4	2	B	2	DIAPHR	MANUAL	CLOS	N/A	
CV32	Charging Pump B Discharge Bypass Control Valve											
	A1CVHCV0206	A	5R179F05007	D-6	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O
CV33	Centrifugal Charging Pump Discharge Check Valves											
	2R171XCV0235A	A	5R179F05007	B-6	2	C	3	CHECK	SELF	EITH	N/A	O/C
	2R171XCV0235B	A	5R179F05007	D-6	2	C	3	CHECK	SELF	EITH	N/A	O/C
CV34	(CV0334) check valve											
	3R171XCV0334	A	5R179F05009	E-4	2	C	3	CHECK	SELF	CLOS	N/A	O
CV35	RC Filters out to RHR Outside Cntmt Isolation Manual Valve											
	2R171XCV0157	P	5R179F05006	F-2	2	A	4	GATE	MANUAL	CLOS	N/A	C
CV37	Charging Header Check Valve											
	2R171XCV0670	A	5R179F05007	D-6	2	C	2	CHECK	SELF	CLOS	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
CV38	RCS Normal and Alternate Charging Check Valves (Class 1 Boundary Valves)											
	1R171XCV0001	A	5R179F05005	G-8	1	C	4	CHECK	SELF	EITH	N/A	O/C
	1R171XCV0002	A	5R179F05005	G-8	1	C	4	CHECK	SELF	EITH	N/A	O/C
	1R171XCV0004	A	5R179F05005	F-8	1	C	4	CHECK	SELF	EITH	N/A	O/C
	1R171XCV0005	A	5R179F05005	F-8	1	C	4	CHECK	SELF	EITH	N/A	O/C
CV40	RCS Charging Inside Cntmt Isolation Check Valve.											
	2R171XCV0026	A	5R179F05005	G-3	2	A/C	4	CHECK	SELF	OPEN	N/A	O/C
CV41	Alternate Boric Acid Make-Up Supply Isolation Check Valve (CV0217)											
	2R171XCV0217	A	5R179F05007	B-3	2	C	4	CHECK	SELF	CLOS	N/A	O
CV42	Boric Acid Pump Discharge Check Valves (CV349, 338)											
	3R171XCV0338	A	5R179F05009	D-6	3	C	4	CHECK	SELF	EITH	N/A	O/C
	3R171XCV0349	A	5R179F05009	C-6	3	C	4	CHECK	SELF	EITH	N/A	O/C
CV43	RC Filters out to RHR Inside Cntmt Isolation Check Valve											
	2R171XCV0158	P	5R179F05006	F-2	2	A/C	4	CHECK	SELF	CLOS	N/A	C
CV44	Reactor Water Storage Tank to Charging Pump Suction Header Isolation Check Valve											
	2R171XCV0224	A	5R179F05007	B-4	2	C	6	CHECK	SELF	EITH	N/A	O
DW01	Demineralizer Water to the RCB Inside Cntmt Isolation Check Valve											
	2S191TDW0502	P	5S199F05034	F-3	2	A/C	4	CHECK	SELF	CLOS	N/A	C
DW02	Demineralizer Water to the RCB Outside Cntmt Isolation Manual Valve											
	2S191TDW0501	P	5S199F05034	F-4	2	A	4	DIAPHR	MANUAL	CLOS	N/A	C
ED01	Containment Normal Sump Discharge Outside Cntmt Isolation Valve (FV7800)											
	A1EDFV7800	A	5Q069F05030	G-7	2	A	3	GLOBE	AIR	O/C	CLOS	C
ED02	Containment Normal Sump Discharge Inside Cntmt Isolation MOV (ED0064)											
	2Q061TED0064	A	5Q069F05030	G-7	2	A	3	GLOBE	MOTOR	O/C	FAI	C
EW01	Essential Cooling Water Blowdown Isolation Valve (Trains A, B, and C)											
	B1EWFV6936	A	5R289F05038	E-5	3	B	4	GLOBE	AIR	OPEN	CLOS	C
	C1EWFV6937	A	5R289F05038	E-5	3	B	4	GLOBE	AIR	OPEN	CLOS	C
	A1EWFV6935	A	5R289F05038	E-5	3	B	4	GLOBE	AIR	OPEN	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST		VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
EW02	Essential Cooling Water Pump Discharge Vent Check Valve (Trains A, B, and C)											
	3R281TEW0370A	A	5R289F05038	C-3	3	C	3	CHECK	SELF	OPEN	N/A	O/C
	3R281TEW0370B	A	5R289F05038	C-3	3	C	3	CHECK	SELF	OPEN	N/A	O/C
	3R281TEW0370C	A	5R289F05038	C-3	3	C	3	CHECK	SELF	OPEN	N/A	O/C
EW03	ECW Screen Wash Booster Pump Discharge Check Valve (Trains A, B, and C)											
	3R281TEW0253	A	5R289F05039	D-7	3	C	3	CHECK	SELF	EITH	N/A	O
	3R281TEW0254	A	5R289F05039	D-5	3	C	3	CHECK	SELF	EITH	N/A	O
	3R281TEW0255	A	5R289F05039	D-2	3	C	3	CHECK	SELF	EITH	N/A	O
EW04	Essential Cooling Water Pump Discharge Strainer Emergency Backflush Check Valve (Trains A, B, and C)											
	3R281TEW0404	A	5R289F05038	C-3	3	C	6	CHECK	SELF	OPEN	N/A	O/C
	3R281TEW0403	A	5R289F05038	C-3	3	C	6	CHECK	SELF	OPEN	N/A	O/C
	3R281TEW0405	A	5R289F05038	C-3	3	C	6	CHECK	SELF	OPEN	N/A	O/C
EW05	Essential Cooling Water Pump Discharge MOV (Trains A, B, and C)											
	3R281TEW0121	A	5R289F05038	C-2	3	B	30	BUTTER	MOTOR	EITH	FAI	O
	3R281TEW0137	A	5R289F05038	C-2	3	B	30	BUTTER	MOTOR	EITH	FAI	O
	3R281TEW0151	A	5R289F05038	C-2	3	B	30	BUTTER	MOTOR	EITH	FAI	O
	3R281TEW0151	A	5R289F05038	C-2	3	B	30	BUTTER	MOTOR	EITH	FAI	O
	3R281TEW0121	A	5R289F05038	C-2	3	B	30	BUTTER	MOTOR	EITH	FAI	O
	3R281TEW0137	A	5R289F05038	C-2	3	B	30	BUTTER	MOTOR	EITH	FAI	O
EW06	ECW Self-Cleaning Strainer Backflush Throttle Valve (Manual)											
	3R281TEW0190	A	5R289F05038	C-2	3	B	6	BUTTER	MANUAL	OPEN	N/A	O/C
	3R281TEW0189	A	5R289F05038	C-2	3	B	6	BUTTER	MANUAL	OPEN	N/A	O/C
	3R281TEW0188	A	5R289F05038	C-2	3	B	6	BUTTER	MANUAL	OPEN	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
EW07	ECW Self-Cleaning Strainer Emergency Backflush Manual Valve										
	3R281TEW0279	A	5R289F05038	C-2	3 B	6	BUTTER	MANUAL	CLOS	N/A	O/C
	3R281TEW0278	A	5R289F05038	C-2	3 B	6	BUTTER	MANUAL	CLOS	N/A	O/C
	3R281TEW0277	A	5R289F05038	C-2	3 B	6	BUTTER	MANUAL	CLOS	N/A	O/C
EW08	Essential Cooling Water Pump Discharge Check Valve (Trains A, B, and C)										
	3R281TEW0079	A	5R289F05038	C-3	3 C	30	CHECK	SELF	EITH	N/A	O
	3R281TEW0006	A	5R289F05038	C-3	3 C	30	CHECK	SELF	EITH	N/A	O
	3R281TEW0042	A	5R289F05038	C-3	3 C	30	CHECK	SELF	EITH	N/A	O
EW09	ECW Screen Wash Pump Discharge Valve (Trains A, B, and C)										
	C1EWFV6934	A	5R289F05039	D-3	3 B	3	GLOBE	AIR	EITH	OPEN	O
	B1EWFV6924	A	5R289F05039	D-5	3 B	3	GLOBE	AIR	EITH	OPEN	O
	A1EWFV6914	A	5R289F05039	D-7	3 B	3	GLOBE	AIR	EITH	OPEN	O
EW10	CCW Heat Exchanger A, B, C ECW Return Relief Valves										
	N1EWPSV6863	A	5R289F05038	G7	3 C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6853	A	5R289F05038	G7	3 C	1.5	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6873	A	5R289F05038	G7	3 C	1.5	RELIEF	SELF	CLOS	N/A	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
EW11	Ess. Chlr 11(21)A,B,C/DG11(21),12(22),13(23)/CCW Pump Sup. Clr A, B, C ECW Return Relief Valves										
	N1EWPSV6864	A	5R289F05038	G5	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6856	A	5R289F05038	G8	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6855	A	5R289F05038	G2	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6856	A	5R289F05038	G8	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6854	A	5R289F05038	G5	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6874	A	5R289F05038	G5	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6875	A	5R289F05038	G2	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6865	A	5R289F05038	G2	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6876	A	5R289F05038	G8	3	C	1	RELIEF	SELF	CLOS	N/A	O
EW12	Essential Chiller 12(22) A, B, C ECW Return Relief Valves										
	N1EWPSV6906	A	5R289F05038	G4	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6905	A	5R289F05038	G4	3	C	1	RELIEF	SELF	CLOS	N/A	O
	N1EWPSV6904	A	5R289F05038	G4	3	C	1	RELIEF	SELF	CLOS	N/A	O
EWPP	EW Pumps										
	3R281NPA101A										
FC01	SFP Pump Discharge Reactor Cavity ICIV (Manual)										
	2R211XFC0050	P	5R219F05028	B-6	2	A	3	GATE	MANUAL	CLOS	N/A	C
FC02	SFP Pump Cooling Supply and Return from In-Cntmt Storage Area CIV (Manual)										
	2R211XFC0006C	P	5R219F05028	B-5	2	A	10	GATE	MANUAL	CLOS	N/A	C
	2R211XFC0013E	P	5R219F05028	B-6	2	A	10	GATE	MANUAL	CLOS	N/A	C
	2R211XFC0007C	P	5R219F05028	B-4	2	A	10	GATE	MANUAL	CLOS	N/A	C
	2R211XFC0013F	P	5R219F05028	B-6	2	A	10	GATE	MANUAL	CLOS	N/A	C
FP01	Fire Protection to the RCB Inside Cntmt Isolation Check Valve										
	2Q271TFP0943	A	5Q279F05047	E-8	2	A/C	6	CHECK	SELF	CLOS	N/A	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	Normal	VALVE Failsafe	Safety Func.
FP02	Fire Protection to the RCB Outside Cntmt Isolation MOV											
	2Q271TFP0756	A	5Q279F05047	E-8	2	A	6	GATE	MOTOR	CLOS	FAI	C
FW01	Feedwater to the Steam Generator Isolation Valves											
	A1FWFV7141	A	5S139F00063	G-8	2	B	18	GATE	HYDRAU	OPEN	CLOS	C
	A1FWFV7144	A	5S139F00063	G-2	2	B	18	GATE	HYDRAU	OPEN	CLOS	C
	A1FWFV7142	A	5S139F00063	G-6	2	B	18	GATE	HYDRAU	OPEN	CLOS	C
	A1FWFV7143	A	5S139F00063	G-4	2	B	18	GATE	HYDRAU	OPEN	CLOS	C
FW02	Feedwater flow control valves											
	N1FWFCV0553	A	5S139F00063	D-4	NNS	B	16	ANGLE	AIR	OPEN	CLOS	C
	N1FWFCV0554	A	5S139F00063	D-2	NNS	B	16	ANGLE	AIR	OPEN	CLOS	C
	N1FWFCV0551	A	5S139F00063	D-8	NNS	B	16	ANGLE	AIR	OPEN	CLOS	C
	N1FWFCV0552	A	5S139F00063	D-6	NNS	B	16	ANGLE	AIR	OPEN	CLOS	C
FW03	Feedwater Bypass Flow Control Valves											
	N1FWFV7151	A	5S139F00063	D-7	NNS	B	4	GLOBE	AIR	CLOS	CLOS	C
	N1FWFV7152	A	5S139F00063	D-5	NNS	B	4	GLOBE	AIR	CLOS	CLOS	C
	N1FWFV7153	A	5S139F00063	D-3	NNS	B	4	GLOBE	AIR	CLOS	CLOS	C
	N1FWFV7154	A	5S139F00063	D-1	NNS	B	4	GLOBE	AIR	CLOS	CLOS	C
FW04	Steam Generator Feedwater Inlet Isolation Bypass Valves											
	A1FWFV7148A	P	5S139F00063	G-7	2	B	2	GLOBE	AIR	CLOS	CLOS	C
	B1FWFV7145A	P	5S139F00063	G-1	2	B	2	GLOBE	AIR	CLOS	CLOS	C
	A1FWFV7147A	P	5S139F00063	G-5	2	B	2	GLOBE	AIR	CLOS	CLOS	C
	B1FWFV7146A	P	5S139F00063	G-3	2	B	2	GLOBE	AIR	CLOS	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
FW05	Steam Generator Preheater Bypass Valves											
	A1FWFV7189	A	5S139F00063	E-8	2	B	3	GLOBE	AIR	CLOS	CLOS	C
	A1FWFV7190	A	5S139F00063	E-6	2	B	3	GLOBE	AIR	CLOS	CLOS	C
	A1FWFV7191	A	5S139F00063	E-4	2	B	3	GLOBE	AIR	CLOS	CLOS	C
	A1FWFV7192	A	5S139F00063	E-2	2	B	3	GLOBE	AIR	CLOS	CLOS	C
HC01	RCB Supplemental Purge Supply and Return Inside Cntmt Isolation MOVs											
	2V141THC0003	A	5V149V00019	F-3	2	A	18	BUTTER	MOTOR	OPEN	FAI	C
	2V141THC0005	A	5V149V00019	B-7	2	A	18	BUTTER	MOTOR	OPEN	FAI	C
HC02	RCB Supplemental Purge Supply and Return Outside Cntmt Isolation AOVs											
	A1HCFV9776	A	5V149V00019	F-4	2	A	18	BUTTER	AIR	OPEN	CLOS	C
	A1HCFV9777	A	5V149V00019	B-6	2	A	18	BUTTER	AIR	OPEN	CLOS	C
HC03	RCB Normal Purge Supply and Exhaust Cntmt Isolation (48") MOVs											
	2V141ZHC0010	A	5V149V00018	B-6	2	A	48	BUTTER	MOTOR	CLOS	FAI	C
	2V141ZHC0009	A	5V149V00018	B-7	2	A	48	BUTTER	MOTOR	CLOS	FAI	C
	2V141ZHC0008	A	5V149V00018	G-2	2	A	48	BUTTER	MOTOR	CLOS	FAI	C
	2V141ZHC0007	A	5V149V00018	G-3	2	A	48	BUTTER	MOTOR	CLOS	FAI	C
IA01	Instrument Air to RCB Inside Cntmt Isolation Check Valve (IA0541)											
	2Q111TIA0541	A	5N109F05040	D-4	2	A/C	2	CHECK	SELF	OPEN	N/A	C
IA02	Instrument Air to RCB Outside Cntmt Isolation Valve (IA8565)											
	B1IAFV8565	A	5N109F05040	D-4	2	A	2	BALL	AIR	OPEN	CLOS	C
MS01	Main Steam Isolation Valves											
	A1MSFSV7434	A	5S109F00016	D-4	2	B	30	GATE	AIR	OPEN	CLOS	C
	A1MSFSV7414	A	5S109F00016	G-4	2	B	30	GATE	AIR	OPEN	CLOS	C
	A1MSFSV7424	A	5S109F00016	F-4	2	B	30	GATE	AIR	OPEN	CLOS	C
	A1MSFSV7444	A	5S109F00016	C-4	2	B	30	GATE	AIR	OPEN	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
MS02	Main Steam Safety Valves											
	N1MSPSV7440	A	5S109F00016	C-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7420C	A	5S109F00016	F-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7420D	A	5S109F00016	F-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7430C	A	5S109F00016	E-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7430	A	5S109F00016	E-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7440D	A	5S109F00016	C-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7440B	A	5S109F00016	C-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7430D	A	5S109F00016	E-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7440C	A	5S109F00016	C-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7410	A	5S109F00016	H-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7420B	A	5S109F00016	F-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7440A	A	5S109F00016	C-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7410B	A	5S109F00016	H-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7430A	A	5S109F00016	E-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7420	A	5S109F00016	F-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7430B	A	5S109F00016	E-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7410D	A	5S109F00016	H-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7420A	A	5S109F00016	F-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7410C	A	5S109F00016	H-6	2	C	6	RELIEF	SELF	CLOS	N/A	O
	N1MSPSV7410A	A	5S109F00016	H-6	2	C	6	RELIEF	SELF	CLOS	N/A	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
MS03	Main Steam Power Operated Relief Valves											
	D1MSPV7441	A	5S109F00016	C-6	2	B	8	GLOBE	HYDRAU	CLOS	CLOS	O/C
	A1MSPV7411	A	5S109F00016	H-6	2	B	8	GLOBE	HYDRAU	CLOS	CLOS	O/C
	B1MSPV7421	A	5S109F00016	F-6	2	B	8	GLOBE	HYDRAU	CLOS	CLOS	O/C
	C1MSPV7431	A	5S109F00016	E-6	2	B	8	GLOBE	HYDRAU	CLOS	CLOS	O/C
MS04	Main Steam Bypass Isolation Valves											
	A1MSFV7432	A	5S109F00016	D-4	2	B	4	GLOBE	AIR	CLOS	CLOS	C
	A1MSFV7422	A	5S109F00016	F-4	2	B	4	GLOBE	AIR	CLOS	CLOS	C
	A1MSFV7442	A	5S109F00016	C-4	2	B	4	GLOBE	AIR	CLOS	CLOS	C
	A1MSFV7412	A	5S109F00016	G-4	2	B	4	GLOBE	AIR	CLOS	CLOS	C
PO01	RCP Motor Oil Return system											
	2R371TPO0217	P	5R149F05042	B-4	2	A	2	DIAPHR	MANUAL	CLOS	N/A	C
	2R371TPO0218	P	5R149F05042	B-3	2	A	2	DIAPHR	MANUAL	CLOS	N/A	C
PS01	Pressunzer Vapor Space Sample Inside Cntmt Isolation Valve (4450)											
	B1PSFV4450	A	5Z329Z00045	H-8	2	A	1	GATE	SOLENO	CLOS	CLOS	C
PS02	RCS Pressurizer and Hot Leg Sample ICIVs											
	C1PSFV4455	A	5Z329Z00045	E-8	2	A	1	GATE	SOLENO	CLOS	CLOS	C
	B1PSFV4451	A	5Z329Z00045	G-8	2	A	1	GATE	SOLENO	CLOS	CLOS	C
	C1PSFV4454	A	5Z329Z00045	F-8	2	A	1	GATE	SOLENO	CLOS	CLOS	C
PS03	RHR and Accumulator Sample ICIVs											
	C1PSFV4824	A	5Z329Z00045	B-8	2	A	1	GATE	SOLENO	CLOS	CLOS	C
	B1PSFV4823	A	5Z329Z00045	D-8	2	A	1	GATE	SOLENO	CLOS	CLOS	C
PS04	Pressurizer Liquid Sample OCIV											
	C1PSFV4451B	A	5Z329Z00045	F-7	2	A	1	GLOBE	AIR	CLOS	CLOS	C
PS05	Pressurizer Vapor Space Sample OCIV											
	C1PSFV4452	A	5Z329Z00045	G-7	2	A	1	GLOBE	AIR	CLOS	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
PS07	Primary sampling OCIVs (FV4461 and FV4466, FV 4456)										
	B1PSFV4466	A	5Z329Z00045	B-7	2	A	1	GLOBE	AIR	CLOS	CLOS	C
	C1PSFV4461	A	5Z329Z00045	D-7	2	A	1	GLOBE	AIR	CLOS	CLOS	C
	B1PSFV4456	A	5Z329Z00045	F-7	2	A	1	GLOBE	AIR	CLOS	CLOS	C
RA01	RCB Atmosphere Rad Monitor Inside and Outside Cntmt Isolation Valves										
	2V141TRA0004	A	5V14900017	G-4	2	A	1	BALL	MOTOR	OPEN	FAI	C
	2V141TRA0006	A	5V14900017	F-3	2	A	1	BALL	MOTOR	OPEN	FAI	C
	2V141TRA0001	A	5V14900017	G-4	2	A	1	BALL	MOTOR	OPEN	FAI	C
	2V141TRA0003	A	5V14900017	F-4	2	A	1	BALL	MOTOR	OPEN	FAI	C
RC01	Pressurizer Relief Tank Vent to Gaseous Waste Processing System Outside Cntmt Isolation Valve (3652)										
	B1RCFV3652	A	5R149F05004	F-4	2	A	1	BALL	AIR	CLOS	CLOS	C
RC02	Reactor Make-up Water to RCP Standpipe and PRT OCIV (3651)										
	B1RCFV3651	A	5R149F05004	E-2	2	A	3	BALL	AIR	OPEN	CLOS	C
RC03	RCS Pressurizer Safety Valves										
	N1RCPSV3450	A	5R149F05003	F-7	1	C	6	RELIEF	SELF	CLOS	N/A	O
	N1RCPSV3451	A	5R149F05003	F-6	1	C	6	RELIEF	SELF	CLOS	N/A	O
	N1RCPSV3452	A	5R149F05003	F-4	1	C	6	RELIEF	SELF	CLOS	N/A	O
RC04	RCS Power Operated Relief Valves										
	A1RCPCV0655A	A	5R149F05003	D-8	1	B	3	GLOBE	SOLENO	CLOS	CLOS	O/C
	B1RCPCV0656A	A	5R149F05003	E-8	1	B	3	GLOBE	SOLENO	CLOS	CLOS	O/C
RC05	RCS PORV Block Valves										
	1R141XRC0001A	A	5R149F05003	E-7	1	B	3	GATE	MOTOR	OPEN	FAI	C
	1R141XRC0001B	A	5R149F05003	E-8	1	B	3	GATE	MOTOR	OPEN	FAI	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
RC06	Reactor Vessel Head Vent Isolation Valves											
	A1RCHV3657A	A	5R149F05001	E-4	2	B	1	GLOBE	SOLENO	CLOS	CLOS	C
	A1RCHV3658A	A	5R149F05001	E-3	2	B	1	GLOBE	SOLENO	CLOS	CLOS	C
	B1RCHV3657B	A	5R149F05001	E-4	1	B	1	GLOBE	SOLENO	CLOS	CLOS	C
	B1RCHV3658B	A	5R149F05001	E-3	1	B	1	GLOBE	SOLENO	CLOS	CLOS	C
RC07	Reactor Vessel Head Vent Throttle Valves											
	A1RCHCV0601	A	5R149F05001	E-2	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O/C
	B1RCHCV0602	A	5R149F05001	D-2	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O/C
RC08	Pressurizer Relief Tank Vent to Gaseous Waste Processing System Inside Cntmt Isolation Valve (3652)											
	A1RCFV3653	A	5R149F05004	F-4	2	A	3	GATE	SOLENO	CLOS	CLOS	C
RC09	Reactor Make-up Water to RCP Standpipe and PRT Outside Containment Check Valve.											
	2R141XRC0046	A	5R149F05004	E-4	2	A/C	3	CHECK	SELF	OPEN	N/A	C
RD01	RCS Vacuum Degassing from RCB ICIV and OCIV											
	2R341TRD0008	P	5R149F05046	E-7	2	A	3	BALL	MANUAL	CLOS	N/A	C
	2R341TRD0010	P	5R149F05046	E-7	2	A	3	BALL	MANUAL	CLOS	N/A	C
RH01	Residual Heat Removal Heat Exchange Control Valve (Trains A, B, and C)											
	B1RHHCV0865	A	5R169F20000	D-4	2	B	8	BUTTER	AIR	OPEN	OPEN	O
	C1RHHCV0866	A	5R169F20000	G-4	2	B	8	BUTTER	AIR	OPEN	OPEN	O
	A1RHHCV0864	A	5R169F20000	B-4	2	B	8	BUTTER	AIR	OPEN	OPEN	O
RH02	Residual Heat Removal Outlet to CVCS Letdown Valves											
	2R161XRH0066B	A	5R169F20000	D-2	2	B	4	GATE	MOTOR	OPEN	FAI	C
	2R161XRH0066A	A	5R169F20000	A-4	2	B	4	GATE	MOTOR	OPEN	FAI	C
RH03	Residual Heat Removal Pump Miniflow MOVs (Trains A, B, and C)											
	2R161XRH0067A	A	5R169F20000	A-6	2	B	4	GATE	MOTOR	CLOS	FAI	O/C
	2R161XRH0067B	A	5R169F20000	D-6	2	B	4	GATE	MOTOR	CLOS	FAI	O/C
	2R161XRH0067C	A	5R169F20000	F-6	2	B	4	GATE	MOTOR	CLOS	FAI	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
RH04	Residual Heat Removal Inlet Isolation MOVs (Class 1 Boundary) Trains A, B, and C										
	1R161XRH0060A	A	5R169F20000	B-8	1 A	12	GATE	MOTOR	CLOS	FAI	O/C
	1R161XRH0060B	A	5R169F20000	D-8	1 A	12	GATE	MOTOR	CLOS	FAI	O/C
	1R161XRH0060C	A	5R169F20000	G-8	1 A	12	GATE	MOTOR	CLOS	FAI	O/C
	1R161XRH0061A	A	5R169F20000	B-8	1 A	12	GATE	MOTOR	CLOS	FAI	O/C
	1R161XRH0061B	A	5R169F20000	D-8	1 A	12	GATE	MOTOR	CLOS	FAI	O/C
	1R161XRH0061C	A	5R169F20000	G-8	1 A	12	GATE	MOTOR	CLOS	FAI	O/C
RH05	Residual Heat Removal Pump Miniflow Check Valves (Trains A, B, and C)										
	2R161XRH0068B	A	5R169F20000	D-6	2 C	4	CHECK	SELF		N/A	O
	2R161XRH0068C	A	5R169F20000	F-6	2 C	4	CHECK	SELF		N/A	O
	2R161XRH0068A	A	5R169F20000	A-6	2 C	4	CHECK	SELF		N/A	O
RH06	Residual Heat Removal Pump Discharge Check Valves (Trains A, B, and C)										
	2R161XRH0065A	A	5R169F20000	B-6	2 C	8	CHECK	SELF	CLOS	N/A	O
	2R161XRH0065B	A	5R169F20000	D-6	2 C	8	CHECK	SELF	CLOS	N/A	O
	2R161XRH0065C	A	5R169F20000	G-6	2 C	8	CHECK	SELF	CLOS	N/A	O
RH07	Low Head Safety Injection to RCS Hot Leg Check Valves (Trains A, B, and C)										
	1R161XRH0020A	A	5R169F20000	C-2	1 A/C	8	CHECK	SELF	CLOS	N/A	O/C
	1R161XRH0020B	A	5R169F20000	E-2	1 A/C	8	CHECK	SELF	CLOS	N/A	O/C
	1R161XRH0020C	A	5R169F20000	H-2	1 A/C	8	CHECK	SELF	CLOS	N/A	O/C
RH08	Cold Leg Injection Check Valves (Trains A, B, and C)										
	1R161XRH0032C	A	5R169F20000	G-2	1 A/C	8	CHECK	SELF	CLOS	N/A	O/C
	1R161XRH0032A	A	5R169F20000	B-2	1 A/C	8	CHECK	SELF	CLOS	N/A	O/C
	1R161XRH0032B	A	5R169F20000	D-2	1 A/C	8	CHECK	SELF	CLOS	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
RH09	RHR Return to RWST CIVs											
	2R161XRH0064B	P	5R169F20000	D-5	2	A	8	GATE	MANUAL	CLOS	N/A	C
	2R161XRH0063B	P	5R169F20000	D-6	2	A	8	GATE	MANUAL	CLOS	N/A	C
	2R161XRH0064C	P	5R169F20000	F-5	2	A	8	GATE	MANUAL	CLOS	N/A	C
	2R161XRH0063C	P	5R169F20000	F-6	2	A	8	GATE	MANUAL	CLOS	N/A	C
RH10	RHR Pump A, B, C Discharge Relief Valves											
	N1RHPSV3851	A	5R169F20000	C6	2	C	3	RELIEF	SELF	CLOS	N/A	O
	N1RHPSV3853	A	5R169F20000	H6	2	C	3	RELIEF	SELF	CLOS	N/A	O
	N1RHPSV3852	A	5R169F20000	E6	2	C	3	RELIEF	SELF	CLOS	N/A	O
RH11	RHR Heat Exchanger A, B, C Bypass Relief Valves											
	N1RHPSV3944	A	5R169F20000	H4	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
	N1RHPSV3943	A	5R169F20000	F4	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
	N1RHPSV3934	A	5R169F20000	C4	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
RM01	Reactor Make-up Water Non-essential services Isolation Valves											
	B1RMFV7663	A	5R279F05033	F-7	3	B	4	GLOBE	AIR	OPEN	CLOS	C
	C1RMFV7659	A	5R279F05033	F-7	3	B	4	GLOBE	AIR	OPEN	CLOS	C
SA01	Service Air to RCB Inside Cntmt Isolation Check Valve											
	2Q101TSA0505	P	5N109F05041	D-4	2	A/C	2	CHECK	SELF	CLOS	N/A	C
SA02	Service Air to RCB Outside Cntmt Isolation Manual Valve											
	2Q101TSA0504	P	5N109F05041	C-4	2	A	2	BALL	MANUAL	CLOS	N/A	C
SB01	Steam Generator Bulk Water Sample Outside Cntmt Isolation Valves											
	B1SBFV4188	A	5S209F20	H-1	2	B	0.375	GATE	AIR	CLOS	CLOS	C
	C1SBFV4187	A	5S209F20	D-1	2	B	0.375	GATE	AIR	CLOS	CLOS	C
	A1SBFV4189	A	5S209F20	H-5	2	B	0.375	GATE	AIR	CLOS	CLOS	C
	A1SBFV4186	A	5S209F20	D-5	2	B	0.375	GATE	AIR	CLOS	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
SB02	Steam Generator Blowdown Outside Cntmt Isolation Valves										
	A1SBFV4150	A	5S209F20001	C-5	2 B	4	GATE	AIR	CLOS	CLOS	C
	A1SBFV4153	A	5S209F20001	F-5	2 B	4	GATE	AIR	CLOS	CLOS	C
	C1SBFV4151	A	5S209F20001	C-2	2 B	4	GATE	AIR	CLOS	CLOS	C
	B1SBFV4152	A	5S209F20001	F-2	2 B	4	GATE	AIR	CLOS	CLOS	C
SD01	Starting Air Receiver Inlet Check Valves										
	3Q151XSD0004B	A	5Q159F22546	E-4	3 A/C	1	CHECK	SELF	EITH	N/A	C
	3Q151XSD0003B	A	5Q159F22546	E-5	3 A/C	1	CHECK	SELF	EITH	N/A	C
	3Q151XSD0004A	A	5Q159F22546	E-7	3 A/C	1	CHECK	SELF	EITH	N/A	C
	3Q151XSD0004C	A	5Q159F22546	E-1	3 A/C	1	CHECK	SELF	EITH	N/A	C
	3Q151XSD0003C	A	5Q159F22546	E-2	3 A/C	1	CHECK	SELF	EITH	N/A	C
	3Q151XSD0003A	A	5Q159F22546	E-7	3 A/C	1	CHECK	SELF	EITH	N/A	C
SI01	Safety Injection System Test Line Containment Isolation Valves										
	A1SIFV3971	A	5N129F05013	F-7	2 A	0.75	GLOBE	AIR	CLOS	CLOS	C
	B1SIFV3970	A	5N129F05016	F-7	2 A	0.75	GLOBE	AIR	CLOS	CLOS	C
SI02	Accumulator Nitrogen Supply Outside Cntmt Isolation Valve (3983)										
	A1SIFV3983	A	5N129F05016	G-2	2 A	1	GLOBE	AIR	CLOS	CLOS	C
SI03	Accumulator Nitrogen Supply Inside Cntmt Isolation Check Valve (SI0058)										
	2N121TSI0058	A	5N129F05016	G-2	2 A/C	1	CHECK	SELF	CLOS	N/A	C
SI04	Reactor Water Storage Tank Clean-Up by SFPCCS Isolation Valves										
	A1SIFV3936	A	5N129F05013	F-2	2 B	3	GLOBE	AIR	EITH	CLOS	C
	B1SIFV3937	A	5N129F05013	F-2	2 B	3	GLOBE	AIR	EITH	CLOS	C
SI05	Residual Heat Exchanger Bypass Valves (Trains A, B, and C)										
	B1SIFCV0852	A	5R129F20000	E-5	2 B	8	BUTTER	AIR	CLOS	CLOS	C
	C1SIFCV0853	A	5R169F20000	H-5	2 B	8	BUTTER	AIR	CLOS	CLOS	C
	A1SIFCV0851	A	5R169F20000	C-5	2 B	8	BUTTER	AIR	CLOS	CLOS	C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &	QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
SI06	Low Head Safety Injection Pump Discharge Outside Cntmt Isolation Valves (Trains A, B, and C)										
	2N121XSI0018A	A	5N129F05013	C-4	2	A 8	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0018B	A	5N129F05014	D-4	2	A 8	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0018C	A	5N129F05015	D-4	2	A 8	GATE	MOTOR	OPEN	FAI	O/C
SI07	Safety Injection Emergency Sump Outside Cntmt Isolation MOVs (Trains A, B, and C)										
	2N121XSI0016A	A	5N129F05013	B-4	2	A 16	GATE	MOTOR	CLOS	FAI	O/C
	2N121XSI0016B	A	5N129F05014	B-4	2	A 16	GATE	MOTOR	CLOS	FAI	O/C
	2N121XSI0016C	A	5N129F05015	B-4	2	A 16	GATE	MOTOR	CLOS	FAI	O/C
SI08	High Head Safety Injection Pump Discharge Outside Cntmt Isolation Valves (Trains A, B, and C)										
	2N121XSI0004A	A	5N129F05013	F-5	2	A 6	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0004B	A	5N129F05014	G-4	2	A 6	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0004C	A	5N129F05015	F-5	2	A 6	GATE	MOTOR	OPEN	FAI	O/C
SI09	High Head Safety Injection Cold Leg Isolation (Trains A, B, and C)										
	2N121XSI0006A	A	5N129F05013	E-7	2	B 6	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0006B	A	5N129F05014	F-7	2	B 6	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0006C	A	5N129F05015	E-7	2	B 6	GATE	MOTOR	OPEN	FAI	O/C
SI10	High Head Safety Injection Hot Leg Isolation (Trains A, B, and C)										
	2N121XSI0008C	A	5N129F05015	F-7	2	B 6	GATE	MOTOR	CLOS	FAI	O/C
	2N121XSI0008A	A	5N129F05013	F-7	2	B 6	GATE	MOTOR	CLOS	FAI	O/C
	2N121XSI0008B	A	5N129F05014	G-7	2	B 6	GATE	MOTOR	CLOS	FAI	O/C
SI11	Residual Heat Removal Heat Exchanger Return to Hot Leg MOV (Trains A, B, and C)										
	2R161XRH0019B	A	5R169F20000	E-3	2	B 8	GATE	MOTOR	CLOS	FAI	O
	2R161XRH0019C	A	5R169F20000	H-3	2	B 8	GATE	MOTOR	CLOS	FAI	O
	2R161XRH0019A	A	5R169F20000	C-3	2	B 8	GATE	MOTOR	CLOS	FAI	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
SI12	Cold Leg Injection MOVs (Trains A, B, C)											
	2R161XRH0031A	A	5R169F20000	B-3	2	B	8	GATE	MOTOR	OPEN	FAI	O/C
	2R161XRH0031C	A	5R169F20000	G-3	2	B	8	GATE	MOTOR	OPEN	FAI	O/C
	2R161XRH0031B	A	5R169F20000	D-3	2	B	8	GATE	MOTOR	OPEN	FAI	O/C
SI13	High Head Safety Injection Pump Recirc Isolation											
	2N121TSI0012C	A	5N129F05015	G-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0011C	A	5N129F05015	G-4	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0011B	A	5N129F05014	H-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0012A	A	5N129F05013	F-4	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0011A	A	5N129F05013	F-4	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0012B	A	5N129F05014	H-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
SI14	Low Head Safety Injection Pump Recirc Isolation											
	2N121TSI0014C	A	5N129F05015	D-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0013A	A	5N129F05013	D-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0013B	A	5N129F05014	E-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0013C	A	5N129F05015	D-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0014A	A	5N129F05013	D-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
	2N121TSI0014B	A	5N129F05014	E-3	2	B	2	DIAPHR	MOTOR	OPEN	FAI	O/C
SI15	Safety Injection System Reactor Water Storage Tank Isolation											
	2N121XSI0001C	A	5N129F05015	H-2	2	B	16	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0001A	A	5N129F05013	G-3	2	B	16	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0001B	A	5N129F05014	H-2	2	B	16	GATE	MOTOR	OPEN	FAI	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
SI16	Accumulator Nitrogen Vent Valves (Trains A, B, and C)											
	A1SIPV3928	A	5N129F05016	C-4	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O
	B1SIPV3930	A	5N129F05016	G-4	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O
	C1SIPV3929	A	5N129F05016	E-4	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O
SI17	Accumulator Nitrogen Vent Back-Up Valve (899)											
	B1SIHV0899	A	5N129F05016	F-2	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O
SI18	High Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)											
	2N121XSI0005C	A	5N129F05015	F-5	2	A/C	6	CHECK	SELF	CLOS	N/A	O/C
	2N121XSI0005B	A	5N129F05014	G-4	2	A/C	6	CHECK	SELF	CLOS	N/A	O/C
	2N121XSI0005A	A	5N129F05013	F-6	2	A/C	6	CHECK	SELF	CLOS	N/A	O/C
SI19	High Head Safety Injection Pump Discharge Check to Cold Leg (Class 1 Boundary) (Trains A, B, and C)											
	1N121XSI0007A	A	5N129F05013		1	A/C	6	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0007C	A	5N129F05015	E-7	1	A/C	6	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0007B	A	5N129F05014	F-7	1	A/C	6	CHECK	SELF	CLOS	N/A	O/C
SI20	High Head Safety Injection Pump Discharge Check to Hot Leg (Class 1 Boundary) (Trains A, B, and C)											
	1N121XSI0009C	A	5N129F05015	F-7	1	A/C	6	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0009A	A	5N129F05013	F-7	1	A/C	6	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0009B	A	5N129F05014	G-7	1	A/C	6	CHECK	SELF	CLOS	N/A	O/C
SI21	Low Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)											
	2N121XSI0030B	A	5N129F05014	D-4	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	2N121XSI0030C	A	5N129F05015	D-4	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	2N121XSI0030A	A	5N129F05013	D-5	2	A/C	8	CHECK	SELF	CLOS	N/A	O/C
SI22	Safety Injection System Pumps Discharge Check to Hot Leg (Class 1 Boundary) (Trains A, B, and C)											
	1N121XSI0010A	A	5N129F05013	F-8	1	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0010B	A	5N129F05014	G-8	1	A/C	8	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0010C	A	5N129F05015	F-8	1	A/C	8	CHECK	SELF	CLOS	N/A	O/C

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
SI23	Accumulator to Cold Leg Inboard Check Valves (Trains A, B, and C)											
	1N121XSI0038A	A	5N129F05016	F-7	1	A/C	12	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0038B	A	5N129F05016	D-7	1	A/C	12	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0038C	A	5N129F05016	B-7	1	A/C	12	CHECK	SELF	CLOS	N/A	O/C
SI24	Accumulator Tank Discharge MOVs (Trains A, B, and C)											
	2N121XSI0039B	A	5N129F05016	D-5	2	B	12	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0039C	A	5N129F05016	B-5	2	B	12	GATE	MOTOR	OPEN	FAI	O/C
	2N121XSI0039A	A	5N129F05016	F-5	2	B	12	GATE	MOTOR	OPEN	FAI	O/C
SI25	Safety Injection Pumps Suction Check Valves (Trains A, B, and C)											
	2N121XSI0002C	A	5N129F05015	H-2	2	C	16	CHECK	SELF	CLOS	N/A	O/C
	2N121XSI0002B	A	5N129F05014	H-2	2	C	16	CHECK	SELF	CLOS	N/A	O/C
	2N121XSI0002A	A	5N129F05013	G-3	2	C	16	CHECK	SELF	CLOS	N/A	O/C
SI26	Accumulator Nitrogen Vent Header Bleed Valve (HCV-0900)											
	A1SIHCV0900	A	5N129F05016	G-2	2	B	1	GLOBE	SOLENO	CLOS	CLOS	O
SI27	Accumulator to Cold Leg Outboard Check Valves (Trains A, B, and C)											
	1N121XSI0046B	A	5N129F05016	D-7	1	A/C	12	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0046C	A	5N129F05016	B-7	1	A/C	12	CHECK	SELF	CLOS	N/A	O/C
	1N121XSI0046A	A	5N129F05016	F-6	1	A/C	12	CHECK	SELF	CLOS	N/A	O/C
SI28	Safety Injection Train A, B, C Pumps Suction Header Relief Valves											
	N1SIPSV3941	A	5N129F05015	C2	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
	N1SIPSV3939	A	5N129F05014	D2	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
	N1SIPSV3935	A	5N129F05013	C2	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
SI29	HHSI Pump A, B, C Disch to Loop A, B, C Hot/Cold Leg Relief Valves											
	N1SIPSV3942	A	5N129F05015	F6	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
	N1SIPSV3940	A	5N129F05014	F6	2	C	0.75	RELIEF	SELF	CLOS	N/A	O
	N1SIPSV3938	A	5N129F05013	G6	2	C	0.75	RELIEF	SELF	CLOS	N/A	O

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
SI30	Safety Injection Accumulator A, B, C Relief Valves											
	N1SIPSV3980	A	5N129F05016	E4	2	C	1	RELIEF	SELF	CLOS	N/A	O
	N1SIPSV3981	A	5N129F05016	G4	2	C	1	RELIEF	SELF	CLOS	N/A	O
	N1SIPSV3977	A	5N129F05016	C4	2	C	1	RELIEF	SELF	CLOS	N/A	O
SL1	High Pressure Sludge Lancing CIVs											
	2S201TSL0004	P	5S129F05057	B-6	2	A	2	GATE	MANUAL	CLOS	N/A	C
	2S201TSL0002	P	5S129F05057	B-5	2	A	2	GATE	MANUAL	CLOS	N/A	C
SL2	Low Pressure Sludge Lancing CIVs											
	2S201TSL0027	P	5S129F05057	F-6	2	A	6	GATE	MANUAL	CLOS	N/A	C
	2S201TSL0029	P	5S129F05057	F-5	2	A	6	GATE	MANUAL	CLOS	N/A	C
	2S201TSL0014	P	5S129F05057	D-6	2	A	6	GATE	MANUAL	CLOS	N/A	C
	2S201TSL0012	P	5S129F05057	D-5	2	A	6	GATE	MANUAL	CLOS	N/A	C
WL01	RCDT Vent Outside Containment Isolation Valve											
	B1WLFV4919	A	5R309F05022	G-5	2	A	1	GLOBE	AIR	OPEN	CLOS	C
WL02	RCDT To LWPS Outside Containment Isolation Valve											
	B1WLFV4913	A	5R309F05022	F-3	2	A	3	GLOBE	AIR	OPEN	CLOS	C
WL03	RCDT To LWPS Inside Containment Isolation Valve											
	2R301TWL0312	A	5R309F05022	E-3	2	A	3	GATE	MOTOR	OPEN	FAI	C
WL04	RCDT Vent Inside Containment Isolation Valve											
	A1WLFV4920	A	5R309F05022	G-6	2	A	1	GLOBE	SOLENO	OPEN	CLOS	C
XC01	Reactor Containment Personal Air-lock Safety Check Valves (XC-48, 49)											
	2C261XXC0049	A	5C269F05060	C-7	2	A/C	1	CHECK	SELF	CLOS	N/A	
	2C261XXC0048	A	5C269F05060	C-7	2	A/C	1	CHECK	SELF	CLOS	N/A	

GROUP	GROUP DESCRIPTION / TAGTPNS	Act/Pass	P&ID # &		QClass	IST	VALVE DATA Size	Type	Actuator	VALVE Normal	Failsafe	Safety Func.
XC02	Reactor Containment Air-lock Air Supply Containment Isolation Valves (FV1025, 26,27,28)											
	A1XCFV1028	A	5C269F05060	C-4	2	A	0.5	GLOBE	SOLENO	OPEN	CLOS	C
	A1XCFV1027	A	5C269F05060	C-4	2	A	0 5	GLOBE	SOLENO	OPEN	CLOS	C
	A1XCFV1026	A	5C269F05060	F-4	2	A	0.5	GLOBE	SOLENO	OPEN	CLOS	C
	A1XCFV1025	A	5C269F05060	G-4	2	A	0 5	GLOBE	SOLENO	OPEN	CLOS	C

IST Pump Plan

GROUP System Pump Safety Function	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
AFMDP	Motor Driven AFW Pumps							
AF	3S141MPA02	5S141F00024	C-7	MOTOR DRIVEN AUX FEEDWATER PUMP NO. 12	3	High	Q	Q

The motor driven AFW pump is capable of delivering a minimum required feedwater flow of 540 gpm (UFSAR Section 6.2.1.4.5) to one steam generator during Loss Of Main Feedwater (w/wo offsite power available), Feedwater Line Break, Steam Line Break, Loss Of All AC Power, Control Room Evacuation, and Loss Of Coolant Accident events (DBD Section 3 2.8.9). The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant System from normal zero load temperatures to a hot leg temperature of approximately 350F (DBD Section 3 2.1.5).

AF	3S141MPA03	5S141F00024	B-7	MOTOR DRIVEN AUX FEEDWATER PUMP NO. 13	3	High	Q	Q

The motor driven AFW pump is capable of delivering a minimum required feedwater flow of 540 gpm (UFSAR Section 6 2.1.4 5) to one steam generator during Loss Of Main Feedwater (w/wo offsite power available), Feedwater Line Break, Steam Line Break, Loss Of All AC Power, Control Room Evacuation, and Loss Of Coolant Accident events (DBD Section 3 2 8.9). The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant System from normal zero load temperatures to a hot leg temperature of approximately 350F (DBD Section 3.2.1.5).

AF	3S141MPA01	5S141F00024	F-7	MOTOR DRIVEN AUX FEEDWATER PUMP NO. 11	3	High	Q	Q

The motor driven AFW pump is capable of delivering a minimum required feedwater flow of 540 gpm (UFSAR Section 6.2.1.4.5) to one steam generator during Loss Of Main Feedwater (w/wo offsite power available), Feedwater Line Break, Steam Line Break, Loss Of All AC Power, Control Room Evacuation, and Loss Of Coolant Accident events (DBD Section 3.2.8.9). The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant System from normal zero load temperatures to a hot leg temperature of approximately 350F (DBD Section 3 2.1.5).

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
AFTDP	Turbine Driven AFW Pump							
AF	3S141MPA04	5S141F00024	G-7	TURBINE DRIVEN AUX FEEDWATER PUMP	3	High	Q	Q

The turbine driven AFW pump is capable of delivering a minimum required feedwater flow of 540 gpm (UFSAR Section 6.2.1.4.5) to one steam generator during Loss Of Main Feedwater (w/wo offsite power available), Feedwater Line Break, Steam Line Break, Loss Of All AC Power, Control Room Evacuation, and Loss Of Coolant Accident events (DBD Section 3 2.8.9). The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant System from normal zero load temperatures to a hot leg temperature of approximately 350F (DBD Section 3 2.1.5).

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
CCPP	Component Cooling Water Pumps							
CC	3R201NPA101A	5R209F05017	B-7	COMPONENT COOLING WATER PUMP 1A	3	Medium	Q	54MO
Provides 14,070 gpm of cooling water (DBD 4.1.6 2) to ESF components under safe shutdown and accident conditions.								
CC	3R201NPA101B	5R209F05018	B-7	COMPONENT COOLING WATER PUMP 1B	3	Medium	Q	54MO
Provides 14,070 gpm of cooling water (DBD 4.1.6 2) to ESF components under safe shutdown and accident conditions.								
CC	3R201NPA101C	5R209F05019	B-7	COMPONENT COOLING WATER PUMP 1C	3	Medium	Q	54MO
Provides 14,070 gpm of cooling water (DBD 4.1.6.2) to ESF components under safe shutdown and accident conditions.								

GROUP System	PUMP Tag Pump Safety Function	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
CHPP	Chilled Water Pumps							
CH	3V111VPA004	5V119V10001	F-7	ESSENTIAL CHILL WATER PUMP 11A	3	Medium	Q	54MO

1.Provides the motive force for moving chilled water in a closed loop through the essential chillers and cooling coils of the various safety-related air handling units (AHUs).

2.Remain functional during and following all design basis accidents and plant safe shutdown.

NOTE: Receives an auto start signal upon SI initiation signal. Design flow is 981 gpm (per DBD).

CH	3V111VPA005	5V119V10001	C-7	ESSENTIAL CHILL WATER PUMP 11B	3	Medium	Q	54MO

1. Provides the motive force for moving chilled water in a closed loop through the essential chillers and cooling coils of the various safety-related air handling units (AHUs).

2. Remain functional during and following all design basis accidents and plant safe shutdown.

NOTE: Receives an auto start signal upon SI initiation signal. Design flow is 981 gpm (per DBD).

CH	3V111VPA006	5V119V10001	A-7	ESSENTIAL CHILL WATER PUMP 11C	3	Medium	Q	54MO

1. Provides the motive force for moving chilled water in a closed loop through the essential chillers and cooling coils of the various safety related air handling units (AHUs).

2. Remain functional during and following all design basis accidents and plant safe shutdown.

NOTE: Receives an auto start signal upon SI initiation signal. Design flow is 981 gpm (per DBD).

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
CSPP	Containment Spray pumps							
CS	2N101NPA101A	5N109F05037	G-3	CONTAINMENT SPRAY PUMP 1A	2	Low	6M	54MO

1. Supply borated water from the Reactor Water Storage Tank to the Containment Spray ring header during the short-term injection phase upon receipt of a "HI-3" containment high pressure signal during a steam break inside containment or a LOCA to reduce containment pressure.

2. Recirculate borated water from the containment sumps to the Containment Spray header during the long-term recirculation phase subsequent to a main steam break inside of containment or a LOCA to reduce containment pressure.

CS	2N101NPA101B	5N109F05037	D-3	CONTAINMENT SPRAY PUMP 1B	2	Low	6M	54MO

1. Supply borated water from the Reactor Water Storage Tank to the Containment Spray ring header during the short-term injection phase upon receipt of a "HI-3" containment high pressure signal during a steam break inside containment or a LOCA to reduce containment pressure.

2. Recirculate borated water from the containment sumps to the Containment Spray header during the long-term recirculation phase subsequent to a main steam break inside of containment or a LOCA to reduce containment pressure

CS	2N101NPA101C	5N109F05037	B-3	CONTAINMENT SPRAY PUMP 1C	2	Low	6M	54MO

1. Supply borated water from the Reactor Water Storage Tank to the Containment Spray ring header during the short-term injection phase upon receipt of a "HI-3" containment high pressure signal during a steam break inside containment or a LOCA to reduce containment pressure.

2. Recirculate borated water from the containment sumps to the Containment Spray header during the long-term recirculation phase subsequent to a main steam break inside of containment or a LOCA to reduce containment pressure.

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
CVBAT	Boric Acid Transfer Pumps							
CV	3R171NPA103B	5R179F05009	C-4	BORIC ACID TRANSFER PUMP 1B	3	Low	Q	36MO
Transfer 110 gpm of boric acid solution from the boric acid tanks to the suction of the charging pumps during safety function boration operations (DBD 3 2.1 4).								
CV	3R171NPA103A	5R179F05009	D-4	BORIC ACID TRANSFER PUMP 1A	3	Low	Q	36MO
Transfer 110 gpm of boric acid solution from the boric acid tanks to the suction of the charging pumps during safety function boration operations (DBD 3.2.1.4).								

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
CVCP	Centrifugal Charging Pump							
CV	2R171NPA101B	5R179F05007	D-5	CENTRIFUGAL CHARGING PUMP 1B	2	Medium	Q	36MO
Provide 112 gpm of boric acid solution to the Reactor Coolant System for boration through the charging flowpath and the seal injection flow path (DBD 3 2 2.1.4).								
CV	2R171NPA101A	5R179F05007	B-5	CENTRIFUGAL CHARGING PUMP 1A	2	Medium	Q	36MO
Provide 112 gpm of boric acid solution to the Reactor Coolant System for boration through the charging flowpath and the seal injection flow path (DBD 3 2.2.1.4).								

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
EWPP	EW Pumps							
EW	3R281NPA101A	5N109F05038	C-3	ESSENTIAL COOLING WATER PUMP 1A	3	High	Q	Q

Takes a suction from the Emergency Cooling Pond and delivers cooling water to Emergency Diesel Generator heat exchangers, Essential Chillers, and Component Cooling Water heat exchangers during normal operating, shutdown, and following accident conditions. The ECW pumps receive an auto start signal upon an SI initiation signal.

Design Flow: 19,280 gpm (per DBD)

EW	3R281NPA101C	5N109F05038	C-3	ESSENTIAL COOLING WATER PUMP 1C	3	High	Q	Q

Takes a suction from the Emergency Cooling Pond and delivers cooling water to Emergency Diesel Generator heat exchangers, Essential Chillers, and Component Cooling Water heat exchangers during normal operating, shutdown, and following accident conditions. The ECW pumps receive an auto start signal upon an SI initiation signal.

Design Flow: 19,280 gpm (per DBD)

EW	3R281NPA101B	5N109F05038	C-3	ESSENTIAL COOLING WATER PUMP 1B	3	High	Q	Q

Takes a suction from the Emergency Cooling Pond and delivers cooling water to Emergency Diesel Generator heat exchangers, Essential Chillers, and Component Cooling Water heat exchangers during normal operating, shutdown, and following accident conditions. The ECW pumps receive an auto start signal upon an SI initiation signal.

Design Flow: 19,280 gpm (per DBD)

GROUP *System*	*PUMP Tag*	*P&ID Drawing*	*Coord.*	*PUMP NAME*	*CLAS*	*IST Rank*	*Frequency*	*RI-IST Freq.*
Pump Safety Function								
EWSW	ECW Screen Wash Pump							
EW	3R281NPA102A	5N109F05039	D-7	ECW SCREEN WASH BOOSTER PUMP 1A	3	Low	Q	54MO

The ECW Screen Wash Booster Pumps take water from the ECW pump discharge header and supply it to the ECW travelling screens at the required pressure and flow rate to clean the ECW travelling water screens. The pumps receive an auto start signal upon an SI initiation and will run continuously.

Design Flow: 176 gpm (per DBD)

EW	3R281NPA102B	5N109F05039	D-4	ECW SCREEN WASH BOOSTER PUMP 1B	3	Low	Q	54MO

The ECW Screen Wash Booster Pumps take water from the ECW pump discharge header and supply it to the ECW travelling screens at the required pressure and flow rate to clean the ECW travelling water screens. The pumps receive an auto start signal upon an SI initiation and will run continuously.

Design Flow: 176 gpm (per DBD)

EW	3R281NPA102C	5N109F05039	D-2	ECW SCREEN WASH BOOSTER PUMP 1C	3	Low	Q	54MO

The ECW Screen Wash Booster Pumps take water from the ECW pump discharge header and supply it to the ECW travelling screens at the required pressure and flow rate to clean the ECW travelling water screens. The pumps receive an auto start signal upon an SI initiation and will run continuously.

Design Flow: 176 gpm (per DBD)

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
FCPP	Spent fuel pool cooling pumps							
FC	3R211NPA101A	5R219F05028	G-3	SPENT FUEL COOLING PUMP 1A	3	Low	Q	36MO

Circulates the spent fuel water through filter demineralizers to maintain purity and visual clarity of the spent fuel pool water, and through heat exchangers to remove the normal and maximum design heat load from the spent fuel pool.

Design Flow: 2500 gpm (UFSAR Table 9.1-2)

FC	3R211NPA101B	5R219F05028	D-3	SPENT FUEL COOLING PUMP 1B	3	Low	Q	36MO

Circulates the spent fuel water through filter demineralizers to maintain purity and visual clarity of the spent fuel pool water, and through heat exchangers to remove the normal and maximum design heat load from the spent fuel pool.

Design Flow: 2500 gpm (UFSAR Table 9.1-2)

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
RHPP	RHR Pumps							
RH	2R161NPA101B	5R169F20000	E-6	RHR PUMP 1B	2	Medium	6M	54MO
Circulates 3000 gpm for final phase of reactor cooldown following a SBLOCA, SGTR, MSLB, FWLB, and in the event of a fire.								
RH	2R161NPA101C	5R169F20000	G-6	RHR PUMP 1C	2	Medium	6M	54MO
Circulates 3000 gpm for final phase of reactor cooldown following a SBLOCA, SGTR, MSLB, FWLB, and in the event of a fire								
RH	2R161NPA101A	5R169F20000	B-6	RHR PUMP 1A	2	Medium	6M	54MO
Circulates 3000 gpm for final phase of reactor cooldown following a SBLOCA, SGTR, MSLB, FWLB, and in the event of a fire.								

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
SIHHP	High Head Safety Injection Pumps (Trains A, B, and C)							
SI	2N121NPA101A	5N129F05013	F-4	HIGH HEAD SAFETY INJECTION PUMP 1A	2	High	Q	Q
1. Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. (Flow is required to be greater than 1470 gpm and less than 1620 gpm per T.S. Surveillance Requirement 4.5 2g) 2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hotleg recirculation phase.								
SI	2N121NPA101B	5N129F05014	G-3	HIGH HEAD SAFETY INJECTION PUMP 1B	2	High	Q	Q
1. Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. (Flow is required to be greater than 1470 gpm and less than 1620 gpm per T.S. Surveillance Requirement 4 5.2g.) 2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long term core cooling/cold and hotleg recirculation phase.								
SI	2N121NPA101C	5N129F05015	F-3	HIGH HEAD SAFETY INJECTION PUMP 1C	2	High	Q	Q
1. Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. (Flow is required to be greater than 1470 gpm and less than 1620 gpm per T S. Surveillance Requirement 4.5.2g.) 2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hotleg recirculation phase.								

GROUP System	PUMP Tag	P&ID Drawing	Coord.	PUMP NAME	CLAS	IST Rank	Frequency	RI-IST Freq.
Pump Safety Function								
SILHP	Low Head Safety Injection Pumps (Trains A, B, and C)							
SI	2N121NPA102C	5N129F05015	C-3	LOW HEAD SAFETY INJECTION PUMP 1C	2	Medium	Q	54MO

1. Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. (Flow is required to be greater than 2550 gpm and less than 2800 gpm per T.S. Surveillance Requirement 4.5 2g.)

2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hotleg recirculation phase.

SI	2N121NPA102A	5N129F05013	C-3	LOW HEAD SAFETY INJECTION PUMP 1A	2	Medium	Q	54MO

1.Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. (Flow is required to be greater than 2550 gpm and less than 2800 gpm per T.S. Surveillance Requirement 4.5.2g.)

2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hotleg recirculation phase.

SI	2N121NPA102B	5N129F05014	D-3	LOW HEAD SAFETY INJECTION PUMP 1B	2	Medium	Q	54MO

1. Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. (Flow is required to be greater than 2550 gpm and less than 2800 gpm per T.S. Surveillance Requirement 4.5.2g.)

2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hotleg recirculation phase.

Test Description and Frequency

GROUP	*Test*	*IST Rank*	*Frequency*	*RI-IST Frequency*	*IST TEST DESCRIPTION*
AF01	Auxiliary Feedwater Supply to Steam Generator Inside Containment Isolation Check Valves				
	CV-O	High	CS	CS (CSJ-02)	Check Valve Open Exercise
AF02	Auxiliary Feedwater Supply to Steam Generator Outside Containment Isolation Stop Check MOVs				
	CV-C	High	Q	Q	Check Valve Close Exercise
	CV-O	High	CS	CS (CSJ-01)	Check Valve Open Exercise
	PI	High	2Y	2Y	Position Indication
	ST-C	High	Q	Q	Stroke Time Measurement - Close
	ST-O	High	Q	Q	Stroke Time Measurement - Open
AF03	Auxiliary Feedwater Supply to Steam Generator Flow Regulating MOVs				
	PI	High	2Y	2Y	Position Indication
	ST-C	High	Q	Q	Stroke Time Measurement - Close
	ST-O	High	Q	Q	Stroke Time Measurement - Open
AF04	Auxiliary Feedwater Turbine Trip and Throttle Valve (MS0514)				
	PI	High	2Y	2Y	Position Indication
	ST-C	High	Q	Q	Stroke Time Measurement - Close
	ST-O	High	Q	Q	Stroke Time Measurement - Open
AF05	Main Steam to Auxiliary Feedwater Turbine Warm-up Valve				
	FS-C	Low	Q	18MO	Fail Safe Test - Close
	PI	Low	2Y	18MO	Position Indication
	ST-C	Low	Q	18MO	Stroke Time Measurement - Close
	ST-O	Low	Q	18MO	Stroke Time Measurement - Open
AF06	Auxiliary Feedwater Pump Discharge Cross-Tie Valves				
	FS-C	Low	Q	54MO	Fail Safe Test - Close
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
AF07	Auxiliary Feedwater Auto Recirc Valves				
	CV-O	High	Q	Q	Check Valve Open Exercise
	CV-OP	High	Q	Q	Check Valve Partial Open Exercise
AF08	Main Steam to AF Turbine Suction Stop Check MOV (MS0143)				
	CV-O	Medium	Q	R	Check Valve Open Exercise
	PI	Medium	2Y	2Y	Position Indication
	ST-C	Medium	Q	R	Stroke Time Measurement - Close
	ST-O	Medium	Q	R	Stroke Time Measurement - Open

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
AP01	RCS Hot Leg Sample to PASS Lab OCIVs				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y (VRR-01)	Position Indication
	ST-C	Low	Q	R (VRR-02)	Stroke Time Measurement - Close
AP02	Containment Normal Sump to PASS Lab OCIVs				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
AP03	RHR Sample to PASS Lab OCIVs				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
AP04	PASS Waste Collection Unit Return to Pressurizer Relief Tank OCIV				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
AP05	Containment Air Sample Supply and Return to PASS Lab OCIVs				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
BA01	Breathing Air System Inside Containment Isolation Check Valve				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
BA02	Breathing Air System Outside Containment Isolation Manual Valve				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CC01	Thermal Relief for Penetration M-40 CCW return for the RCPs				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	RF	R	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CC02	CCW Supply to the RCP Thermal Barriers (Double inlet check valves)				
	DA	Low	RF	6YR	Disassemble and Inspect

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CC03	Penetration M-40 CCW return for the RCPs				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
CC04	RHR Heat Exchanger - CCW Outlet Valves				
	FS-O	High	Q	Q	Fail Safe Test - Open
	PI	High	2Y	2Y	Position Indication
	ST-O	High	Q	Q	Stroke Time Measurement - Open
CC05	Common Suction Header Isolation Valves (Trains A, B, & C) MOVs				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC06	Common Supply Header Isolation Valves (Trains A, B, & C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC07	CCW Heat Exchanger Outlet MOVs (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC08	CCW Heat Exchanger Bypass MOVs (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC09	CCW return from the RCFCs, Inside Containment Isolation Valves (Trains A, B, and C)				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC09A	CCW return from the RCFCs, Outside Containment Isolation Valves (Trains A, B, and C)				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CC10	CCW Supply (OCIV) to RHR Pump and Heat Exchanger - Trains A, B, and C				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC11	CCW Supply (OCIV) to Reactor Containment Fan Coolers - Trains A, B, and C				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC12	CCW Return from RHR Pump and Heat Exchanger - Trains A, B, and C				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC13	Chilled Water Return from RCFCs Outside Containment Isolation MOV (Trains A, B, and C)				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC14	Chilled Water Supply to RCFCs Outside Containment Isolation MOV (Trains A, B, and C)				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC15	CCW Supply Header to Spent Fuel Pool Heat Exchanger, First and Second Isolation				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
CC16	CCW Supply Header to Non-Safety Loads, First and Second Isolation				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	CS	3YR	Stroke Time Measurement - Close
CC17	CCW Supply to Excess Letdown Heat Exchanger Isolation MOV				
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CC18	CCW Supply Header Isolation to Charging Pumps (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC19	CCW Return Isolation from Charging Pumps (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CC20	CCW Supply to RCDT Ht Exch and Excess Letdown				
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
CC21	CCW Supply to RCDT Ht Exch.				
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
CC22	CCW Supply to RCP Coolers Outside Containment Isolation MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
CC23	CCW Return from RCP Coolers, Containment Isolation MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
CC24	Chilled Water Return for the RCFCs, Outside Containment Isolation Valve (Trains A, B, and C)				
	FS-C	Low	Q	54MO	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
CC25	CCW Supply Header to Post Accident Sampling System, First and Second Isolation				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
CC26	CCW Common Return Header to CCW Pump Suction Check Valve (Trains A, B, and C)				
	CV-C	Low	Q	54MO	Check Valve Close Exercise
	CV-O	Low	Q	54MO	Check Valve Open Exercise
CC27	CCW Pump Discharge Check Valve to Common Supply Header (Trains A, B, and C)				
	CV-O	Low	Q	54MO	Check Valve Open Exercise

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CC28	CCW Supply to RCFCs Inside Containment Isolation Check Valve (Trains A, B, and C)				
	CV-C	Low	APP J	APP J	Check Valve Close Exercise
	CV-O	Low	Q	54MO	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CC29	CCW Supply to RHR Pump and Heat Exchanger Inside Containment Isolation Check Valve (Trains A, B, and C)				
	CV-C	High	APP J	APP J (VRR-03)	Check Valve Close Exercise
	CV-O	High	Q	Q	Check Valve Open Exercise
	LR-CIV	High	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CC30	CCW Return for RCDT Heat Exchanger Check Valves				
	DA	Low	RF	3YR	Disassemble and Inspect
CC31	CCW Return for Excess Letdown Heat Exchanger Check Valves				
	DA	Low	RF	3YR	Disassemble and Inspect
CC32	CCW Supply to RCPs Inside Containment Isolation Check Valve				
	CV-C	Low	RF	R	Check Valve Close Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CC33	RCP Thermal Barrier Leak Isolation Valves				
	FSE	Low	RF	6YR	Full Stroke Exercise (Manual Valves)
	SP	Low	RF	6YR	Setpoint Verification
CC34	Cross Connect Valves for CCW Supply and Return for Charging Pumps				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
CH01	EAB Control Room Envelope Air Handling Unit Outlet Temperature Valve (Trains A, B, and C)				
	FS-O	Low	Q	54MO	Fail Safe Test - Open
	PI	Low	2Y	54MO	Position Indication
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CH02	EAB Main Supply Air Handling Unit Outlet Temperature Valve (Trains A, B, and C)				
	FS-O	Low	Q	54MO	Fail Safe Test - Open
	PI	Low	2Y	54MO	Position Indication
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CM01	RCB Air Sample Select Valves for Containment Hydrogen Monitoring System				
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	Q	6YR	Stroke Time Measurement - Close
	ST-O	Low	Q	6YR	Stroke Time Measurement - Open

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CM02	Containment Hydrogen Monitoring System Inside and Outside CIVs				
	FS-C	Low	Q	6YR	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	Q	6YR	Stroke Time Measurement - Close
	ST-O	Low	Q	6YR	Stroke Time Measurement - Open
CS01	Containment Spray Pump Discharge Outside Containment Isolation MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
CS02	Containment Spray Header Inside Containment Isolation Check Valves				
	DA	Low	RF	6YR	Disassemble and Inspect
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CV01	Reactor Coolant Auxiliary Spray Valve				
	PI	Medium	2Y	2Y	Position Indication
	ST-C	Medium	CS	R	Stroke Time Measurement - Close
	ST-O	Medium	CS	R	Stroke Time Measurement - Open
CV02	Centrifugal Charging Pump Minimum Recirc. Control Valves				
	FS-O	Low	Q	3YR	Fail Safe Test - Open
	PI	Low	2Y	3YR	Position Indication
	ST-O	Low	Q	3YR	Stroke Time Measurement - Open
CV03	RCS Letdown Line Inside Containment Isolation Bypass Check Valve (CV0022)				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	RF	R	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CV04	RCS Seal Water Return Inside Containment Isolation Bypass Check Valve (CV0078)				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	RF	R	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CV05	(CV0346, 351) BAT Pump recirc valves				
	CV-O	Low	Q	3YR	Check Valve Open Exercise
CV06	RCP Seal Injection Check Valve (Class 1 Boundary Isolation)				
	CV-C	Low	R	6YR	Check Valve Close Exercise
	CV-O	Low	Q	6YR	Check Valve Open Exercise

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CV07	Seal Injection to RCPs Inside Containment Isolation Check Valves				
	CV-C	Low	RF	6YR	Check Valve Close Exercise
	CV-O	Low	Q	6YR	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CV08	Boric Acid Polishing Return to Boric Acid Tank				
	CV-C	Low	Q	3YR	Check Valve Close Exercise
CV09	Centrifugal Charging Pump Minimum Recirc. Check Valves				
	CV-O	Low	Q	3YR	Check Valve Open Exercise
CV10	Reactor Coolant Auxiliary Spray Inlet Check Valve (CV0009)				
	CV-O	Medium	CS	R	Check Valve Open Exercise
CV11	CVCS SEAL WATER INJECTION FLOW CONTROL VALVE				
	FS-O	Low	CS	R	Fail Safe Test - Open
	PI	Low	2Y	2Y	Position Indication
	ST-O	Low	CS	R	Stroke Time Measurement - Open
CV12	Letdown Orifice Header Isolation Valve				
	FS-C	Low	CS	R	Fail Safe Test - Close
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	CS	R	Stroke Time Measurement - Close
CV13	RCS Charging Flow Control Valve				
	FS-O	Medium	CS	R	Fail Safe Test - Open
	PI	Medium	2Y	2Y	Position Indication
	ST-O	Medium	CS	R	Stroke Time Measurement - Open
CV14	Manual Alternate Borate Check Valve				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	RF	R	Check Valve Open Exercise
CV15	Charging Header Check Valve (CV671)				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	Q	R	Check Valve Open Exercise
CV16	Boric Acid Supply to Concentrated BA Polishing Demineralizer Isolation Valves				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CV19	RCS Charging Outside Containment Isolation MOV				
	LR-CIV	Medium	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Medium	2Y	2Y	Position Indication
	ST-C	Medium	CS	R	Stroke Time Measurement - Close
	ST-O	Medium	CS	R	Stroke Time Measurement - Open
CV20	RCS Letdown Isolation (Class 1 Boundary Isolation)				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	CS	3YR	Stroke Time Measurement - Close
CV21	Centrifugal Charging Pump Discharge Isolation MOVs				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
	ST-O	Low	Q	3YR	Stroke Time Measurement - Open
CV22	Volume Control Tank Outlet Isolation MOVs				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	CS	3YR	Stroke Time Measurement - Close
CV23	Reactor Water Storage Tank to Charging Pump Suction Header Isolation MOVs				
	PI	Low	2Y	3YR	Position Indication
	ST-O	Low	CS	3YR	Stroke Time Measurement - Open
CV24	Alternate Boric Acid Make-Up Supply Isolation MOV (CV0218)				
	PI	Low	2Y	2Y	Position Indication
	ST-O	Low	Q	R	Stroke Time Measurement - Open
CV25	RCS Normal and Alternate Charging Flow Isolation MOVs				
	PI	Medium	2Y	3YR	Position Indication
	ST-C	Medium	CS	3YR	Stroke Time Measurement - Close
	ST-O	Medium	CS	3YR	Stroke Time Measurement - Open
CV26	RCS Letdown Inside and Outside Containment Isolation MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	CS	3YR	Stroke Time Measurement - Close
CV27	RCP Seal Injection Outside Containment Isolation MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	CS	6YR	Stroke Time Measurement - Close
CV28	Reactor Coolant Pump Seal Water Supply MOV (CV8348)				
	PI	Low	2Y	2Y	Position Indication
	ST-O	Low	Q	R	Stroke Time Measurement - Open

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CV29	RCP Seal Water Return Inside and Outside Containment Isolation MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	CS	3YR	Stroke Time Measurement - Close
CV30	RCS Excess Letdown Heat Exchanger Inlet Isolation MOVs (Class 1 Boundary Isolation)				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
CV32	Charging Pump B Discharge Bypass Control Valve				
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
	ST-O	Low	Q	R	Stroke Time Measurement - Open
CV33	Centrifugal Charging Pump Discharge Check Valves				
	CV-C	Low	Q	3YR	Check Valve Close Exercise
	CV-O	Low	Q	3YR	Check Valve Open Exercise
CV34	(CV0334) check valve				
	CV-O	Low	CS	R	Check Valve Open Exercise
CV35	RC Filters out to RHR Outside Containment Isolation Manual Valve				
	LR-CIV	APP J	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CV37	Charging Header Check Valve				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	Q	R	Check Valve Open Exercise
CV38	RCS Normal and Alternate Charging Check Valves (Class 1 Boundary Valves)				
	CV-C	Low	RF	3YR	Check Valve Close Exercise
	CV-O	Low	CS	3YR	Check Valve Open Exercise
CV40	RCS Charging Inside Containment Isolation Check Valve.				
	CV-C	Low	RF	R	Check Valve Close Exercise
	CV-O	Low	Q	R	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
CV41	Alternate Boric Acid Make-Up Supply Isolation Check Valve (CV0217)				
	CV-O	Low	CS	R	Check Valve Open Exercise
CV42	Boric Acid Pump Discharge Check Valves (CV349, 338)				
	CV-C	Low	Q	3YR	Check Valve Close Exercise
	CV-O	Low	Q	3YR	Check Valve Open Exercise
CV43	RC Filters out to RHR Inside Containment Isolation Check Valve				
	LR-CIV	APP J	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
CV44	Reactor Water Storage Tank to Charging Pump Suction Header Isolation Check Valve				
	CV-O	Low	CS	R	Check Valve Open Exercise
DW01	Demineralizer Water to the RCB Inside Containment Isolation Check Valve				
	LR-CIV	APP J	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
DW02	Demineralizer Water to the RCB Outside Containment Isolation Manual Valve				
	LR-CIV	APP J	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
ED01	Containment Normal Sump Discharge Outside Containment Isolation Valve (FV7800)				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
ED02	Containment Normal Sump Discharge Inside Containment Isolation MOV (ED0064)				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
EW01	Essential Cooling Water Blowdown Isolation Valve (Trains A, B, and C)				
	FS-C	Low	Q	54MO	Fail Safe Test - Close
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
EW02	Essential Cooling Water Pump Discharge Vent Check Valve (Trains A, B, and C)				
	DA	Low	RF	54MO	Disassemble and Inspect
EW03	ECW Screen Wash Booster Pump Discharge Check Valve (Trains A, B, and C)				
	CV-O	Low	Q	54MO	Check Valve Open Exercise
EW04	Essential Cooling Water Pump Discharge Strainer Emergency Backflush Check Valve (Trains A, B, and C)				
	CV-O	Low	Q	54MO	Check Valve Open Exercise
	DA	Low	RF	54MO	Disassemble and Inspect
EW05	Essential Cooling Water Pump Discharge MOV (Trains A, B, and C)				
	PI	Medium	2Y	54MO	Position Indication
	ST-O	Medium	Q	54MO	Stroke Time Measurement - Open
EW06	ECW Self-Cleaning Strainer Backflush Throttle Valve (Manual)				
	FSE	Low	Q	54MO	Full Stroke Exercise (Manual Valves)
EW07	ECW Self-Cleaning Strainer Emergency Backflush Manual Valve				
	FSE	Low	Q	54MO	Full Stroke Exercise (Manual Valves)
EW08	Essential Cooling Water Pump Discharge Check Valve (Trains A, B, and C)				
	CV-O	High	Q	Q	Check Valve Open Exercise

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
EW09	ECW Screen Wash Pump Discharge Valve (Trains A, B, and C)				
	FS-O	Low	Q	54MO	Fail Safe Test - Open
	PI	Low	2Y	54MO	Position Indication
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
FC01	SFP Pump Discharge Reactor Cavity ICIV (Manual)				
	LR-CIV	APP J	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
FC02	SFP Pump Cooling Supply and Return from In-Containment Storage Area CIV (Manual)				
	LR-CIV	APP J	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
FP01	Fire Protection to the RCB Inside Containment Isolation Check Valve				
	CV-C	Low	RF	APP J	Check Valve Close Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
FP02	Fire Protection to the RCB Outside Containment Isolation MOV				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
FW01	Feedwater to the Steam Generator Isolation Valves				
	FS-C	Low	CS	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	PSE	Low	Q	6YR	Partial Stroke Exercise
	ST-C-A	Low	CS	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	CS	6YR	Stroke Time Msrmt - Close (B Train)
FW02	Feedwater flow control valves				
	FS-C	Low	CS	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C-A	Low	CS	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	CS	6YR	Stroke Time Msrmt - Close (B Train)
FW03	Feedwater Bypass Flow Control Valves				
	FS-C	Low	CS	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C-A	Low	CS	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	CS	6YR	Stroke Time Msrmt - Close (B Train)
FW04	Steam Generator Feedwater Inlet Isolation Bypass Valves				
	FS-C	Low	Q	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C-A	Low	Q	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	Q	6YR	Stroke Time Msrmt - Close (B Train)

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
FW05	Steam Generator Preheater Bypass Valves				
	FS-C	Low	CS	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C-A	Low	CS	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	CS	6YR	Stroke Time Msrmt - Close (B Train)
HC01	RCB Supplemental Purge Supply and Return Inside Containment Isolation MOVs				
	LR-CIV	Medium	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Medium	2Y	3YR	Position Indication
	ST-C	Medium	Q	3YR	Stroke Time Measurement - Close
HC02	RCB Supplemental Purge Supply and Return Outside Containment Isolation AOVs				
	FS-C	Medium	Q	3YR	Fail Safe Test - Close
	LR-CIV	Medium	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Medium	2Y	3YR	Position Indication
	ST-C	Medium	Q	3YR	Stroke Time Measurement - Close
HC03	RCB Normal Purge Supply and Exhaust Containment Isolation (48") MOVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	CS	6YR	Stroke Time Measurement - Close
IA01	Instrument Air to RCB Inside Containment Isolation Check Valve (IA0541)				
	CV-C	Low	RF	APP J	Check Valve Close Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
IA02	Instrument Air to RCB Outside Containment Isolation Valve (IA8565)				
	FS-C	Low	CS	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	CS	R	Stroke Time Measurement - Close
MS01	Main Steam Isolation Valves				
	FS-C	Low	CS	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C-A	Low	CS	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	CS	6YR	Stroke Time Msrmt - Close (B Train)

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
MS02	Main Steam Safety Valves				
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
	SP	Medium	RF	5YR	Setpoint Verification
MS03	Main Steam Power Operated Relief Valves				
	FS-C	High	Q	Q	Fail Safe Test - Close
	PI	High	2Y	2Y	Position Indication
	ST-C	High	Q	Q	Stroke Time Measurement - Close
	ST-O	High	Q	Q	Stroke Time Measurement - Open
MS04	Main Steam Bypass Isolation Valves				
	FS-C	Low	Q	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C-A	Low	Q	6YR	Stroke Time Msrmt - Close (A Train)
	ST-C-B	Low	Q	6YR	Stroke Time Msrmt - Close (B Train)
PO01	RCP Motor Oil Return system				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
PS01	Pressurizer Vapor Space Sample Inside Containment Isolation Valve (4450)				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
PS02	RCS Pressunzer and Hot Leg Sample ICIVs				
	FS-C	Low	Q	54MO	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
PS03	RHR and Accumulator Sample ICIVs				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
PS04	Pressurizer Liquid Sample OCIV				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
PS05	Pressurizer Vapor Space Sample OCIV				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
PS07	Primary sampling OCIVs (FV4461 and FV4466, FV 4456)				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
RA01	RCB Atmosphere Rad Monitor Inside and Outside Containment Isolation Valves				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	Q	6YR	Stroke Time Measurement - Close
RC01	Pressurizer Relief Tank Vent to Gaseous Waste Processing System Outside Containment Isolation Valve (3652)				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
RC02	Reactor Make-up Water to RCP Standpipe and PRT OCIV (3651)				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
RC03	RCS Pressurizer Safety Valves				
	SP	Medium	RF	R	Setpoint Verification
	SP	Medium	RF	R	Setpoint Verification
	SP	Medium	RF	R	Setpoint Verification
RC04	RCS Power Operated Relief Valves				
	FS-C	High	CS	CS (CSJ-03)	Fail Safe Test - Close
	PI	High	2Y	2Y	Position Indication
	ST-O	High	CS	CS (CSJ-03)	Stroke Time Measurement - Open
RC05	RCS PORV Block Valves				
	PI	High	2Y	Q	Position Indication
	ST-C	High	Q	Q	Stroke Time Measurement - Close
	ST-O	High	Q	Q	Stroke Time Measurement - Open
RC06	Reactor Vessel Head Vent Isolation Valves				
	FS-C	Low	CS	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	CS	6YR	Stroke Time Measurement - Close
	ST-O	Low	CS	6YR	Stroke Time Measurement - Open
RC07	Reactor Vessel Head Vent Throttle Valves				
	FS-C	Low	CS	3YR	Fail Safe Test - Close
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	CS	3YR	Stroke Time Measurement - Close
	ST-O	Low	CS	3YR	Stroke Time Measurement - Open
RC08	Pressurizer Relief Tank Vent to Gaseous Waste Processing System Inside Containment Isolation Valve (3652)				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
RC09	Reactor Make-up Water to RCP Standpipe and PRT Outside Containment Check Valve				
	CV-C	Low	RF	APP J	Check Valve Close Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
RD01	RCS Vacuum Degassing from RCB ICIV and OCIV				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
RH01	Residual Heat Removal Heat Exchange Control Valve (Trains A, B, and C)				
	FS-O	Low	Q	54MO	Fail Safe Test - Open
	PI	Low	2Y	54MO	Position Indication
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
RH02	Residual Heat Removal Outlet to CVCS Letdown Valves				
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
	ST-O	Low	Q	3YR	Stroke Time Measurement - Open
RH03	Residual Heat Removal Pump Miniflow MOVs (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
RH04	Residual Heat Removal Inlet Isolation MOVs (Class 1 Boundary) Trains A, B, and C				
	LR-PIV	Medium	CS	54MO	Leak Rate Test - Pressure Isoltn Valve
	PI	Medium	2Y	54MO	Position Indication
	ST-C	Medium	CS	54MO	Stroke Time Measurement - Close
	ST-O	Medium	CS	54MO	Stroke Time Measurement - Open
RH05	Residual Heat Removal Pump Miniflow Check Valves (Trains A, B, and C)				
	CV-O	Low	6M	54MO	Check Valve Open Exercise
RH06	Residual Heat Removal Pump Discharge Check Valves (Trains A, B, and C)				
	CV-O	Medium	CS	54MO	Check Valve Open Exercise
	CV-OP	Medium	6M	54MO	Check Valve Partial Open Exercise
RH07	Low Head Safety Injection to RCS Hot Leg Check Valves (Trains A, B, and C)				
	CV-C	Low	CS	54MO	Check Valve Close Exercise
	CV-O	Low	CS	54MO	Check Valve Open Exercise
	LR-PIV	Low	CS	54MO	Leak Rate Test - Pressure Isoltn Valve
RH08	Cold Leg Injection Check Valves (Trains A, B, and C)				
	CV-C	Medium	CS	54MO	Check Valve Close Exercise
	CV-O	Medium	CS	54MO	Check Valve Open Exercise
	LR-PIV	Medium	CS	54MO	Leak Rate Test - Pressure Isoltn Valve
RH09	RHR Return to RWST CIVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
RM01	Reactor Make-up Water Non-essential services isolation Valves				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
SA01	Service Air to RCB Inside Containment Isolation Check Valve				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
SA02	Service Air to RCB Outside Containment Isolation Manual Valve				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
SB01	Steam Generator Bulk Water Sample Outside Containment Isolation Valves				
	FS-C	Low	Q	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	Q	6YR	Stroke Time Measurement - Close
SB02	Steam Generator Blowdown Outside Containment Isolation Valves				
	FS-C	Low	Q	6YR	Fail Safe Test - Close
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	Q	6YR	Stroke Time Measurement - Close
SD01	Starting Air Receiver Inlet Check Valves				
	CV-C	Low	Q	54MO	Check Valve Close Exercise
SI01	Safety Injection System Test Line Containment Isolation Valves				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
SI02	Accumulator Nitrogen Supply Outside Containment Isolation Valve (3983)				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
SI03	Accumulator Nitrogen Supply Inside Containment Isolation Check Valve (SI0058)				
	CV-C	Low	RF	APP J	Check Valve Close Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
SI04	Reactor Water Storage Tank Clean-Up by SFPCCS Isolation Valves				
	FS-C	Low	Q	3YR	Fail Safe Test - Close
	PI	Low	2Y	3YR	Position Indication
	ST-C	Low	Q	3YR	Stroke Time Measurement - Close
SI05	Residual Heat Exchanger Bypass Valves (Trains A, B, and C)				
	FS-C	Low	CS	54MO	Fail Safe Test - Close
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	CS	54MO	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
SI06	Low Head Safety Injection Pump Discharge Outside Containment Isolation Valves (Trains A, B, and C)				
	LR-CIV	Low	30 MO	54MO	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
SI07	Safety Injection Emergency Sump Outside Containment Isolation MOVs (Trains A, B, and C)				
	LR-CIV	Medium	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Medium	2Y	54MO	Position Indication
	ST-C	Medium	Q	54MO	Stroke Time Measurement - Close
	ST-O	Medium	Q	54MO	Stroke Time Measurement - Open
SI08	High Head Safety Injection Pump Discharge Outside Containment Isolation Valves (Trains A, B, and C)				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
SI09	High Head Safety Injection Cold Leg Isolation (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
SI10	High Head Safety Injection Hot Leg Isolation (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
SI11	Residual Heat Removal Heat Exchanger Return to Hot Leg MOV (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
SI12	Cold Leg Injection MOVs (Trains A, B, C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	Q	54MO	Stroke Time Measurement - Close
	ST-O	Low	Q	54MO	Stroke Time Measurement - Open
SI13	High Head Safety Injection Pump Recirc Isolation				
	PI	Medium	2Y	54MO	Position Indication
	ST-C	Medium	Q	54MO	Stroke Time Measurement - Close
	ST-O	Medium	Q	54MO	Stroke Time Measurement - Open

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
SI14	Low Head Safety Injection Pump Recirc Isolation				
	PI	Medium	2Y	54MO	Position Indication
	ST-C	Medium	Q	54MO	Stroke Time Measurement - Close
	ST-O	Medium	Q	54MO	Stroke Time Measurement - Open
SI15	Safety Injection System Reactor Water Storage Tank Isolation				
	PI	Medium	2Y	54MO	Position Indication
	ST-C	Medium	Q	54MO	Stroke Time Measurement - Close
	ST-O	Medium	Q	54MO	Stroke Time Measurement - Open
SI16	Accumulator Nitrogen Vent Valves (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	CS	54MO	Stroke Time Measurement - Close
	ST-O	Low	CS	54MO	Stroke Time Measurement - Open
SI17	Accumulator Nitrogen Vent Back-Up Valve (899)				
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	CS	R	Stroke Time Measurement - Close
	ST-O	Low	CS	R	Stroke Time Measurement - Open
SI18	High Head Safety Injection Pump Discharge Inside Containment Isolation Valves (Trains A, B, and C)				
	CV-C	Low	RF	APP J (VRR-03)	Check Valve Close Exercise
	CV-O	High	RF	R (ROJ-01)	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
SI19	High Head Safety Injection Pump Discharge Check to Cold Leg (Class 1 Boundary) (Trains A, B, and C)				
	CV-C	High	CS	CS (CSJ-04)	Check Valve Close Exercise
	CV-O	High	RF	R (ROJ-01)	Check Valve Open Exercise
	LR-PIV	High	CS	CS	Leak Rate Test - Pressure Isoltn Valve
SI20	High Head Safety Injection Pump Discharge Check to Hot Leg (Class 1 Boundary) (Trains A, B, and C)				
	CV-C	Low	CS	54MO	Check Valve Close Exercise
	CV-O	Low	RF	54MO	Check Valve Open Exercise
	LR-PIV	Low	CS	54MO	Leak Rate Test - Pressure Isoltn Valve
SI21	Low Head Safety Injection Pump Discharge Inside Containment Isolation Valves (Trains A, B, and C)				
	CV-C	Low	RF	APP J (VRR-03)	Check Valve Close Exercise
	CV-O	Medium	RF	54MO	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
SI22	Safety Injection System Pumps Discharge Check to Hot Leg (Class 1 Boundary) (Trains A, B, and C)				
	CV-C	Low	CS	54MO	Check Valve Close Exercise
	CV-O	Low	CS	54MO	Check Valve Open Exercise
	LR-PIV	Low	CS	54MO	Leak Rate Test - Pressure Isoltn Valve

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
SI23	Accumulator to Cold Leg Inboard Check Valves (Trains A, B, and C)				
	CV-C	High	CS	CS (CSJ-04)	Check Valve Close Exercise
	CV-O	High	RF	R (ROJ-02)	Check Valve Open Exercise
	LR-PIV	High	CS	CS	Leak Rate Test - Pressure Isoltn Valve
SI24	Accumulator Tank Discharge MOVs (Trains A, B, and C)				
	PI	Low	2Y	54MO	Position Indication
	ST-C	Low	CS	54MO	Stroke Time Measurement - Close
	ST-O	Low	CS	54MO	Stroke Time Measurement - Open
SI25	Safety Injection Pumps Suction Check Valves (Trains A, B, and C)				
	CV-C	High	R (DA)	Q (NI)	Check Valve Close Exercise
	CV-O	High	R	R (ROJ-03)	Check Valve Open Exercise
SI26	Accumulator Nitrogen Vent Header Bleed Valve (HCV-0900)				
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	CS	R	Stroke Time Measurement - Close
	ST-O	Low	CS	R	Stroke Time Measurement - Open
SI27	Accumulator to Cold Leg Outboard Check Valves (Trains A, B, and C)				
	CV-C	Low	CS	54MO	Check Valve Close Exercise
	CV-O	Low	RF	54MO	Check Valve Open Exercise
	LR-PIV	Low	CS	54MO	Leak Rate Test - Pressure Isoltn Valve
SL1	High Pressure Sludge Lancing CIVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
SL2	Low Pressure Sludge Lancing CIVs				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
WL01	RCDT Vent Outside Containment Isolation Valve				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
WL02	RCDT to LWPS Outside Containment Isolation Valve				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isolation Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close

GROUP	Test	IST Rank	Frequency	RI-IST Frequency	IST TEST DESCRIPTION
WL03	RCDT To LWPS Inside Containment Isolation Valve				
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isoltn Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
WL04	RCDT Vent Inside Containment Isolation Valve				
	FS-C	Low	Q	R	Fail Safe Test - Close
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isoltn Valve
	PI	Low	2Y	2Y	Position Indication
	ST-C	Low	Q	R	Stroke Time Measurement - Close
XC01	Reactor Containment Personal Air-lock Safety Check Valves (XC-48, 49)				
	CV-C	Low	Q	3YR	Check Valve Close Exercise
	CV-O	Low	Q	3YR	Check Valve Open Exercise
	LR-CIV	Low	30 MO	APP J	Leak Rate Test - Cntmt Isoltn Valve
XC02	Reactor Containment Air-lock Air Supply Containment Isolation Valves (FV1025, 26,27,28)				
	FS-C	Low	Q	6YR	Fail Safe Test - Close
	LR-CIV	Low	30 MO	6YR	Leak Rate Test - Cntmt Isoltn Valve
	PI	Low	2Y	6YR	Position Indication
	ST-C	Low	Q	6YR	Stroke Time Measurement - Close

Test Exception Number	*Test Exception Type*
CSJ-01	Cold Shutdown Justification
Group AF02	Auxiliary Feedwater Supply to Steam Generator Outside Cntmt Isolation Stop Check MOVs

Safety Function 1. Open upon receipt of:
A. steam generator low water level,
B. low feedwater flow signal from AMSAC, or
C. SI initiation signal to allow 500 gpm
(per Technical Specification 4.7.1.2.1) flow to Steam Generator 1(2)D.

NOTE: The ESF actuation signal allows the stop check valve to function normally through the self-actuating design of the check valve. Operation of the motor operator function is not required for the valve to fulfill its open safety function.

2. Close (remote manual) for Steam Generator 1(2)D isolation in response to SGTR, FWLB, and MSLB.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open or partially open position required to fulfill its safety function.

Reason for Exception These valves can only be full-stroke open exercised by directing auxiliary feedwater flow into the steam generator. The initiation of auxiliary feedwater flow during power operation would result in unwanted thermal shock to the secondary portions of the steam generators. Additionally, the introduction of cold water to the steam generator would cause an unwanted power transient.

Alternate Testing These valves will be full-stroke open exercised each cold shutdown unless the period of time since the previous full-stroke open exercise is less than three months. Auxiliary feedwater flow will be directed through the valve from its respective pump and into the steam generator. Verification of flow through the valve will provide assurance that the valve has opened sufficiently to perform its safety function.

Test Exception Number *Test Exception Type*

CSJ-02 Cold Shutdown Justification

Group AF01 Auxiliary Feedwater Supply to Steam Generator Inside Cntmt Isolation Check Valves

Safety Function Open to allow 500 gpm (per Technical Specification 4.7.1.2.1) of auxiliary feedwater flow to Steam Generator 1(2)A.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open or partially open position required to fulfill its safety function.

Reason for Exception These valves can only be full-stroke open exercised by directing auxiliary feedwater flow into the steam generator. The initiation of auxiliary feedwater flow during power operation would result in unwanted thermal shock to the secondary portions of the steam generators. Additionally, the introduction of cold water to the steam generator would cause an unwanted power transient. Main feedwater flow cannot be used to exercise this check valve during normal power operation due to the thermal shock that would occur by injecting the cooler, stagnant water in the connecting piping. Flow instrumentation is not available in this configuration to verify that the valve has been properly exercised.

Alternate Testing These valves will be full-stroke open exercised each cold shutdown unless the period of time since the previous full-stroke open exercise is less than three months. Auxiliary feedwater flow will be directed through the valve from its respective pump and into the steam generator. Verification of flow through the valve will provide assurance that the valve has opened sufficiently to perform its safety function.

Test Exception Number	*Test Exception Type*
CSJ-03	Cold Shutdown Justification
Group RC04	RCS Power Operated Relief Valves

Safety Function 1. Remain closed to preserve the integrity of the reactor coolant pressure boundary.

2. Open to depressurize the RCS to cold shutdown conditions and to mitigate transients/accidents such as MSLB and FWLB.

3. Open during the long term cooling mode following a SBLOCA to satisfy LHSI pump minimum flow requirements.

4. Open in response to COMS to provide overpressure mitigation for the RCS and prevent pressure-temperature conditions from exceeding Appendix G limits.

Code Requirement OMa 4.2.1.1 requires that each active Category B valve be tested nominally every three (3) months for operational readiness.

Reason for Exception The operability testing (full-stroke open and close exercise) of these valves during normal power operation would require closing the associated block valve to prevent an undesirable RCS pressure and pressurizer level transients. Failure of the valve to properly reseat after the open and close exercise test would require the block valve to be closed and entry into a Limiting Condition for Operation with a possible plant shutdown being required.

Alternate Testing These valves will be full-stroke open and close exercised, stroke-timed, and their fail-safe actuation verified at each cold shutdown not to exceed once every three months per the requirements of OMa 4.2.1.2

Test Exception Number *Test Exception Type*

CSJ-04 Cold Shutdown Justification

Group SI19 High Head Safety Injection Pump Discharge Check to Cold Leg (Class 1 Boundary) (Trains A, B, and C)

Safety Function 1. Open to inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5.2.g).

2. Close to prevent the diversion of flow from the accumulator or from the LHSI pump in the event that the corresponding HHSI pump is not running.

3. Close and be leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

Code Requirement OMa 4.3.2.1 requires that each active Category A/C valve be tested nominally every three (3) months.

Reason for Exception The close exercise testing of these valves will be in conjunction with the seat leakage testing required by OMa 4.2.2.3. The seat leakage testing must be performed with the maximum differential pressure across the valve seats. In addition, the following normally de-energized valves must be energized and remain energized in the abnormal valve position until testing is completed and the valves are returned to their normal operating position.

2N121(2)XSI0039A,B,C - Accumulator Tank Discharge Isolation Valves.
2N121(2)XSI0008A,B,C - HHSI Lot Leg Isolation Valves
2R161(2)XRH0019A,B,C - RHR Heat Exchanger Return to Hot Leg Valves
2R161(2)XRH0031A,B,C - Cold Leg Injection Valves

Alternate Testing These valves will be close exercised tested by the performance of a seat leakage test following each cold shutdown and prior to entering Mode 2 not to exceed once every nine months per the requirements of Technical Specification 4.4.6.2.2.

Test Exception Number	*Test Exception Type*
CSJ-04	Cold Shutdown Justification
Group SI23	Accumulator to Cold Leg Inboard Check Valves (Trains A, B, and C)

Safety Function 1. Open when the RCS pressure falls below the accumulator pressure to force borated water into the RCS cold legs.

2. Close to prevent backflow from the RCS into the low pressure SI system.

3. Close and be leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

Code Requirement OMa 4.3.2.1 requires that each active Category A/C valve be tested nominally every three (3) months.

Reason for Exception The close exercise testing of these valves will be in conjunction with the seat leakage testing require by OMa 4.2.2.3. The seat leakage testing must be performed with the maximum differential pressure across the valve seats. In addition, the following normally de-energized valves must be energized and remain energized in the abnormal valve position until testing is completed and the valves are returned to their normal operating position.

2N121(2)XSI0039A, B, C - Accumulator Tank Discharge Isolation Valves.
2N121(2)XSI0008A, B, C - HHSI Lot Leg Isolation Valves
2R161(2)XRH0019A, B, C - RHR Heat Exchanger Return to Hot Leg Valves
2R161(2)XRH0031A, B, C - Cold Leg Injection Valves

Alternate Testing These valves will be close exercised tested by the performance of a seat leakage test following each cold shutdown and prior to entering Mode 2 not to exceed once every nine months per the requirements of Technical Specification 4.4.6.2.2.

Test Exception Number	*Test Exception Type*
PRR-01	Pump Relief Request
Group EWPP	EW Pumps

Safety Function Takes a suction from the Emergency Cooling Pond and delivers cooling water to Emergency Diesel Generator heat exchangers, Essential Chillers, and Component Cooling Water heat exchangers during normal operating, shutdown, and following accident conditions. The ECW pumps receive an auto start signal upon an SI initiation signal.

Design Flow: 19,280 gpm (per DBD)

Code Requirement OMa Part 6, 5.2.1(b) requires the system resistance to be varied until the flow rate equals the reference point. The differential pressure shall be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to its reference value.

OMa Part 6, 5.2.1(c) states that where system resistance cannot be varied, flow rate and pressure shall be determined and compared to their respective reference values.

Reason for Exception The Essential Cooling Water System is designed so that total pump flow cannot be readily adjusted to one reference value for testing without adversely affecting the operating system flow balance or utilizing excessive operator resources which would be better utilized to monitor the safe operation of the plant. These pumps must be tested in a manner that does not adversely affect the flow balance and system operability.

System resistance is not fixed since each load has an acceptable flow range. Adjusting system total flow to meet a specific reference value may change the individual load flow rates and may cause one or more of the loads to move outside its respective operation range possibly requiring an entry into an LCO. Additionally, STP has specific "cold" and "warm" weather lineups for operation of the essential chillers creating a different system resistance. Consequently, adjusting flow to one specific value on a quarterly basis for the performance of pump testing conflicts with system design and challenges the system operability.

Alternate Testing As an alternative to the testing requirements of OMa Part 6, 5.2.1, STP will assess pump performance and operational readiness through the use of reference pump curves. Flow rate and pump differential pressure will be measured during inservice testing in the as found condition of the system and compared to an established reference curve. The following elements will be used in the development of the reference pump curves:

PRR-01 Continued

1. A reference pump curve (flow rate versus differential pressure) will be established for each of the ECW pumps for the data taken when these pumps are known to be operating acceptably.

2. Pump curves will be established from measurements taken with instrumentation meeting or exceeding the accuracy requirements of OMa Part 6, 4.6.1.1.

3. Each Pump curve will be based on at least 5 points beyond the flat portion of the pump curve in the normal operating range of the pumps (at a flow greater than 15,700 gpm). Rated capacity of these pumps is 19,280 gpm. The pumps will be tested over the range of their full design flow rates, 15,700 gpm minimum to 20,610 gpm maximum.

4. The reference pump curves will be based on flow rate versus differential pressure. The acceptance criteria (acceptable and required action ranges) curves will be based on the differential pressure limits of OMa Part 6, Table 3b.

5. Vibration levels will be measured at each of the reference points. If negligible variation readings are observed over the range of pump conditions, a single reference value may be assigned to each vibration measurement location. If vibration levels change over the range of pump conditions, appropriate acceptance criteria will be assigned to regions of the pump curve.

6. After any maintenance or repair that may affect the existing reference pump curve, a new reference curve shall be determined or the existing pump curve revalidated by an inservice test. A new pump curve shall be established based on at least 5 points beyond the flat portion of the pump curve.

Test Exception Number	*Test Exception Type*
PRR-02	Pump Relief Request
Group CCPP	Component Cooling Water Pumps

Safety Function Provides 14,070 gpm of cooling water (DBD 4.1.6.2) to ESF components under safe shutdown and accident conditions.

Code Requirement OMa-1988 Part 6, Paragraphs 4.6.1.1 and 4.6.1.2 require pressure instrumentation requirements for accuracy and range. Accuracy must be +/- 2% and full-scale range shall be not greater than three times the reference value.

Reason for Exception The installed suction pressure gauges for the Component Cooling Water pumps have a range of 160 psig and an accuracy of 0.5%. The reference values for suction pressure for these pumps have been as low as 21 psig. The installed suction pressure gauges for the Component Cooling Water pumps have a full-scale range greater than 3 times the reference value, but have an accuracy of +/- 0.5%, which is more conservative than the Code. The combination of the range and accuracy of the installed suction pressure gauge yields a reading at least equivalent to the reading achieved from instruments that meet the Code Requirements. The installed suction pressure gauge meets the intent of the Code requirements and provides for an acceptable level of quality and safety for inservice testing.

Alternate Testing The permanently installed suction gauges for Component Cooling Water pumps 1A(2A), 1B(2B), and 1C(2C) will be used to obtain test measurements for evaluating pump operability.

Test Exception Number *Test Exception Type*

ROJ-01 Refueling Outage Justification

Group SI18 High Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)

Safety Function 1. Open to inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5.2.g).

2. Open to recirculate borated water from the containment sump to the RCS hot legs during the hot leg recirculation phase of safety injection.

3. Close and be leak-tight (CAT A) to provide containment integrity.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves cannot be exercised during normal power operation since the HHSI pump cannot overcome normal RCS pressure. These valves cannot be exercised at cold shutdown due to the possibility of over-pressurizing the Reactor Coolant System.

Alternate Testing Per OMa 4.3.2.2.e, these check valves will be exercised, full stroke open, each refueling outage by injecting HHSI flow into the open RCS with a vent path established. The most practical method of verifying valve closure on cessation of flow or flow reversal is in conjunction with the leakage testing required by technical specifications.

Valves 1N121(2)XSI0007A,B,C and 1N121(2)XSI0009A,B,C will be closed exercised tested in accordance with CSJ-04.

Valves 2N121(2)XSI0005A,B,C and 2N121(2)XSI0030A,B,C will be closed exercised tested in accordance with VRR-03.

Test Exception Number *Test Exception Type*

ROJ-01 Refueling Outage Justification

Group SI19 High Head Safety Injection Pump Discharge Check to Cold Leg (Class 1 Boundary) (Trains A, B, and C)

Safety Function 1. Open to inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5.2.g).

2. Close to prevent the diversion of flow from the accumulator or from the LHSI pump in the event that the corresponding HHSI pump is not running.

3. Close and be leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves cannot be exercised during normal power operation since the HHSI pump cannot overcome normal RCS pressure. These valves cannot be exercised at cold shutdown due to the possibility of over pressurizing the Reactor Coolant System.

Alternate Testing Per Oma 4.3.2.2.e, these check valves will be exercised, full stroke open, each refueling outage by injecting HHSI flow into the open RCS with a vent path established. The most practical method of verifying valve closure on cessation of flow or flow reversal is in conjunction with the leakage testing require by technical specifications.

Valves 1N121(2)XSI0007A,B,C and 1N121(2)XSI0009A,B,C will be closed exercised tested in accordance with CSJ-04.

Valves 2N121(2)XSI0005A,B,C and 2N121(2)XSI0030A,B,C will be closed exercised tested in accordance with VRR-03.

Test Exception Number	*Test Exception Type*
ROJ-02	Refueling Outage Justification
Group SI23	Accumulator to Cold Leg Inboard Check Valves (Trains A, B, and C)

Safety Function 1. Open when the RCS pressure falls below the accumulator pressure to force borated water into the RCS cold legs.

2. Close to prevent backflow from the RCS into the low pressure SI system.

3. Close and be leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves cannot be exercised during normal power operation (full or partial stroke open) since neither the HHSI, LHSI, RHR pump, or Accumulators can overcome normal RCS pressure. These valves cannot be exercised at cold shutdown due to the possibility of over pressurizing the RCS.

Alternate Testing Per OMa 4.3.2.2.e, these check valves will be exercised, full stroke open, each refueling outage using non-intrusive techniques to ensure no degradation has occurred. If any check valve tested during the refueling outage shows signs of unacceptable degradation or performance, it will be disassembled and inspected during that refueling outage.

Test Exception Number *Test Exception Type*

ROJ-03 Refueling Outage Justification

Group SI25 Safety Injection Pumps Suction Check Valves (Trains A, B, and C)

Safety Function 1. Open to provide a source of borated water to the suction of the LHSI, HHSI and CS pumps during the injection mode of accident mitigation (Flow rate required is 5920 gpm. This is a combination of 1470 gpm for HHSI, 2550 gpm for LHSI, and 1900 gpm for CS).

2. Close to prevent backflow to the RWST when containment sump isolation valves are opened during switchover from the injection phase to the cold leg recirculation mode before SI-MOV001A, B, and C are closed. Operator action is required to manually close SI-MOV001A, B, and C to complete the switchover process.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves can only be exercised, full stroke, by simulating LOCA conditions and allowing the above pumps to inject flow into the RCS at zero or a very low pressure. These conditions can only be simulated during a refueling outage with the reactor vessel head off and the containment spray pump on full recirculation.

Closure of these check valves cannot be verified by non-intrusive means. There are no external position indicators on these valves and due to the soft closure of these valves (result of pump coastdown) acoustic methods are not conclusive. Magnetic methods are also not conclusive.

Draindown of a portion of the safety injection system is required t perform disassembly and inspection of the valves. Disassembly and inspection can only be accomplished during the 7-day Safety Injection System LCO window or during refueling outages.

Local leakage rate testing of other SI valves and other maintenance activities are now being conducted during the 7-day SI system LCO windows. Conducting the disassembly and inspection of these check valves in conjunction with LLRTs or other maintenance activities would accomplish the following:

a) Increase the availability of the Safety Injection System during refueling outages, which would lower the overall risk during the outages. The online risk should not be increased if performed during the AOT window since the SI Train will already be removed from service for LLRTs or other maintenance.

b) Radwaste should be reduced as the inspections will be performed with other draindown work during the LCO week.

c) There will be a reduction in outage manpower and resource requirements for both maintenance and operations personnel.

d) A reduction in radiation exposure should be realized because personnel will have to perform drain and fill operations only once.

Alternate Testing Per OMa 4.3.2.2.e, these check valves will be exercised, full stroke, each refueling outage by injecting flow into the RCS with the vessel head off and the CS pump on full recirculation.

For closure verification, per OMa 4.3.2.4.c, if other test methods are impractical, a sample disassembly examination program shall be used to verify valve obturator movement. At least one check valve from the sample group will be verified operable by disassembly and inspection on a nominal refueling cycle frequency of 18 months (+/- 25%). This will not result in a reduction in the number of inspections performed over the life of the plant. If a generic failure occurs, a plan of action for inspection the remaining valves will be developed utilizing the Condition Reporting Process and the guidance provided in Generic Letter 91-18. This plan of action will take into account the potential failure modes and their associated plant impacts and will be implemented in a time frame commensurate with their safety significance. This will ensure that all check valves in this sample group are inspected within six years as required by Generic Letter 89-04, Position 2. Approval of this Relief Request safety function will not preclude STP from performing these inspections during refueling outage should some other scope of work make it necessary to drain a train of SI.

Test Exception Number	*Test Exception Type*
VRR-01	Valve Relief Request
Group AP01	RCS Hot Leg Sample to PASS Lab OCIVs

Safety Function Close in response to an ESF signal and leak tight (CAT A) to maintain containment integrity.

Code Requirement OMa 4.1 requires that valves with remote position indicators be observed locally at least once every two years to verify that valve operation is accurately indicated.

Reason for Exception These valves are solenoid valves for which stem movement cannot be directly observed. They are redundant valves in series and operate simultaneously from a single control switch with one set of indicating lights.

Alternate Testing These valves are stroked and timed during normal inservice testing using the remote indicating lights. Open and closed indication is actuated by the limit switches of each valve wired in series and remote position indication is based on the slowest valve. Since these redundant valves cannot be exercised separately (unless leads are lifted, temporary power supplied to the disabled valve to hold it in the open position, and jumpers placed across the disabled valve's limit switches) the valves will be stroked simultaneously and remote position indication verified by observing that system flow is initiated and then secured.

Test Exception Number ***Test Exception Type***

VRR-02 Valve Relief Request

Group AP01 RCS Hot Leg Sample to PASS Lab OCIVs

Safety Function Close in response to an ESF signal and leak tight (CAT A) to maintain containment integrity.

Code Requirement OMa 4.2.1.1 requires that each category A valve be tested nominally every three months for operational readiness.

Reason for Exception The valves are redundant valves in series and operate simultaneously from a single control switch with one set of indicating lights. These redundant valves cannot be exercised separately (unless leads are lifted, temporary power supplied to the disabled valve to hold it in the open position, and jumpers placed across the disabled valve's limit switches).

Based on the guidance on NUREG 1482, an evaluation was performed and it was determined that only one valve is required to satisfy the plant safety analysis. Both valves will be included in the IST plan.

Alternate Testing Since these redundant valves cannot be exercised separately, the valves will be stroked simultaneously and timed using the remote position indication of the slowest valve. Failure to meet the stroke time acceptance criteria of OMa 4.2.1.8 shall be treated as a failure of a series valve pair and corrective actions taken to determine the cause of the failure.

Test Exception Number *Test Exception Type*

VRR-03 Valve Relief Request

Group SI18 High Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)

Safety Function 1. Open to inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5.2.g).

2. Open to recirculate borated water from the containment sump to the RCS hot legs during the hot leg recirculation phase of safety injection.

3. Close and be leak-tight (CAT A) to provide containment integrity.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves have a safety function in the closed direction as containment isolation valves. There are no intra or intersystem cross-ties downstream of these valves which would cause a diversion of flow from another pump if the check valve did not close. Due to the fact that there are no cross-ties downstream of the valves, the valves lack design provisions for system testing to verify closure capability in any plant condition.

Leak rate testing verifies valve closure by validating the valve seats properly and is leak tight, and provides more information about the closed position than a simple backflow test.

NUREG 1482, Section 4.1.4, allows the extension of the test interval to refueling outage frequency for check valves where the only practical means of verifying check valve closure is by performing the Appendix J Leak Test. STP has adopted Option B of Appendix J that allows these check valves to be leak tested on a frequency not to exceed once every five years.

Disassembly provides limited information on a check valve's ability to seat properly on cessation of flow. Following re-assembly, the Code requires a post-assembly test, which would reopen the check valve without providing assurance the disk would return to the closed position. Disassembly of these check valves is not practical due to the design complexity of the check valves, the increased probability of human error during valve re-assembly, foreign material exclusion concerns, and ALARA considerations.

The subject valves have exhibited a history of satisfactory operation. Based on their performance history, it is believed that the current Probabilistic Risk Assessment (PRA) modeling of the failure rates for these valves is still accurate. Irrespective of the failure rate modeling, the current STPNOC PRA model indicates that the potential failure of these valves to close has no impact on core damage frequency. In addition, the impact on these valves (assuming complete failure) from a Large Early Release standpoint is minimal.

Based on the above, it is evident that in the event that containment isolation is necessary, the subject valves will have a high probability of performing their intended safety function. Therefore, STP believes that the safety significance and potential consequences of the proposed relief is extremely small.

Alternate Testing Closure verification of these check valves will be performed by leak rate testing in accordance with 10CFR50 Appendix J on a frequency specified by Option B of Appendix J.

Test Exception Number *Test Exception Type*

VRR-03 Valve Relief Request

Group SI21 Low Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)

Safety Function

1. Open to inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is >2550 gpm and <2800 gpm for LHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5.2.g).
2. Open to recirculate borated water from the containment sump to the RCS hot legs during the hot leg recirculation phase of safety injection.
3. Close to prevent backflow from the RHR system during post accident recovery operations.
4. Close and be leak tight (CAT A) to maintain containment integrity.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves have a safety function in the closed direction as containment isolation valves. There are no intra or intersystem cross-ties downstream of these valves which would cause a diversion of flow from another pump if the check valve did not close. Due to the fact that there are no cross-ties downstream of the valves, the valves lack design provisions for system testing to verify closure capability in any plant condition.

Leak rate testing verifies valve closure by validating the valve seats properly and is leak tight, and provides more information about the closed position than a simple backflow test.

NUREG 1482, Section 4.1.4, allows the extension of the test interval to refueling outage frequency for check valves where the only practical means of verifying check valve closure is by performing the Appendix J Leak Test. STP has adopted Option B of Appendix J that allows these check valves to be leak tested on a frequency not to exceed once every five years.

Disassembly provides limited information on a check valve's ability to seat properly on cessation of flow. Following re-assembly, the Code requires a post-assembly test, which would reopen the check valve without providing assurance the disk would return to the closed position. Disassembly of these check valves is not practical due to the design complexity of the check valves, the increased probability of human error during valve re-assembly, foreign material exclusion concerns, and ALARA considerations.

The subject valves have exhibited a history of satisfactory operation. Based on their performance history, it is believed that the current Probabilistic Risk Assessment (PRA) modeling of the failure rates for these valves is still accurate. Irrespective of the failure rate modeling, the current STPNOC PRA model indicates that the potential failure of these valves (assuming complete failure) from a Large Early Release standpoint is minimal.

Based on the above, it is evident that in the event that containment isolation is necessary, the subject valves will have a high probability of performing their intended safety function. Therefore, STP believes that the safety significance and potential consequences of the proposed relief is extremely small.

Alternate Testing Closure verification of these check valves will be performed by leak rate testing in accordance with 10CFR50 Appendix J on a frequency specified by Option B of Appendix J.

Test Exception Number *Test Exception Type*

VRR-03 Valve Relief Request

Group CC29 CCW Supply to RHR Pump and Heat Exchanger Inside Cntmt Isolation Check Valve (Trains A, B, and C)

Safety Function 1. Open to provide flow path for CCW through RHR pump 1(2)C seal cooler and RHR 1(2)C heat exchanger (4906 gpm required per DBD Table T-7, Minimum or Maximum Safeguards).

2. Close and leak tight (CAT A) in accordance with UFSAR commitment (Section 6.2.6.3

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves have a safety function in the closed direction as containment isolation valves. There are no intra or intersystem cross-ties downstream of these valves which would cause a diversion of flow from another pump if the check valve did not close. Due to the fact that there are no cross-ties downstream of the valves, the valves lack design provisions for system testing to verify closure capability in any plant condition.

Leak rate testing verifies valve closure by validating the valve seats properly and is leak tight, and provides more information about the closed position than a simple backflow test.

NUREG 1482, Section 4.1.4, allows the extension of the test interval to refueling outage frequency for check valves where the only practical means of verifying check valve closure is by performing the Appendix J Leak Test. STP has adopted Option B of Appendix J that allows these check valves to be leak tested on a frequency not to exceed once every five years.

Disassembly provides limited information on a check valve's ability to seat properly on cessation of flow. Following re-assembly, the Code requires a post-assembly test, which would reopen the check valve without providing assurance the disk would return to the closed position. Disassembly of these check valves is not practical due to the design complexity of the check valves, the increased probability of human error during valve re-assembly, foreign material exclusion concerns, and ALARA considerations.

VRR-03 Continued

The subject valves have exhibited a history of satisfactory operation. Based on their performance history, it is believed that the current Probabilistic Risk Assessment (PRA) modeling of the failure rates for these valves is still accurate. Irrespective of the failure rate modeling, the current STPNOC PRA model indicates that the potential failure of these valves to close has no impact on core damage frequency. In addition, the impact on these valves (assuming complete failure) from a Large Early Release standpoint in minimal.

Based on the above, it is evident that in the event that containment isolation is necessary, the subject valves will have a high probability of performing their intended safety function. Therefore, STP believes that the safety significance and potential consequences of the proposed relief is extremely small.

Alternate Testing Closure verification of these check valves will be performed by leak rate testing in accordance with 10CFR50 Appendix J on a frequency specified by Option B of Appendix J.and Figure 6.2.4-1, Sheet 39) to provide containment integrity.

Test Exception Number *Test Exception Type*

VRR-03 Valve Relief Request

Group CC28 CCW Supply to RCFCs Inside Cntmt Isolation Check Valve (Trains A, B, and C)

Safety Function 1. Open to provide cooling water to the Reactor Containment Fan Coolers (RCFC) in the event of a Safety Injection signal or Loss of Offsite Power (LOOP) (3600 gpm per DBD Table T-7, Safety Injection, Minimum or Maximum Safeguards, or Recirculation).

2. Close and leak tight (CAT A) in accordance with UFSAR commitment (Section 6.2.6.3 and Figure 6.2.4-1, Sheet 25) to provide containment integrity.

Code Requirement OMa 4.3.2.1 requires check valves to be exercised nominally every three (3) months. OMa 4.3.2.2 requires that each check valve be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its safety function.

Reason for Exception These check valves have a safety function in the closed direction as containment isolation valves. There are no intra or intersystem cross-ties downstream of these valves which would cause a diversion of flow from another pump if the check valve did not close. Due to the fact that there are no cross-ties downstream of the valves, the valves lack design provisions for system testing to verify closure capability in any plant condition.

Leak rate testing verifies valve closure by validating the valve seats properly and is leak tight, and provides more information about the closed position than a simple backflow test.

NUREG 1482, Section 4.1.4, allows the extension of the test interval to refueling outage frequency for check valves where the only practical means of verifying check valve closure is by performing the Appendix J Leak Test. STP has adopted Option B of Appendix J that allows these check valves to be leak tested on a frequency not to exceed once every five years.

Disassembly provides limited information on a check valve's ability to seat properly on cessation of flow. Following re-assembly, the Code requires a post-assembly test, which would reopen the check valve without providing assurance the disk would return to the closed position. Disassembly of these check valves is not practical due to the design complexity of the check valves, the increased probability of human error during valve re-assembly, foreign material exclusion concerns, and ALARA considerations.

The subject valves have exhibited a history of satisfactory operation. Based on their performance history, it is believed that the current Probabilistic Risk Assessment (PRA) modeling of the failure rates for these valves is still accurate. Irrespective of the failure rate modeling, the current STPNOC PRA model indicates that the potential failure of these valves to close has no impact on core damage frequency. In addition, the impact on these valves (assuming complete failure) from a Large Early Release standpoint in minimal.

Based on the above, it is evident that in the event that containment isolation is necessary, the subject valves will have a high probability of performing their intended safety function. Therefore, STP believes that the safety significance and potential consequences of the proposed relief is extremely small.

Alternate Testing Closure verification of these check valves will be performed by leak rate testing in accordance with 10CFR50 Appendix J on a frequency specified by Option B of Appendix J

ATTACHMENT 5

IST GROUP NARRATIVES

GROUP	*GROUP DESCRIPTION*
AF01	Auxiliary Feedwater Supply to Steam Generator Inside Cntmt Isolation Check Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	High	5.75E-04	1799.28	High	High

IST_FUNCTIONS

Open to allow 500 gpm (per Technical Specification 4.7.1.2.1) of auxiliary feedwater flow to Steam Generator 1(2)A.

PRA_FUNCTIONS

Model to open and remain open.

DETERMINISTIC REMARKS

Open to allow auxiliary feedwater flow to Steam Generator.

There are 4 available flowpaths leading to 4 steam generators.

2 of 4 trains required for immediate response.

1 train is required for long term decay heat removal.

Discussion (The following general IST ranking notes apply to this valve group)

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth (Three valves would have to fail to fail the function)

Note 4. Low FV with High RAW.

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain HIGH until new PRA model is approved.

IST RANK DISCUSSION

Failure of this valve affects heat removal capability of associated steam generator. Function can be performed by any of the four Auxiliary Feedwater trains. Based on the amount of redundancy available for this function the FV is less than 5E-03 and an IST rank of Low is reasonable. However, the RAW is high as a result of the industry failure rate data for check valves. The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW may be reduced when the new industry failure rate data for check valves is included in the PRA update. This valve group will remain IST Rank HIGH until new PRA model is approved. Currently GQA Risk Rank and PRA rank are the same (HIGH) which is also the final ranking for IST.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
AF02	Auxiliary Feedwater Supply to Steam Generator Outside Cntmt Isolation Stop Check MOVs

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA_RAN*	*Final IST*
Low	High	4.51E-03	1963.45	High	High

IST_FUNCTIONS

1. Open upon receipt of
   A. Steam generator low water level,
   B. Low feedwater flow signal from AMSAC, or
   C. SI initiation signal to allow 500 gpm (per Technical Specification 4.7.1.2.1) flow to Steam Generator 1(2)A.
   NOTE: The ESF actuation signal allows the stop check valve to function normally through the self-actuating design of the check valve. Operation of the motor operator function is not required for the valve to fulfill its open safety function.
2. Close (remote manual) for Steam Generator 1(2)A isolation in response to SGTR, FWLB, and MSLB.

PRA_FUNCTIONS

Model to perform its function (throttle) and return open after throttling.

DETERMINISTIC REMARKS

Open upon receipt of steam generator low water level, low feedwater flow signal from AMSAC, or SI initiation signal to control flow to Steam Generator. The ESF actuation signal allows the stop check valve to function normally through the self-actuating design of the check valve. Operation of the motor operator function is not required for the valve to fulfill its open safety function.

Close (remote manual) for Steam Generator isolation in response to SGTR, FWLB, and MSLB. This is a normally closed stop check valve. There are 3 check valves in the line, affording much redundancy for the closing function.

There are 4 available flowpaths leading to 4 steam generators.
2 of 4 trains required for immediate response.
1 train is required for long term decay heat removal.

Discussion (The following general IST ranking notes apply to this valve group.)

Medium FV and High RAW Note 1.Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain HIGH until new PRA model is approved.

IST RANK DISCUSSION

Failure of this valve affects heat removal capability of associated steam generator. Function can be performed by any of the four Auxiliary Feedwater trains. Based on the amount of redundancy available for this function the FV is less than 5E-03 and an IST rank of Low is reasonable. However, the RAW is high as a result of the industry failure rate data The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is include in the RAW number. The RAW may be reduced when the new industry failure rate data for check valves is included in the PRA update. Valve group will remain IST Rank HIGH until new PRA model is approved. Currently GQA Risk Rank and PRA rank are the same (HIGH) which is also the current ranking for IST.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
AF03	Auxiliary Feedwater Supply to Steam Generator Flow Regulating MOVs

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled		High		High

IST_FUNCTIONS

Open by QDPS upon receipt of

- Steam generator low water level,
- Low feedwater flow signal from AMSAC, or
- SI Initiation signal to allow 500 gpm (per Technical Specification 4.7.1.2.1) flow to Steam Generator 1(2)C.

PRA_FUNCTIONS

Models to perform throttling function.

DETERMINISTIC REMARKS

Open by QDPS upon receipt of steam generator low water level, low feedwater flow signal from AMSAC, or SI initiation signal to control flow to Steam Generator.

Normally open valve. Valve has to perform a throttling function.

There are 4 available flowpaths leading to 4 steam generators.

2 of 4 trains required for immediate response.

1 train is required for long term decay heat removal.

Discussion (The following general IST ranking notes apply to this valve group.)

Medium FV and High RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 7. High RAW is due to high CCF term. (3 trains of like components)

IST RANK DISCUSSION

Failure of this valve affects heat removal capability of associated steam generator. Function can be performed by any of the four Auxiliary Feedwater trains. Though the IST function is not specifically modeled in the PRA, the PRA ranking is determined by comparison with other valves in the Auxiliary Feedwater flow stream. Based on the amount of redundancy available for this function the FV is less than 5E-03 and an IST rank of Low is reasonable. However, the RAW is high as a result of the industry failure rate data used in the current PRA results in a larger contribution to the common cause calculation which is include in the RAW number. The RAW may be reduced when the new industry failure rate data for check valves is included in the PRA update. Valve group will remain IST Rank HIGH until new PRA model is approved. Currently GQA Risk Rank and PRA rank are the same (HIGH) which is also the current ranking for IST.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
AF04	Auxiliary Feedwater Turbine Trip and Throttle Valve (MS0514)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	1.95E-01	4.53	High	High

IST_FUNCTIONS

Open to control steam admission to the AFW pump turbine in response to a SI signal, Lo-Lo SG water level, or AMSAC.

PRA_FUNCTIONS

Models to open to start the pump

DETERMINISTIC REMARKS

Open to control steam admission to the AFW pump turbine in response to a SI signal, Lo-Lo SG water level, or AMSAC. Close to isolate steam flow in response to SGTR.

There are 4 available flowpaths leading to 4 steam generators.

2 of 4 trains required for immediate response.

1 train is required for long term decay heat removal.

Discussion

High FV. Modeled in PRA with AF Turbine function.

IST RANK DISCUSSION

Failure of this valve affects heat removal capability of the 1(2)D steam generator. During SBO, this train is the only source of water for decay heat removal. Valve serves as overspeed protection for the Aux. Feedwater Terry Turbine. Three Diesel Generators provide redundant power capability to the other AF trains during LOOP. The Final IST Rank is IST High, based on the FV value determined by the PRA model.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
AF06	Auxiliary Feedwater Pump Discharge Cross-Tie Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

Close upon receipt of

- Low-low steam generator water level signal for any one of the four steam generators,
- SI signal, or
- Low feedwater flow signal from AMSAC.

NOTE: This serves to isolate the S/G's and their respective AFW pumps from one another in the event of a rupture in one of the S/G's.

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Close upon receipt of low-low steam generator water level signal for any one of the four steam generators, SI signal, or low feedwater flow signal from AMSAC. This serves to isolate the S/G's and their respective AFW pumps from one another in the event of a rupture in one of the S/G's. There would have to be a failure of 2 of the 4 valves (includes FV7518) in order to affect AF train separation and prevent pump runout. These valves are designed to fail closed.

Discussion (The following general IST ranking notes apply to this valve group.)

Note 1. Average redundancy in system maintains defense in depth.

Note 2. Failure of 2 Diverse valves required to fail safety function.

Note 3. Valves are normally closed and fail close (not required to change position to perform safety function.

Note 5. Close function for valve group is ranked low by GQA. Other GQA function not tested by IST.

IST RANK DISCUSSION

Failure of the valve could affect AF train separation. Requires two valve failures. Valves are normally closed and fail closed. Redundancy, diversity, and passivity are the factors considered that result in the ranking of IST Low. This ranking is in agreement with the GQA risk ranking for the safety function tested by the IST program.

Final IST Rank – LOW

GROUP	*GROUP DESCRIPTION*
AF07	Auxiliary Feedwater Auto Recirc Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	High	5.75E-04	1799.28	High	High

IST_FUNCTIONS

Open to allow a minimum flow of 100 – 130 gpm (per Aux Feedwater DBD 4.1.2.1) from the AFW pump in recirculation to the AFST and a flow of 550 – 640 gpm (per Aux Feedwater DBD 4.1.2.2) from the AFW pump to the steam generator

PRA_FUNCTIONS

Model to open

DETERMINISTIC REMARKS

Open to allow flow from the AFW pump in recirculation to the AFST and flow from the AFW pump to the steam generator.

There are 4 available flowpaths leading to 4 steam generators. There is high redundancy of flowpaths.

2 of 4 trains required for immediate response.

1 train is required for long term decay heat removal.

Discussion (The following general IST ranking notes apply to this valve group)

Note 4. Low FV with High RAW.

Note 7. Common Cause Failure is dominant in high RAW (four trains).

Note 12. Valve group will remain HIGH until new PRA model is approved.

IST RANK DISCUSSION

Failure of this valve affects heat removal capability of associated steam generator. Function can be performed by any of the four Auxiliary Feedwater trains. Based on the amount of redundancy available for this function the FV is less than 5E-03 and an IST rank of Low is reasonable. However, the RAW is high as a result of the industry failure rate data. The industry failure data used in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW may be reduced when the new industry failure rate data for check valves is included in the PRA update. Valve group will remain ranked IST HIGH until new PRA model is approved. Currently GQA Risk Rank and PRA rank are the same (HIGH) which is also the current ranking for IST.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
AFMDP	Motor-Driven AFW Pumps

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	High	1.00E-02	332.18	High	High

IST_FUNCTIONS

The motor driven AFW pump is capable of delivering a flow of 540 gpm (UFSAR, Section 6 2.1 4 5) to one steam generator during a loss of main feedwater (with or without offsite power available), during a feedwater line break, during a steam line break, during a Loop, during a control room evacuation, or during a LOCA event (DBD, Section 3.2.8.9). The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant System from normal zero load temperatures to a hot leg temperature of approximately 350oF (DBD, Section 3 2.1.5). Discharge pressure shall be greater than 1519 psig per CREE 97-17512-3.

PRA_FUNCTIONS

AFW is credited to provide decay heat removal post-trip.

DETERMINISTIC REMARKS

The motor driven AFW pumps are capable of delivering flow to the associated steam generators during a loss of main feedwater (with or without offsite power available), during a feedwater line break, during a steam line break, during a Loop, during a control room evacuation, or during a LOCA event. The pumps also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant system from normal zero load temperatures to a hot leg temperature of approximately 350 F.

There are 4 available flowpaths leading to 4 steam generators.

2 of 4 trains required for immediate response.

1 train is required for long term decay heat removal.

Discussion (The following general IST ranking notes apply to this valve group.)

High FV and high RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three pumps would have to fail to fail the function)

IST RANK DISCUSSION

Failure of a pump affects heat removal capability of associated steam generator. Function can be performed by any of the four redundant trains. FV and RAW are high indicating that the AFW pumps are high risk significant and are important to the success criteria in the PRA.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
AFTDP	Turbine-Driven AFW Pump

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	1.95E-01	4.53	High	High

IST_FUNCTIONS

The turbine-driven AFW pump is capable of delivering a minimum required feedwater flow of 540 gpm (UFSAR, Section 6 2.1.4.5) to one steam generator during Loss Of Main Feedwater (with or without offsite power available), Feedwater Line Break, Steam Line Break, Loss Of All AC Power, Control Room Evacuation, and Loss Of Coolant Accident events. The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant system from normal zero load temperatures to a hot leg temperature of approximately 350F.

PRA_FUNCTIONS

AFW is credited to provide decay heat removal post trip.

DETERMINISTIC REMARKS

The turbine-driven AFW pump is capable of delivering a minimum required feedwater flow to one steam generator during Loss of Main Feedwater (with or without offsite power available), Feedwater Line Break, Steam Line Break, Loss Of All AC Power (SBO), Control Room Evacuation, and Loss Of Coolant Accident events. The pump also functions to supply feedwater to one or more steam generators to perform cooldown of the Reactor Coolant system from normal zero load temperatures to a hot leg temperature of approximately 350F. During SBO, this train is the only source of water for decay heat removal. DG provides redundant power capability to the other AF trains during LOOP.

There are 4 available flowpaths leading to 4 steam generators.

2 of 4 trains required for immediate response.

1 train is required for long term decay heat removal.

Discussion

High FV

IST RANK DISCUSSION

Failure of this pump affects heat removal capability of associated steam generator. Function backed up by redundant trains. During SBO, this train is the only source of water for decay heat removal. DG provides redundant power capability to the other AF trains during LOOP FV and RAW are high indicating that the AFW turbine driven pump is high risk significant and are important to the success criteria in the PRA.

Final IST Rank – HIGH

GROUP	*GROUP DESCRIPTION*
CC05	Common Suction Header Isolation Valves (Trains A, B, & C) MOVs

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low	6 00E-05	1.05	Medium	Low

IST_FUNCTIONS

1. Open to provide a return path from the Spent Fuel Pool Heat Exchangers, RCP thermal barrier heat exchangers, bearing lube oil coolers, and motor air coolers to the Train B pump if it is operating for accident conditions.
2. Close to isolate the return flow path from the Spent Fuel Pool Heat Exchangers, RCP thermal barrier heat exchangers, bearing lube oil coolers, and motor air coolers if the surge tank level is low or the pump has stopped.

PRA_FUNCTIONS

Modeled to open

DETERMINISTIC REMARKS

Valve opens to allow CCW flow from SFP Heat Exchangers, RCP Coolers, and other Non-ESF loads. Valve closes on low level of the CCW Surge Tank to isolate CCW suction header. Valve is located between Header and suction side of CCW pumps. Valve is a normally open motor-operated valve MOVs fail in current position.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Low RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth (All three valves would have to fail to fail the function)

Note 3. Valve is normally open and does not have to reposition to allow CCW flow, which is the safety function ranked high by GQA.

IST RANK DISCUSSION

These valves are normally open. The MOV fails in the existing or normal position. The greatest risk is associated with the function to allow CCW flow. Since these valves are normally open, this function is satisfied without operation of the valve. Reopening of the valve would require a previous need for closure and there are three trains to supply CCW. It would take more than one failure to fail this function. The risk identified for GQA and the PRA is medium. The PRA measures for IST are lower since the valve is normally open and does not change position to satisfy function. The Risk Achievement Worth drops from just over 2 to 1.00. The close function is ranked LOW by GQA. System redundancy and the failure in the normal position for the critical safety function are considerations for the rank of IST Low.

Final IST Rank – LOW

GROUP	*GROUP DESCRIPTION*
CC06	Common Supply Header Isolation Valves (Trains A, B, & C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low	6.00E-05	1.05	Medium	Low

IST_FUNCTIONS

1. Open to provide CCW Train A cooling to the Spent Fuel Pool Heat Exchangers, RCP thermal barrier heat exchangers, bearing lube oil coolers, and motor air coolers if the Train A pump is operating for accident conditions.
2. Close when the pump is stopped to isolate the Train A Pump from the CCW common header.

PRA_FUNCTIONS

Modeled to open

DETERMINISTIC REMARKS

Valve opens to allow CCW flow to SFP Heat Exchangers, RCP Coolers, and other Non-ESF loads. Valve closes on low level of the CCW Surge Tank to isolate CCW supply header. Valve is located between Header and discharge side of CCW pumps. Valve is a normally open motor operated valve. MOVs fail in current position and open on pump start.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Low RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth.

Note 2. Closing function provided by redundant and diverse upstream check valve. (All three valves would have to fail to fail the function)

Note 3. Valve is normally open and does not have to reposition to allow CCW flow, which is the safety function ranked high by GQA.

IST RANK DISCUSSION

These valves are normally open. The valve fails in the existing or normal position. The greatest risk is associated with the function to allow CCW flow. Since these valves are normally open this function is satisfied without operation of the valve. Reopening of the valve would require a previous need for closure and there are three trains to supply CCW. It would take more than one failure to fail this function. The risk identified for GQA and the PRA is medium. The PRA measures for IST are lower since the valve is normally open and does not change position to satisfy function. The Risk Achievement Worth drops from just over 2 to 1.00. The close function is ranked LOW by GQA. System redundancy and the failure in the normal position for the critical safety function are considerations for the rank of IST Low.

Final IST Rank – LOW

GROUP	*GROUP DESCRIPTION*
CC26	CCW Common Return Header to CCW Pump Suction Check Valve (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low	6.30E-05	1.60	Medium	Low

IST_FUNCTIONS

1. Close on reverse flow to ensure CCW Train separation.
2. Open to provide return flow path from the RCP thermal barrier heat exchangers, bearing lube oil coolers, and motor air coolers to the CCW Train A pump if it is operating for accident conditions per DBD 4.1 4.5.

PRA_FUNCTIONS

Modeled.

DETERMINISTIC REMARKS

The closing function of these valves is redundant to the function of upstream MOVs. Check valves are considered to be more reliable to close. In the case of flow diversion, there are supply MOVs and supply check valves, so the plant would isolate the supply. In the case of the opening function, there are 3 trains. STP typically runs one train therefore, the plant only requires one set of valves).

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Low RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Closing function provided by redundant and diverse upstream MOV.

Note 3. Check valves are passive components and considered more reliable to open/close

IST RANK DISCUSSION

System function is designed so that failure to open will be mitigated by redundant trains. Loss of RCPs challenges plant response. Redundancy for the open function and diversity for the closing function provide assurance that the safety functions will be performed. Check valves do not have valve operator type failures so they are considered more reliable and have lower failure rates.

Final IST Rank – LOW

GROUP	*GROUP DESCRIPTION*
CC27	CCW Pump Discharge Check Valve to Common Supply Header (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low	8.16E-05	1 66	Medium	Low

IST_FUNCTIONS

Open to provide CCW flow for CVCS and SFPCCS equipment (4461 gpm required per CR 99-1380-1).

PRA_FUNCTIONS

Modeled to open

DETERMINISTIC REMARKS

The closing function of these valves is redundant to the function of upstream MOVs. Check valves are considered to be more reliable to close. In the case of flow diversion, there are supply MOVs and supply check valves, so the plant would isolate the supply. In the case of the opening function, there are 3 trains STP typically runs one train therefore, the plant only requires one set of valves).

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Low RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Closing function provided by redundant and diverse downstream MOV.

Note 3. Check valves are passive components and considered more reliable to open/close

IST RANK DISCUSSION

System function is designed so that failure to open will be mitigated by redundant trains. Loss of RCPs challenges plant response. Redundancy for the open function and diversity for the closing function provide assurance that the safety functions will be performed. Check valves do not have valve operator type failures so they are considered more reliable and have lower failure rates.

Final IST Rank – LOW

GROUP	*GROUP DESCRIPTION*
CC29	CCW Supply to RHR Pump and Heat Exchanger Inside Cntmt Isolation Check Valve (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Medium	3 49E-06	7.28	Medium	Medium

IST_FUNCTIONS

1. Open to provide flow path for CCW through RHR pump 1(2)C seal cooler and RHR 1(2)C heat exchanger (4906 gpm required per DBD Table T-7, Minimum or Maximum Safeguards).
2. Close and leak tight (CAT A) in accordance with UFSAR commitment (Section 6 2.6 3 and Figure 6.2.4-1, Sheet 39) to provide containment integrity.

PRA_FUNCTIONS

Modeled to open

DETERMINISTIC REMARKS

There are 3 trains of flow paths available, only 1 train is required. The GQA rank is based on this function. CC10 (MOVs in line) are ranked low by GQA. MOVs in line provide redundant closing function.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Medium RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Closing function provided by redundant and diverse upstream MOV.

Note 3. Check valves are passive components and considered more reliable to open/close.

Note 8. Industry data will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain Medium until new PRA model is approved.

IST RANK DISCUSSION

Valve open function required for post-accident heat removal. Redundancy available in other trains. MOVs in line provide redundant closing function. Additionally, the valve is in a physically closed system whose piping is higher design pressure than containment pressure and the CCW system is not connected to the reactor coolant pressure boundary. Based on the amount of redundancy available for this function the FV is less than 5E-03 and an IST rank of Low is reasonable. However, the RAWis Medium as a result of the industry failure rate data. The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW may be reduced when the new industry failure rate data for check valves is included in the PRA update. This valve group will remain ranked IST MEDIUM until new PRA model is approved. Currently GQA Risk Rank and PRA rank are the same (MEDIUM) which is also the current ranking for IST.

Final IST Rank – MEDIUM

GROUP	*GROUP DESCRIPTION*
CC33	RCP Thermal Barrier Leak Isolation Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low			Medium	Low

IST_FUNCTIONS

1. Remain open for the return of CCW cooling water from the RCP thermal barrier to prevent seal failure or thermal barrier rupture which could lead to a SBLOCA (40 gpm required per DBD Table T-7, Safety Injection).
2. Close to prevent CCW overpressurization from flow of the RCS into the CCW system in the event of failure of the thermal barrier.

NOTE: This valve is a normally open, cylinder-actuated, self-regulated globe valve. The process water is used as the input signal to the actuator. The valve starts to close when the pressure of the process water reaches 120 psig. The valve is fully closed, but not seated at 150 psig. The valve shuts off at a pressure of over 200 psig.

PRA_FUNCTIONS

Modeled to remain open

DETERMINISTIC REMARKS

Close on increasing pressure to isolate CCW system from possible backflow from the RCP thermal barrier. Remains open to provide cooling water to the RCP thermal barrier. Thermal barrier failure is a highly unlikely event. Redundant closing function is provided by valves in series.

Discussion (The following general IST ranking notes apply to this valve group)

PRA models valve to stay open. Open is not an active function.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. Close function would be lost only if there was a previous failure of the RCP thermal barrier and two valves in series both failed to close.

Note 3. Valve is normally open and does not have to reposition to allow CCW flow, which is the safety function ranked medium by GQA. Valve closes if system pressure increases due to a RCP thermal leak.

IST RANK DISCUSSION

Function of the valves is to mitigate thermal barrier failure. These valves do not play a role in any other accident or transient. Ranking of IST Low is based on the normal position of the valve is open to allow CCW flow to cool RCP thermal barriers. Valve failure would not prevent CCW flow. Double isolation valves provide redundant closing capability to mitigate infrequent event.

Final IST Rank – LOW

GROUP	*GROUP DESCRIPTION*
CCPP	Component Cooling Water Pumps

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	1 30E-03	2.14	High	Medium

IST_FUNCTIONS

Provide 14,070 gpm of cooling water (DBD 4.1.6.2) to ESF components under safe shutdown and accident conditions.

PRA_FUNCTIONS

Modeled to start and run to provide cooling OR

Fail-to-start/Fail-to-run

DETERMINISTIC REMARKS

Provide 14,070 gpm of cooling water to ESF components under safe shutdown and accident conditions. CCW pumps support normal operation and shutdown. Three independent trains of CCW are available. One pump train is capable of supplying adequate cooling to all necessary loads. Although original design requires two trains for shutdown, evaluations have determined that one train is sufficient to prevent core damage, and, is therefore used for success criteria in PRA.

Discussion (The following general IST ranking notes apply to this valve group)

Low FV and Medium RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three pumps would have to fail to fail the function)

Compensatory measure: Train rotation for maintenance requires starting different CCW pumps frequently. There will be assurance that the pumps will start and provide adequate flow.

IST RANK DISCUSSION

CCW Pumps provide the primary means to remove decay heat in both normal and accident conditions. Redundant trains available. All three trains are administratively required for front end mid-loop. CCW pump function is used to mitigate transients and accidents. Failure of a pump to function can affect the associated ECCS train. One CCW pump is running at all times. Train rotation for maintenance results in frequent verification that the CCW pumps will start as required.

Final IST Rank - MEDIUM with compensatory actions (slave relay test starts all CCW pumps in addition to the regular rotation of the trains for maintenance)

GROUP	*GROUP DESCRIPTION*
CHPP	Chilled Water Pumps

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Medium	5.53E-04	4 65	High	Medium

IST_FUNCTIONS

Provide the motive force required for moving chilled water in a closed loop through the essential chillers and cooling coils of the various safety related air handling units (AHUs).

PRA_FUNCTIONS

Modeled to start and run to provide cooling OR
Fail-to-start/Fail-to-run

DETERMINISTIC REMARKS

Provide the motive force required for moving chilled water in a closed loop through the essential chillers and cooling coils of the various safety related air handling units (AHUs).

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Medium RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three pumps would have to fail to fail the function)

Compensatory measure: Pumps started to allow slave relay testing per Tech Specs.

IST RANK DISCUSSION

Loss of chilled water affects cooling loads on that train. There are 3 trains that provide this function. One CH pump is running at all times. Train rotation for maintenance results in frequent verification that the Essential Chilled Water pumps will start as required.

Final IST Rank - MEDIUM with compensatory actions (slave relay test starts all Essential Chilled Water pumps in addition to the regular rotation of the trains for maintenance)

GROUP	*GROUP DESCRIPTION*
CV06	RCP Seal Injection Check Valve (Class 1 Boundary Isolation)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low			Medium	Low

IST_FUNCTIONS

1. Open to provide 8 gpm of alternate RCS boration for safe shutdown (CVC DBD 3 2 2.1 4).
2. Close to maintain the RCS pressure boundary integrity in the event of a seal line rupture.

PRA_FUNCTIONS

Modeled to open and remain open

DETERMINISTIC REMARKS

Open to provide alternate RCS boration for safe shutdown. Close to maintain the RCS pressure boundary integrity in the event of a seal line rupture. Valve is normally open (essentially a passive function). Effectively, the valve is tested during the course of normal operation (I.e., there are no hidden failures). The valve closes when flow stops (no automatic signal) during phase A. At phase B, RCPs are not credited (large LOCA scenario). Redundant closing function provided by other check valve

Discussion (The following general IST ranking notes apply to this valve group.)

PRA – not explicitly modeled due to passive function.

Note 1. Average Redundancy provides Defense in Depth requirement.

Note 9. Closing function ranked medium by GQA is not called upon until an unlikely failure (Failure of Q Class 2 piping) has already occurred.

IST RANK DISCUSSION

Failure to close affects RCS pressure boundary. The close function is required if there is a pipe break in the Class 2 portion of the seal injection line. Class 2 piping less than 2" is exempt from ISI so this piping has not been risk ranked by the ISI program, however the Class 1 portion of the same line with the same material specification and fluid medium has no degradation mechanisms identified. This indicates that there is negligible risk of a pipe break that would require the check valves to go closed. Redundant closing function provided by other check valve in series. Valve is normally open (essentially a passive function).

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV07	Seal Injection to RCPs Inside Cntmt Isolation Check Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low				Medium	Low

IST_FUNCTIONS

Close and leak tight (CAT A) to maintain containment integrity and to provide isolation in the event of a seal line rupture.

PRA_FUNCTIONS

No active function modeled

DETERMINISTIC REMARKS

Close and leak tight (CAT A) to maintain containment integrity and to provide isolation in the event of a seal line rupture. Open to provide alternate RCS boration for safe shutdown Valve is normally open (essentially a passive function). Effectively, the valve is tested during the course of normal operation (I.e., there are no hidden failures). The valve closes when flow stops (no automatic signal) during phase A. At phase B, RCPs are not credited (large LOCA scenario). Redundant closing function performed by outboard MOV.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay open which is a passive function.

Note 1. Average Redundancy provides Defense in Depth requirement

Note 3. Valve is normally open and does not have to reposition to allow Seal Injection flow, which is the safety function ranked medium by GQA.

Note 10. No credible failure could occur, after valve is open and operating, which would prevent performance of function ranked medium.

IST RANK DISCUSSION

Failure to close affects containment integrity. Function is backed up by outboard MOVs. Valve opens to allow seal injection flowpath. Seal injection flow is established prior to starting the Reactor Coolant Pumps. Established flow indicates that check valves are not stuck in the closed position. Flow to RCP seals is maintained and check valves remain open during all plant modes until the RCS is depressurized. Failure to provide seal flow after valve is initially opened is not considered to be a credible event for Y pattern lift check valves.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV12	Letdown Orifice Header Isolation Valve

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low	3.33E-05	1.20	Medium	Low

IST_FUNCTIONS

Close in response to a Containment Phase A signal to isolate the letdown line from PSV-3100. Closure of MOV-0023 and MOV-0024 without closure of FV-0011, would increase the pressure in the letdown line until PSV-3100 lifted.

PRA_FUNCTIONS

Modeled to close

DETERMINISTIC REMARKS

Close in response to a Containment Phase A signal to isolate the letdown line from PSV-3100. Closure of MOV-0023 and MOV-0024 without closure of FV-0011, would increase the pressure in the letdown line until PSV-3100 lifted. Normally open, fails closed If this valve fails to close, upstream MOVs will isolate the line and downstream CIVs will also provide redundant closing capability.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Low RAW

Note 11. IST rank agrees with GQA function rank for the function tested by IST.

IST RANK DISCUSSION

Normally open, fails closed. If this valve fails to close, upstream MOVs will isolate the line and downstream CIVs will also provide redundant closing capability. Flow through relief valve is minimized by letdown orifices. Close function is ranked low by GQA. IST rank agrees with GQA function rank for safety function tested by the IST Program.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV20	RCS Letdown Isolation (Class 1 Boundary Isolation)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	NRS			Medium	Low

IST_FUNCTIONS

Close in response to low pressurizer level signal to isolate letdown line and maintain RCS pressure boundary integrity or close (remote manual) to isolate a high energy line break in the CVCS between the letdown stop valves and the letdown header isolation valves.

PRA_FUNCTIONS

Modeled to close

DETERMINISTIC REMARKS

Close in response to low pressurizer level signal to isolate letdown line and maintain RCS pressure boundary integrity or close (remote manual) to isolate a high energy line break in the CVCS between the letdown stop valves and the letdown header isolation valves. Actuation signals and power come from separate sources. Redundant closing capability provided by 2 MOVs in series.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay open for letdown. Close function not explicitly modeled.

Note 1. Average Redundancy provides Defense in Depth requirement.

Note 2. Two valves in series with separate closing signals and separate power sources provide diversity to assure performance of safety function.

Note 9. Closing function ranked medium by GQA is not called upon until an unlikely failure (Failure of Q Class 2 piping.) has already occurred.

IST RANK DISCUSSION

Failure of valve to close could affect RCS Inventory. Two valves in series (redundancy) with separate closing signals and separate power sources (diversity) assure performance of safety function.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV22	Volume Control Tank Outlet Isolation MOVs

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	NRS			Medium	Low

IST_FUNCTIONS

1. Remain open to provide suction from the VCT to the charging pumps for safe shutdown boration requirements.
2. Close in response to a SI signal coincident with an open signal from valves LCV-0112C and LCV-0113B (CVC DBD 4B.11.1.2) to switch charging pump suction from the VCT to the RWST on low-low levels in the VCT for safe shutdown boration requirements.

PRA_FUNCTIONS

Modeled to remain open, to close on low-low level in VCT

DETERMINISTIC REMARKS

Remain open to provide suction from the VCT to the charging pumps for safe shutdown boration requirements. Close in response to a SI signal coincident with an open signal from valves LCV-0112C and LCV-0113B to switch charging pump suction from the VCT to the RWST on low-low levels in the VCT for safe shutdown boration requirements. Two valves in series provide redundant closing function. Failure of both valves to close might lead to gas binding of the charging pumps. Valves are powered by separate power supplies and separate actuation signals.

Discussion (The following general IST ranking notes apply to this valve group)

PRA models valve to stay open which is a passive function.

Note 3. Valve is normally open and does not have to reposition to allow suction to charging pumps, which is the safety function ranked medium. IST does not test this function

Note 11. IST rank agrees with GQA function rank for the function tested by IST.

IST RANK DISCUSSION

Failure of a valve to remain open might lead to failure of the running charging pump. Failure of both valves to close might lead to gas binding of the charging pumps. Valves are normally open and fail as is. Valves are powered by separate power supplies and separate actuation signals. IST rank agrees with GQA ranking for the function tested by the IST program.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV27	RCP Seal Injection Outside Cntmt Isolation MOVs

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Close in response to an ESF signal coincident with a charging header low pressure signal (ESF signal is blocked if the charging header pressure is high) per CVC DBD 4B 7.4 and leak tight (CAT A) to provide containment integrity.
2. Remain open to provide an alternate boration path for safe shutdown.

PRA_FUNCTIONS

No active function modeled

DETERMINISTIC REMARKS

Close in response to an ESF signal coincident with a charging header low-pressure signal to provide containment integrity. Redundant closing function performed by inboard check valve.
Remain open to provide an alternate boration path for safe shutdown. Also provides seal injection. Valve is normally open.

Discussion (The following general IST ranking notes apply to this valve group)

PRA models valve to stay open which is a passive function.

Note 3. Valve is normally open and does not have to reposition to allow for boration through seal injection, which is the safety function ranked medium. IST does not test this function

Note 11. IST rank agrees with GQA function rank for the function tested by IST.

IST RANK DISCUSSION

Failure of the valve to close affects containment integrity. Redundant closing function performed by inboard check valve. IST rank agrees with GQA ranking for the close safety function which is tested by the IST program. Valve is normally open and does not have to reposition to allow for boration through seal injection, which is the function that is ranked medium by GQA. IST does not test this passive function. Valve is a cold shutdown valve since closing the valve would isolation RCP seal injection Valve is not routinely repositioned therefore open is a passive safety function

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV30	RCS Excess Letdown Heat Exchanger Inlet Isolation MOVs (Class 1 Boundary Isolation)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

Close to provide isolation of the excess letdown line for pipe break downstream of the valve to maintain RCS pressure boundary integrity.

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Close to provide isolation of the excess letdown line for pipe break downstream of the valve to maintain RCS pressure boundary integrity.

These valves are normally closed (essentially a passive safety function) and they do not receive a closing signal (because they are infrequently used - start up and cleanup events). There are two MOVs in series which provide redundant closing capability.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay closed which is passive function

Note 1. Average Redundancy provides Defense in Depth requirement.

Note 3. Valves are normally closed and do not have to reposition to isolation Excess Letdown from RCS pressure, which is the safety function ranked medium.

IST RANK DISCUSSION

Failure to close could affect RCS pressure boundary. These valves are normally closed and do not have to be repositioned to isolate Excess Letdown from RCS pressure. This function is ranked Medium by GQA. The valves are cold shutdown valves and are not stroked at power. There are two MOVs in series which provide redundant closing capability. Redundancy and passive safety function are considered for the IST rank.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
CV37	Charging Header Check Valve

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	NRS			Medium	Low

IST_FUNCTIONS

1. Open to provide seal injection RCS boration control flow path from discharge of centrifugal charging pump. A flow rate of 32 gpm is required per CVC DBD 4A 1 2.4.
2. Close to prevent diversion of flow due to HELB in charging header with flow path established through valve

PRA_FUNCTIONS

Modeled to open

DETERMINISTIC REMARKS

Open to provide RCS boration control flow path from discharge of centrifugal charging pumps. Close to prevent diversion of flow due to HELB in charging header with flow path established through valve HCV-0206. This valve is normally open. If this valve fails to close in the event of a HELB, the normal charging flowpaths are lost. The primary charging flowpath is isolated on safety injection.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay open (passive).

Note 3. Valve is normally open with charging in service and does not have to reposition to allow a boration flowpath, which is the safety function ranked medium by GQA.

Note 10. No credible failure could occur after valve is open and operating which would prevent performance of function ranked medium.

IST RANK DISCUSSION

Failure of the valve to close during HELB takes out normal charging path. The close function is ranked low by GQA. Alternate boration paths are available through RCP seal injection. The open function is ranked medium by GQA. Once a check valve has opened and is functioning, a credible failure that would prevent the valve from performing open function is very unlikely. Check valves are normally open and highly reliable.

Final IST rank - LOW

GROUP	*GROUP DESCRIPTION*
CV38	RCS Normal and Alternate Charging Check Valves (Class 1 Boundary Valves)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Close to maintain RCS pressure boundary isolation in the event of a Class 2 CVCS line break.
2. Open to provide 30 gpm for RCS boron and water inventory (charging) control for safe shutdown per Technical Specification 4.1.2.2 d Required flowrate is 190 gpm for RWST as water source per CR 99-1380-3.

PRA_FUNCTIONS

No active function modeled

DETERMINISTIC REMARKS

Close to maintain RCS pressure boundary isolation in the event of a Class 2 CVCS line break. Open to provide 30 gpm for RCS boron and water inventory (charging) control for safe shutdown. Two check valves in series provide redundant closing capability. Check valves are considered to be reliable to perform their function Redundant flowpaths provided by parallel injection lines.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay open which is a passive function.

Note 1. Redundancy is provided by two check valves in series for closing function. There are two separate flow paths for redundancy of the open function.

Note 3. In one path the closing function is backed up by a normally closed MOV. These check valves will be in the closed position and will not have to be repositioned to perform safety function.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 9. Closing function is required if there is a pipe failure. It has been shown that failure of the Class 2 pipe is very unlikely.

Note 10. For the flow path that is used for charging, the valves will be normally open to allow charging and chemical control of RCS. When the check valves are open and in service there is no credible failure that would prevent the valves from performing safety function.

IST RANK DISCUSSION

Failure of this valve to open affects one charging path. Redundant path is available. Failure of the valve to close affects RCS pressure boundary. Redundant closing function provided by second check valve. Check valves are considered to be reliable to perform their function.

Final IST rank - LOW

GROUP	*GROUP DESCRIPTION*
CV40	RCS Charging Inside Cntmt Isolation Check Valve

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	NRS			Medium	Low

IST_FUNCTIONS

1. Close and leak tight (CAT A) to maintain containment integrity.
2. Open to provide 30 gpm for RCS boron and water inventory (charging) control for safe shutdown per Technical Specification 4.1.2.2 d. Required flowrate is 190 gpm for RWST as water source per CR 99-1380-3.

PRA_FUNCTIONS

Modeled to remain open

DETERMINISTIC REMARKS

Close and leak tight (CAT A) to maintain containment integrity.

Open to provide boration and water inventory (charging) control for safe shutdown.

Upstream MOV performs redundant closing function. Check valve is normally open and highly reliable.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models the valve to remain open. Since the check valve is normally open this is a passive function

Note 1. Open function allows for charging and boration flow paths. Redundant flow paths are available through seal injection.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce RAW for check valves in clean systems.

IST RANK DISCUSSION

Failure of the valve to close could affect containment integrity. Redundant closing capability provided by upstream MOV. Failure to close following loss of letdown could lead to RCS inventory mismatch, however, in this case, redundancy is provided by upstream control valve. Valve is normally open providing a charging path. Once a check valve has opened and is functioning, a credible failure that would prevent the valve from performing open function is very unlikely. The open function to provide a charging flow path is the reason for the Medium rank by GQA. Failure of the valve to open after phase A reset would affect normal charging and boration flowpath. Alternate boration paths are available through RCP seal injection. System redundancy is provided so that valve is not risk significant.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
EW05	Essential Cooling Water Pump Discharge MOV (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	1.20E-03	4.67	High	Medium

IST_FUNCTIONS

Open following ECW pump start to provide essential cooling during accident conditions. The delay allows air that may have accumulated in the discharge line to be pushed out the vent line to minimize water hammer.

PRA_FUNCTIONS

Open to provide flow.

DETERMINISTIC REMARKS

Open following ECW pump start to provide essential cooling during accident conditions. The delay allows air that may have accumulated in the discharge line to be pushed out the vent line to minimize water hammer.

This system serves as the ultimate heat sink. Two of these valves (in 2 of the trains) are open all of the time. There are 3 trains. Any 1 train can provide the necessary cooling. These valves will not close on a LOOP.

Discussion (The following general IST ranking notes apply to this valve group)

Medium FV and Medium RAW

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Compensatory measure: Train rotation for maintenance requires starting different ECW pumps frequently. There will be assurance that the pumps will start and the valves will open to provide adequate flow.

IST RANK DISCUSSION

Failure of valve to open affects one train of ECW. 3 trains are available; only one train is required to provide necessary cooling. One train of ECW always in service. FV and RAW are Medium. These valves will be constantly tested for the open function as a result of the rotation of ECW trains for the staggered maintenance schedule. ECW pumps are ranked IST High and will be tested quarterly per Code requirements. These valves will be exercised during each ECW pump inservice test.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
EW08	Essential Cooling Water Pump Discharge Check Valve (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	High	7.72E-04	833 51	High	High

IST_FUNCTIONS

Open to allow ECW Pump discharge flow to components cooled by ECW. ECW Pump design flow per DBD is 18,290 gpm per CR 98-19892-3 and CR 99-1380-2.

PRA_FUNCTIONS

Opens to provide flow

DETERMINISTIC REMARKS

Open to allow ECW Pump discharge flow to components cooled by ECW. This system serves as the ultimate heat sink. Two of these valves (in 2 of the trains) are open all of the time. There are 3 independent trains. Any 1 train can provide the necessary cooling.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and High RAW

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 12. Valve group will remain High until new PRA model is approved.

IST RANK DISCUSSION

Loss of valve leads to loss of one train of ECW. 3 trains of ECW are available. Only 1 train is required to provide necessary cooling. High RAW results from high common cause as a result of brackish water in essential cooling water pond.

Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
EWPP	EW Pumps

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	8.75E-03	836.58	High	High

IST_FUNCTIONS

Take a suction from the Emergency Cooling Pond (ECP) and deliver cooling water to Emergency Diesel Generator heat exchangers, Essential Chillers, and Component Cooling Water heat exchangers during normal operating, shutdown, and following accident conditions. The ECW pumps receive an auto start signal upon an SI initiation signal. Design flow is 19,280 gpm (per DBD).

PRA_FUNCTIONS

Fail to start, fail to run

DETERMINISTIC REMARKS

Take a suction from the Emergency Cooling Pond (ECP) and deliver cooling water to Emergency Diesel Generator heat exchangers, Essential Chillers, and Component Cooling Water heat exchangers during normal operating, shutdown, and following accident conditions. The ECW pumps receive an auto start signal upon an SI initiation signal. This system serves as the ultimate heat sink. There are 3 trains. Any 1 train can provide the necessary cooling.

Discussion (The following general IST ranking notes apply to this valve group.)

High FV and High RAW

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three pumps would have to fail to fail the function)

IST RANK DISCUSSION

Failure of pump affects one train of ECW. 3 trains are available; only one train is required to provide necessary cooling. Loss of pump fails all safety class train components. Pumps provide primary means to remove decay heat in both normal and accident conditions. Redundant trains available. All three trains are administratively required for front end mid-loop. FV and RAW are high indicating that the Essential Cooling Water pumps are high risk significant and are important to the success criteria in the PRA.

Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
MS01	Main Steam Isolation Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low			Medium	Low

IST_FUNCTIONS

Close on the following signals to provide containment isolation, prevent blowdown of more than one steam generator at a time, and to prevent Containment overpressurization from reverse flow due to a steam line break inside of Containment:

- Low steam line pressure, or
- High negative steam line pressure rate.

PRA_FUNCTIONS

Close for MSLB and SGTR

DETERMINISTIC REMARKS

Normally open, designed to fail closed. During a SGTR and one fails to close, there are two separate trains of solenoid valves that could be used to force the valve to close. From the CR, the close signal will isolate the air supply and vent the air off of the operator to force the valve to close. For all other events, if the break occurs upstream of the valve, we do not want multiple SGs feeding the break. This means that more than one of the MSIVs would have to fail, an unlikely event

Discussion (The following general IST ranking notes apply to this valve group)

PRA models the valve to remain open or fail to transfer to the closed position. Valve is normally open and fails closed.

Note 1. Valve fails closed and has two trains of solenoid valves that can be used to close the valve. For MS line break, two valves would have to fail to affect more than one SG. Multiple SGs are available to cooldown RCS.

Note 9. Function is not called upon until unlikely failure of the Main Steam piping has occurred.

IST RANK DISCUSSION

Redundancy in isolating the alternate trains for steam line break. System design prevents blow down of more than one generator with single valve failure.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
MS03	Main Steam Power Operated Relief Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	3.71E-02	255.81	High	High

IST_FUNCTIONS

1. Open to permit the removal of heat from the Nuclear Steam Supply System when the MSIVs are closed to mitigate the consequences of a steam line break, feedwater line break, or steam generator tube rupture. When used in conjunction with the Auxiliary Feedwater System, the Main Steam System is used to achieve a safe shutdown condition.
2. Close to isolate steam generator in response to SGTR during startup operations.

PRA_FUNCTIONS

Model to open and to close

DETERMINISTIC REMARKS

Fail safe position is closed.
Of the steam generators receiving feedwater (typically all 4), we only need one PORV to function in order to depressurize. There are 4 available PORVs.
PRA rank is high to remove decay heat. If this does not work, and AFW is available, the 20 safety valves will help remove decay heat. PRA credits the function of 1 safety valve. Failing this, the plant will open the primary side and "create" a LOCA to depressurize. The new PRA model may show that the importance of this valve is low.

Discussion (The following general IST ranking notes apply to this valve group.)

High FV and High RAW

Note 1. Above Average Redundancy - Heat can be dissipated using any of four PORVs. Also if Auxiliary Feedwater is available, there are 20 Main Steam Relief Valves that also can perform this function. Closing function is backed up by the PORV block valves, except in case of SGTR concurrent with Core Damage

IST RANK DISCUSSION

In the case of SGTR, failure to close may challenge containment. Block valves can isolate open PORVs, except in SGTR with core damage due to high radiation. Redundancy in the valves is available. Steam dumps also provide redundant cooling function in scenarios where MSIVs remain open. High FV and High RAW.

Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
MS04	Main Steam Bypass Isolation Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

Close on the following signals to provide containment isolation, prevent blowdown of more than one steam generator at a time, and to prevent Containment overpressurization from reverse flow due to a steam line break inside Containment:

- Low steam line pressure, or
- High negative steam line pressure rate.

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Normally closed, except when starting up to warm up the steam lines.

GQA considered this to be of medium importance due to pressure boundary considerations.

Preliminary assessment supports a low ranking.

Discussion (The following general IST ranking notes apply to this valve group)

PRA – Valves are not explicitly modeled. Valves are open only when starting up to warm up the steam lines.

Note 3. Failure to close can only be a concern when the valves are open. The valves are normally closed.

Note 9. Steam line rupture during startup requiring closure is an unlikely event.

IST RANK DISCUSSION

Mainsteam/feedwater line rupture, high containment pressure Smaller line has less significant impact than MSIVs. Could only happen when valve is open. (Not likely in small window with valves are in use during startup) Redundancy in isolating the alternate trains for steam line break. System design prevents blow down of more than one generator with single valve failure. IST does not test pressure boundary function which is the function that results in the medium risk rank for GQA.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
MS05	Main Steam Dump Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
N/A				Low	N/A

IST_FUNCTIONS

N/A

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Dump steam to the condenser upon load rejection (Hi Tavg) and turbine trip (Hi Tavg)

If the turbine load is low, the 0 percent dump valves and the 10% to 20% dump valves will completely open within 3 seconds to dump steam to the condenser. The steam dump system can dump up to 40% rated steam flow corresponding to 50% external load rejection without a reactor trip.

If a 2/4 lo-lo Tavg signal is detected, the steam dump valves will close to stop the steam flow to the condensers.

The SDVs modulate, based on the turbine impulse pressure, to allow extra steam to the condensers.

All flows are equally divided between the 3 condensers to ensure even heat loads. Steam dump valves are non-safety and not Class 1E powered. These valves are not considered in the accident analysis.

Discussion

Steam dump valves are currently not modeled in the PRA. Dump valves are used for decay heat removal and if modeled would probably have a medium rank for the function, but individually the valves would be ranked LOW. STP is analyzed to cool down using the MS PORVs with the MS Isolation Valves closed If modeled the reliance on the MS PORVs could be reduced. Use of dump valves would require that the MSIVs be open or verified open. The plant reliability process will ensure that maintenance and monitoring activities are identified. Cause determination and corrective actions are performed whenever failures occur.

IST RANK DISCUSSION

Other program controls are used to focus plant resources on this valve group. Valves are not High risk, therefore are not being added to the IST program.

Final IST Rank – N/A

GROUP	*GROUP DESCRIPTION*
RC03	RCS Pressurizer Safety Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Low	1.07E-04	1.09	High	Medium

IST_FUNCTIONS

Open for overpressure protection of the RCS during loss of electrical load and /or turbine trip, uncontrolled rod withdrawal at power, loss of reactor coolant flow, loss of normal feedwater, and loss of offsite power to the station auxiliaries. Setpoint is 2485 psig per DBD 4D.1.2.4.

PRA_FUNCTIONS

Modeled to open to prevent overpressure

DETERMINISTIC REMARKS

Open for overpressure protection of the RCS during loss of electrical load and /or turbine trip, uncontrolled rod withdrawal at power, loss of reactor coolant flow, loss of normal feedwater, and loss of offsite power to the station auxiliaries.

PORVs minimize the challenge to safety valves for most events . For a standard overpressure event, only 1 PSV must lift. For other events (ATWS), all 3 PSVs have to open.

Discussion

Low FV and Low RAW

Frequency of testing for CODE and possibility for sample expansion does not warrant seeking extension of this valve group. Valves removed and sent offsite for testing each refueling outage.

IST RANK DISCUSSION

Failure of valve when challenged could affect RCS integrity. In the event of ATWS all valves must open. Redundancy of function provided by other safety valves. Additionally, system redundancy is provided by the RCS PORVs, which relieve RCS pressure and have a setpoint at a lower RCS pressure. PRA FV and RAW are low.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
RC06	Reactor Vessel Head Vent Isolation Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			High	Low

IST_FUNCTIONS

1. Close (for Regulatory Guide 1.139 requirements) to preclude a LOCA.
2. Open to vent steam and gases from the reactor vessel head following a LOCA and to provide a safety grade letdown path to the PRT allowing the plant to achieve cold shutdown for accident conditions.

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Close to preclude a LOCA.

Open to vent steam and gases from the reactor vessel head following a LOCA and to provide a safety grade letdown path to the PRT allowing the plant to achieve cold shutdown for accident conditions.

Normally closed, fails closed, 2 valves in series.

Active function (vent the head) to depressurize. There are two parallel paths to vent the head Separate power supply available for each path.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA does not credit Reactor Head Vents. Not explicitly modeled. GQA high function is closed. GQA medium function for Open.

Note 1. Two valves in series provide redundant closing capability. Two parallel paths provide redundant opening capability.

Note 2. Valves have separate power and signal trains.

Note 3. Valves are normally closed and fail close Closing function to provide RCS pressure boundary is passive. This is the function ranked high by GQA.

IST RANK DISCUSSION

Failure of the valve to close could challenge pressure boundary. Redundant closing capability provided by second head vent valve in vent path. These valves are cold shutdown valves and are not exercised during at power operations. Valves are verified closed following Tech Spec testing of the Head Vent flow path at the end of each refueling outage. The close function for RCS pressure boundary is a passive function. Opening of the vent path facilitates natural circulation decay heat removal. Failure to open is mitigated by redundant flowpath. The open function for vent path is required after a previous failure which results in a lost RCS inventory. Such a scenario would require a minimum of three failures for the Head vent system not to function.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
RC07	Reactor Vessel Head Vent Throttle Valves

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Open to vent steam and gases from the reactor vessel head following a LOCA and to provide a safety grade letdown path to the Pressurizer Relief Tank by "feed and bleed" to reach cold shutdown for accident conditions.
2. Close (for Regulatory Guide 1.139 requirements) to preclude a LOCA.

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Close to preclude a LOCA.

Open to vent steam and gases from the reactor vessel head following a LOCA and to provide a safety grade letdown path to the PRT allowing the plant to achieve cold shutdown for accident conditions.

Normally closed, fails closed, 2 valves in series.

Active function (vent the head) to depressurize. There are two parallel paths to vent the head Separate power supply available for each path.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA does not credit Reactor Head Vents. GQA medium function for Open.

Note 1. Two parallel paths provide redundant opening capability.

Note 2. Valves have separate power and signal trains.

IST RANK DISCUSSION

Failure of the valve to close could challenge pressure boundary. Redundant closing capability provided by upstream heat vent valves (requires the failure of three valves to result in LOCA. Failure to open is mitigated by redundant flowpath. Opening of the vent path facilitates natural circulation decay heat removal. The open function for vent path is required after a previous failure which results in a lost RCS inventory. Such a scenario would require a minimum of three failures for the Head vent system not to function.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
RH01	Residual Heat Removal Heat Exchange Control Valve (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			High	Low

IST_FUNCTIONS

1. Open for normal operating valve lineup after pipeline warmup and thus ensure correct valve position during safety injection and long term recirculation.
2. Fail open on loss of air or loss of electrical power.
3. Provide indication of valve position, GDC 13.

PRA_FUNCTIONS

Normally open, fails open (passive)

DETERMINISTIC REMARKS

Open for normal operating valve lineup after pipe line warmup and thus ensure correct valve position during safety injection and long term recirculation.

Fail open on loss of air or loss of electrical power. Valve is de-energized in open position during Modes 1-3.

Important for injection, recirculation, RHR (long-term cooling). The flowpath is important.

Normally open. Fails open. Redundancy of the flowpath provided by 3 trains. Only one flowpath is required for successful accident mitigation.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models this valve to stay open, which is a passive function.

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail the function)

Note 3. Valve is normally open and does not have to reposition to perform safety function. The valve fails open also.

IST RANK DISCUSSION

Failure of the valve could affect flow through the RHR HX and, therefore, decay heat removal. Valve is in its required position for SI. Redundancy is provided by other trains. GQA risk rank is high for residual heat removal during SI and to maintain cold shutdown. These valves are de-energized in the open position (Modes 1,2,3) and therefore the open function for SI is passive, no operation required (zero risk). These valves fail open which would allow maximum heat removal capability Three trains of RHR are capable and available to perform this function.

IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
RH04	Residual Heat Removal Inlet Isolation MOVs (Class 1 Boundary) Trains A, B, and C

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Medium	8.03E-05	28.46	High	Medium

IST_FUNCTIONS

1. Remain close and leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).
2. Open to allow RHR cooldown following SBLOCA, MSLB, FWLB, and in event of a fire.
3. Close to stop flow during a cooldown, with a pipe break downstream of the valve.
4. Provide indication of valve position, GDC 13.

PRA_FUNCTIONS

Model to open during SGTR. For most events, PRA does not need to credit RHR. During the SGTR, RHR is credited. If RHR is unavailable, the PRA will continue to use the SGs and open the PORVs, and then basically go to sump recirculation

DETERMINISTIC REMARKS

Remain close and leak tight (CAT A) to maintain RCS pressure boundary.

Open to allow RHR cooldown following SBLOCA, MSLB, FWLB, and in event of a fire (App. R.)

Close to stop flow during a cooldown, with a pipe break downstream of the valve.

Normally closed. Redundancy of closing function provided by other MOV in series. Diverse power supplied to redundant valves.

Redundancy of opening function provided by other trains.

Normally operate two trains during cooldown. Only one train is required.

Discussion (The following general IST ranking notes apply to this valve group)

Low FV and Medium RAW, PRA models valve to open during shutdown. GQA High Rank to Open function, MOV Rank – Medium

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Separate opening signals and separate power sources provide diversity to assure performance of safety function.

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 4. Low FV (E-05)

Compensatory Measure – No measure available. Valves are not operated during normal operation and are tested during every refueling outage in accordance with Tech Specs.

IST RANK DISCUSSION

Failure of these valves to open could affect decay heat removal. However, redundancy of opening function is provided by other trains. RHR is the preferred method of long-term decay heat removal. It is not required for early accident mitigation. RHR is required for shutdown. Normally operate two trains to maintain RCS temperature below 140 to avoid inadvertent mode change; however, only one train is required. Valve is required to reclose to isolate excessive leakage in RHR train. Valves are closed and leak tested as required by the Technical Specifications. Valves are closed during at power operations. Since the valves will fail in the as-is position, the close function for RCS pressure boundary is a passive function. During cold shutdown operation, the closure function can be performed by the redundant RHR suction MOV. Pipe break risk is low for the RHR suction line with the exception of the first weld, which can see a thermal transient.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
RH06	Residual Heat Removal Pump Discharge Check Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Medium	5.43E-06	7.19	High	Medium

IST_FUNCTIONS

Open to allow flow to occur during RHR cooldown following SBLOCA, MSLB, FWLB, or in event of a fire. Flow rate required is 3,000 gpm per paragraph 4A.1.2.1 of the DBD.

PRA_FUNCTIONS

Model to open during SGTR. For most events, PRA does not need to credit RHR. During the SGTR, RHR is credited. If RHR is unavailable, the PRA will continue to use the SGs and open the PORVs, and then basically go to sump recirculation.

DETERMINISTIC REMARKS

Normally operate two trains of RHR during cooldown. Only one train is required.

Valves open to allow flow to occur during RHR cooldown following SBLOCA, MSLB, FWLB, or in event of a fire.

Redundancy of function provided by other trains.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Medium RAW, GQA High Rank to open function

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 4. Low FV (E-06)

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data has shown that check valves are reliable Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain Medium until new PRA model is approved.

IST RANK DISCUSSION

Failure of these valves to open could affect decay heat removal. However, redundancy of opening function is provided by other trains. RHR is the preferred method of long-term decay heat removal. It is not required for early accident mitigation. Based on the amount of redundancy available for this function the FV is well below 5E-03 (FV = 5 43E-06) and an IST rank of Low is reasonable. However the RAW is in the Medium range therefore the IST rank will be kept at medium until new industry check valve failure data is included in the next update to the PRA.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
RH07	Low Head Safety Injection to RCS Hot Leg Check Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Close and leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).
2. Open to provide sump recirculation flow to the RCS hot leg from LHSI for hot-leg recirculation (Maximum accident flow rate is 840 gpm per CR 97-9239-1).

PRA_FUNCTIONS

Not modeled. PRA does not credit hot leg recirculation.

DETERMINISTIC REMARKS

Open to recirculate borated water from the containment sump to the RCS hot leg during the long-term core cooling recirculation phase.

Remain close to maintain RCS pressure boundary.

There are 2 check valves in series to provide redundant ability to maintain RCS pressure boundary.

Closing function is backed up by upstream valves.

Valves are closed and leak tested prior to startup.

Discussion (The following general IST ranking notes apply to this valve group.)

Hot Leg Injection is not modeled in PRA, Valve not explicitly modeled for active function. GQA High Rank for open and Medium Rank for close

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. . (All three valves would have to fail.)

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

IST RANK DISCUSSION

If this valve fails to open, the plant will keep the train running on cold leg injection and use another line for the hot leg injection. Only one train is required to be aligned for hot leg injection. Redundancy of function provided by other trains. Check valves do not have valve operator type failures so they are considered more reliable and have lower failure rates.

Final IST rank - LOW

GROUP	*GROUP DESCRIPTION*
RH08	Cold Leg Injection Check Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	1.08E-04	42.61	High	Medium

IST_FUNCTIONS

1. Close and leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).
2. Open to allow a safety grade cold shutdown of the RCS using RHR following a SBLOCA, SGTR, MSLB, or FWLB accident condition (Maximum flow rate is 3000 gpm per DBD 4A.1.2.1).
3. Open to provide cold-leg injection during ECCS injection and recirculation phases (Maximum flow rate is 2550 gpm per CR 97-9239-1).

PRA_FUNCTIONS

PRA models opening function. Normally closed. PRA models rupture scenario (ISLOCA) of this valve, and then the downstream rupture (XSI0038A).

DETERMINISTIC REMARKS

Close and leak tight (CAT A) to maintain RCS pressure boundary.

Open to allow a safety grade cold shutdown of the RCS using RHR following a SBLOCA, SGTR, MSLB, or FWLB accident condition.

Open to provide cold-leg injection during ECCS injection and recirculation phases.

Discussion (The following general IST ranking notes apply to this valve group)

Low FV with High RAW. GQA High Rank for open and Med. Rank for close

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail.)

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 4. Low FV with High RAW.

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems. Compensatory Measure - No measure available. Valves are not operated during normal operation and are tested during every refueling outage in accordance with Tech Specs.

IST RANK DISCUSSION

Failure to close could challenge RCS pressure boundary. Redundant closing function provided by closed downstream check valves. Failure of valve to open causes loss of one train low head SI and RHR. Redundant trains provide adequate flow. Valves are closed and leak tested prior to startup. Check valves do not have valve operator type failures so they are considered more reliable and have lower failure rates.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
RH09	RHR Return to RWST CIVs

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low				Medium	Low

IST_FUNCTIONS

Remain closed and leak tight (CAT A) to maintain containment integrity.

PRA_FUNCTIONS

Not modeled

DETERMINISTIC REMARKS

Remain close and leak tight (CAT A) to maintain containment integrity. Manual valve, normally closed, locked closed, redundancy provided by 2 valves in series.

Discussion (The following general IST ranking notes apply to this valve group)

Normally closed, locked closed manual valve is not opened except during shutdown. The valve closing is a passive function. IST testing requires leak test in accordance with Appendix J only.

Note 5. GQA Medium Rank is for close function. IST does not perform close exercise test since the function is passive and the valve is not routinely repositioned

Note 11. IST rank agrees with GQA function rank for containment isolation.

IST RANK DISCUSSION

System is not used at power. Locked closed and isolated. Used only during shutdown conditions when containment isolation is not required. Valve is used to drain cavity following refueling. The pressure boundary function ranked medium by GQA is tested by the IST Program.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
RHPP	RHR Pumps

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	3 21E-04	7.19	High	Medium

IST_FUNCTIONS

Circulate 3,000 gpm for final phase of reactor cooldown following a SBLOCA, SGTR, MSLB, or FWLB accident condition

PRA_FUNCTIONS

Failure to start, failure to run

DETERMINISTIC REMARKS

Circulate reactor coolant for final phase of reactor cooldown following a SBLOCA, SGTR, MSLB, or FWLB accident condition. Redundancy of the flowpath provided by 3 trains. Only one flowpath is required for successful accident mitigation.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Medium RAW

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three pumps would have to fail to fail the function)

Compensatory Measure – RHR pumps are started to allow slave relay testing as required by Technical Specifications.

IST RANK DISCUSSION

Failure of a pump could affect decay heat removal. However, redundancy is provided by other trains. RHR is the preferred method of long-term decay heat removal. It is not required for early accident mitigation. Rank of pump in comparison to other components in train is a IST Medium because of requirements to start and continue running For the GQA ranking process, a potential overpressure condition results in a higher Large Early Release Frequency due to the potential for an intersystem LOCA. The higher LERF makes the FV calculated for GQA high. The IST FV does not include the pressure boundary contribution, therefore the FV for IST is not high. The IST Program does not test the pressure boundary function.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
SI05	Residual Heat Exchanger Bypass Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

Close for normal operating valve lineup and thus ensure correct valve position during safety injection and long term recirculation.

PRA_FUNCTIONS

Not modeled.

DETERMINISTIC REMARKS

Close for normal operating valve lineup and thus ensure correct valve position during safety injection and long term recirculation. Normally closed, fails closed. Normally de-energized. Redundancy of the flowpath provided by 3 trains. Only one flowpath is required for successful accident mitigation.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay close. Not explicitly modeled due to passive function.

Note 11. IST rank agrees with GQA function rank for the function tested by IST.

IST RANK DISCUSSION

Failure of the valve to remain close could affect one train of RHR /SI cooling Normally closed, fails closed. Normally de-energized. Redundancy of the flowpath provided by 3 trains. Only one flowpath is required for successful accident mitigation. IST Rank agrees with GQA function rank for the function tested by the IST program.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI06	Low Head Safety Injection Pump Discharge Outside Cntmt Isolation Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low	2.92E-06	1.01	Medium	Low

IST_FUNCTIONS

1. Remain open to inject borated water from the RWST to the RCS cold legs during the short term core cooling/cold-leg injection phase of safety injection.
2. Remain open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long term core cooling/cold and hot leg recirculation phase.
3. Close for accidents requiring cooldown using RHR and leak tight (CAT A) to provide containment integrity.
4. Provide indication of valve position, GDC 13.

PRA_FUNCTIONS

PRA models valve to remain open and ISLOCA function (closing function).

DETERMINISTIC REMARKS

Remain open to inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection.

Remain open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hot leg recirculation phase.

Close for accidents requiring cooldown using RHR and leak tight (CAT A) to provide containment integrity.

Close to prevent ISLOCA

Discussion (The following general IST ranking notes apply to this valve group)

Low FV and Low RAW for active closing function, open is passive. Open function (ranked high by GQA).

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth

Note 3. Valve is normally open and does not have to reposition for safety injection, which is the safety function ranked high/medium by GQA.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program

Note 11. IST rank agrees with GQA function rank for the function tested by IST.

IST RANK DISCUSSION

Valve is in correct position for accident conditions. MOV fails as is. There are 3 upstream check valves in series to provide redundant capability. IST rank agrees with GQA function rank for the function required to be tested by the IST program. Open is an augmented test function in the IST program.

Final IST rank - LOW

GROUP	*GROUP DESCRIPTION*
SI07	Safety Injection Emergency Sump Outside Cntmt Isolation MOVs (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	2 54E-03	83 83	High	Medium

IST_FUNCTIONS

1. Open to supply borated water from the emergency containment sump to the suction of the HHSI and LHSI pumps during the hot and cold-leg recirculation phase of safety injection.
2. Remain close to prevent draining the RWST water into the emergency containment sump and for Appendix R FHA.
3. Leak tight (CAT A) to provide containment integrity.
4. Provide indication of valve position, GDC 13.

PRA_FUNCTIONS

PRA models opening function

DETERMINISTIC REMARKS

Open to supply borated water from the emergency containment sump to the suction of the HHSI, CS, and LHSI pumps during the hot and cold-leg recirculation phase of safety injection.

Remain closed to prevent draining the RWST water into the emergency containment sump.

Leak tight (CAT A) to provide containment integrity.

Discussion (The following general IST ranking notes apply to this valve group.)

Medium FV and Medium RAW

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Compensatory measure – Slave relay testing operates valve every quarter. Failure to operate will be documented on a Condition Report.

IST RANK DISCUSSION

Failure of valve fails one train of SI and CS. Redundant trains are available for SI and CS. IST Rank based on IST PRA FV and RAW would be medium Per direction of the Expert Panel, IST rank should be in agreement with the GQA risk rank if there isn't a specific difference in the scope/reason for risk ranking. GQA designated the system function high for cold leg recirculation mode - recirculate borated water from the containment sump, through the RHR heat exchangers, and back to the RCS cold legs.

Final IST Rank – MEDIUM

GROUP	*GROUP DESCRIPTION*
SI08	High Head Safety Injection Pump Discharge Outside Cntmt Isolation Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Low			Medium	Low

IST_FUNCTIONS

1. Remain open to inject borated water from the RWST to the RCS cold legs during the short term core cooling/cold-leg injection phase of safety injection and for Appendix R FHA.
2. Remain open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hot leg recirculation phase.
3. Close during long term recirculation mode after HHSI pumps have been shut-off and leak tight (CAT A) to provide containment integrity.
4. Provide indication of valve position, GDC 13.

PRA_FUNCTIONS

PRA models valve to remain open and ISLOCA function (closing function).

DETERMINISTIC REMARKS

Remain open to inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection.

Remain open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hot leg recirculation phase.

Close for accidents requiring cooldown using RHR and leak tight (CAT A) to provide containment integrity.

Close to prevent ISLOCA

Discussion (The following general IST ranking notes apply to this valve group)

PRA models valve to stay open (not an active function). PRA does not model hot leg injection (closing function not important in PRA)

Open function (ranked high by GQA):

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 3. Valve is normally open and does not have to reposition for safety injection, which is the function ranked high by GQA. MOV fails as-is.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program

Close function (ranked medium by GQA):

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Separate closing signals and separate power sources provide diversity to assure performance of safety function.

IST RANK DISCUSSION

Valve is in correct position for accident conditions. MOV fails as is. The valve does not have to operate to perform the open safety function. There are 3 upstream check valves in series to provide redundant closing capability. Separate closing signals and separate power sources provide diversity to assure performance of the open and close safety functions.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI09	High Head Safety Injection Cold Leg Isolation (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Remain open to inject borated water from the RWST to the RCS cold legs during the short term core cooling/cold-leg injection phase of safety injection and for Appendix R FHA.
2. Remain open to recirculate borated water from the containment sump to the RCS cold legs during the long-term core cooling/cold leg recirculation phase.
3. Close to stop flow to the RCS cold leg during switchover from cold-leg to hot-leg recirculation.
4. Provide indication of valve position, GDC 13.

PRA_FUNCTIONS

PRA models valve to remain open and ISLOCA function (closing function).

DETERMINISTIC REMARKS

Remain open to inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection and for Appendix R FHA.

Remain open to recirculate borated water from the containment sump to the RCS cold legs during the long-term core cooling/cold leg recirculation phase.

Close to stop flow to the RCS cold leg during switchover from cold-leg to hot-leg recirculation.

Provide indication of valve position.

Valve is power locked out at the breaker in the open position.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA models valve to stay open (not an active function). PRA does not model hot leg injection (closing function not important in PRA).

Open function (ranked high by GQA).

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth (All three valves would have to fail to fail the function)

Note 3. Valve is normally open and does not have to reposition for safety injection, which is the function ranked high by GQA. MOV fails as-is.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program

Close function (ranked medium by GQA)

Note 1. Above average redundancy allows for one failure but maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Separate closing signals and separate power sources provide diversity to assure performance of safety function.

IST RANK DISCUSSION

Valve is in correct position for accident conditions. MOV fails as is. The valve does not have to operate to perform the open safety function. The open safety function, which is ranked high by GQA is an augmented test in the IST program. Separate closing signals and separate power sources provide diversity to assure performance of the open and close safety functions.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI10	High Head Safety Injection Hot Leg Isolation (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Open to recirculate borated water from the containment sump to the RCS hot legs during the long term core cooling/hot leg recirculation phase.
2. Remain closed to prohibit flow to the RCS hot leg during cold-leg injection and recirculation and for Appendix R FHA.

PRA_FUNCTIONS

Remain closed for ISLOCA (pressure boundary).

DETERMINISTIC REMARKS

Normally closed. Redundancy of the opening function provided by redundant injection flow paths.

Open to recirculate borated water from the containment sump to the RCS hot legs during the long-term core cooling/hot leg recirculation phase.

Remain close to prohibit flow to the RCS hot leg during cold-leg injection and recirculation and for Appendix R FHA.

Discussion (The following general IST ranking notes apply to this valve group)

PRA models valve to stay closed (not an active function). PRA does not model hot leg injection (opening function not important in PRA).

Close function (ranked medium by GQA):

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 3. Valve is normally closed and does not have to reposition for safety injection, which is the function ranked high by GQA. MOV fails as-is.

Note 6. Testing of passive closed safety function is not required by IST, but it is listed as an augmented test in the program.

Open function (ranked medium by GQA)

Note 1. Above average redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Separate opening signals and separate power sources provide diversity to assure performance of safety function.

IST RANK DISCUSSION

Valves are normally closed. Close function is passive and is listed as an augmented test in the IST program. Diversity is maintained since each valve has separate trains for the opening signals and for the power supplies. If this valve fails to open, the plant will keep the train running on cold leg injection and use another line for the hot leg injection Only one train is required to be aligned for hot leg injection. Redundancy of function provided by other trains. Three failures are required to fail this function.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI11	Residual Heat Removal Heat Exchanger Return to Hot Leg MOV (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

Hot leg injection line. Open to provide sump recirculation flow to the RCS hot leg from LHSI for hot-leg recirculation. This flow path allows the boric acid to remain in solution for cold leg break events (boric acid precipitation).

PRA_FUNCTIONS

Not modeled. PRA does not credit hot leg recirculation.

DETERMINISTIC REMARKS

Normally closed. Redundancy of the opening function provided by redundant injection flow paths.

Open to recirculate borated water from the containment sump to the RCS hot legs during the long-term core cooling/hot leg recirculation phase.

Remain close to prohibit flow to the RCS hot leg during cold-leg injection and recirculation.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA does not model hot leg injection (opening function not important in PRA).

Note 1. Above average Redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 3. This function can be considered passive. If the valve fails to allow hot leg injection, then the water will be directed to the reactor vessel through the cold leg Water in the vessel will prevent core damage regardless of valve failure.

IST RANK DISCUSSION

Valves are normally closed and opened to allow hot leg injection. If this valve fails to open, the plant will keep the train running on cold leg injection and use another line for the hot leg injection. Only one train is required to be aligned for hot leg injection. Redundancy of function provided by other trains. If the valves fail to allow hot leg injection, then the water will be directed to the reactor vessel through the cold leg. Water in the vessel will prevent core damage even if all three valves fail.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI12	Cold Leg Injection MOVs (Trains A, B, C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled	1.62E-06	1.00	High	Low

IST_FUNCTIONS

1. Remain open to allow a safety grade cold shutdown of the RCS using RHR following a SBLOCA, SGTR, MSLB, or FWLB accident condition.
2. Remain open for the injection phase and for the sump recirculation phase of SI to the RCS following a LOCA.
3. Close to allow switchover of sump recirculation flow to the RCS from the cold-leg to the hot-leg.

PRA_FUNCTIONS

Remain open

DETERMINISTIC REMARKS

Remain open to allow a safety grade cold shutdown of the RCS using RHR following a SBLOCA, SGTR, MSLB, or FWLB accident condition.

Remain open for the injection phase and for the sump recirculation phase of SI to the RCS following a LOCA.

Close to allow switchover of sump recirculation flow to the RCS from the cold-leg to the hot-leg.

Normally open. Redundancy of the hot leg recirculation flowpath provided by 3 trains. Only one hot leg recirculation flowpath is required for successful accident mitigation

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Low RAW. PRA models valve to stay open (not an active function). PRA does not model hot leg injection (closing function not important in PRA).

Open function (ranked high by GQA).

Note 1. Above average redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 3. Valve is normally open and does not have to reposition for safety injection, which is the function ranked high by GQA MOV fails as-is.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program.

Close function (ranked medium by GQA)

Note 1. Above average redundancy allows for one failure and still maintains Defense in Depth. (All three valves would have to fail to fail the function)

Note 2. Separate closing signals and separate power sources provide diversity to assure performance of safety function.

IST RANK DISCUSSION

The open function, ranked high by GQA, is a passive function and is listed as an augmented test in the IST program. Separate closing signals and separate power sources provide diversity to assure performance of close safety function. If this valve fails to close, the plant will keep the train running on injection and use another line for the hot leg injection. Only one train is required to be aligned for hot leg injection. Redundancy of function provided by other trains

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI13	High Head Safety Injection Pump Recirc Isolation

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	2.07E-04	41.26	High	Medium

IST_FUNCTIONS

HH recirculation line

1. Remain open to provide a minimum recirculation flow path to the RWST for the HHSI pump.
2. Close to isolate flow to the RWST during switchover of pump suction from the RWST to the containment sump.

PRA_FUNCTIONS

Models to remain open and to close.

DETERMINISTIC REMARKS

Remain open to provide a minimum recirculation flow path to the RWST for the HHSI pump.

Close to isolate flow to the RWST during switchover of pump suction from the RWST to the containment sump.

Discussion (The following general IST ranking notes apply to this valve group)

Low FV and Medium RAW, MOV Working Group rank is Medium.

Open function (ranked medium by GQA).

Note 3. Valve is normally open and does not have to reposition to allow pump recirc. path, which is the function ranked medium by GQA. MOV fails as-is.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program.

Close function (ranked medium by GQA)

Note 1. Average redundancy maintains Defense in Depth. (Both valves would have to fail to fail the function)

Note 2. Separate closing signals and separate power sources provide diversity to assure performance of safety function.

Compensatory measure – SI Auto. Recirc. Actuation and Response Time Test is performed every 18 months.

IST RANK DISCUSSION

The open function, ranked high by GQA, is a passive function and is listed as an augmented test in the IST program. Separate closing signals and separate power sources for each valve provide diversity to assure performance of close safety function. Failure to close both valves blocks switchover. Redundant closing function provided by identical valve. Redundant SI function provided by alternate trains.

Final IST Rank - MEDIUM

GROUP	*GROUP DESCRIPTION*
SI14	Low Head Safety Injection Pump Recirc Isolation

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	2.07E-04	41.26	High	Medium

IST_FUNCTIONS

LH recirculation line.

1. Remain open to provide a minimum recirculation flow path to the RWST for the LHSI pump.
2. Close to isolate flow to the RWST during switchover of pump suction from the RWST to the containment sump.

PRA_FUNCTIONS

Models to remain open and to close.

DETERMINISTIC REMARKS

Remain open to provide a minimum recirculation flow path to the RWST for the LHSI pump.

Close to isolate flow to the RWST during switchover of pump suction from the RWST to the containment sump.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and Medium RAW, MOV Working Group rank is Medium.

Open function (ranked medium by GQA).

Note 3. Valve is normally open and does not have to reposition to allow pump recirc. path, which is the function ranked medium by GQA. MOV fails as-is.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program.

Close function (ranked medium by GQA)

Note 1. Average Redundancy maintains Defense in Depth. (Both valves would have to fail to fail the function)

Note 2. Separate closing signals and separate power sources provide diversity to assure performance of safety function.

Compensatory measure – SI Auto. Recirc. Actuation and Response Time Test is performed every 18 months.

IST RANK DISCUSSION

The open function, ranked high by GQA, is a passive function and is listed as an augmented test in the IST program. Separate closing signals and separate power sources provide diversity to assure performance of close safety function. Failure to close both valves blocks switchover. Redundant closing function provided by identical valve. Redundant SI function provided by alternate trains.

Final IST Rank - MEDIUM

GROUP	GROUP DESCRIPTION
SI18	High Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)

IST Rank	PRA RANK	FV	RAW	GQA RANK	Final IST
Medium	Medium	9.15E-04	3593 30	High	Low/High

IST_FUNCTIONS

1. Open to inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5 2 g)
2. Open to recirculate borated water from the containment sump to the RCS hot legs during the hot leg recirculation phase of safety injection.
3. Close and be leak tight (CAT A) to provide containment integrity.

PRA_FUNCTIONS

PRA models open and closing for the ISLOCA scenario.

DETERMINISTIC REMARKS

Open to inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection.

Open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hot leg recirculation phase.

Close for accidents requiring cooldown using RHR and leak tight (CAT A) to provide containment integrity.

Close to prevent ISLOCA

There are 2 check valves in series to provide redundant ability to strengthen pressure boundary to minimize LERF impacts.

Open function required for feed and bleed in addition to standard LOCA response.

Discussion (The following general IST ranking notes apply to this valve group)

Low FV and High RAW Open function is ranked medium by GQA. Close function is ranked low.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 4. Low FV with High RAW.

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 11. For close function, IST rank is the same as GQA function rank. Current relief request approved by the NRC agrees with low risk for closing function. Testing of close function will continue to be performed in accordance with Appendix J testing.

Note 12. For open function, valve group will remain High

IST RANK DISCUSSION

Failure of valve to open causes loss of one train high head safety injection. Adequate flow provided by alternate trains. Based on the amount of redundancy available for this function the FV is less than 1E-03 and an IST rank of Low is reasonable. However, the RAW is high as a result of the industry failure rate data The failure ratedata in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW will be reduced when the new industry failure rate data for check valves is included in the PRA update. For the open function this valve group will remain IST Rank HIGH until new PRA model is approved Currently GQA Risk Rank and PRA rank are the same (HIGH) which is also the final ranking for IST.

Final IST Rank - HIGH (for the open function).

Failure to close could challenge containment integrity. STP has documented, using Valve Relief Request (VRR-03), that the close function is low risk and the impact to the Large Early Release Frequency is minimal. Since the relief request describes that close exercise testing will be performed in accordance with Appendix J, Option B, we will administratively rank the close function as IST Low.

Final IST Rank – LOW (for the close function)

GROUP	GROUP DESCRIPTION
SI19	High Head Safety Injection Pump Discharge Check to Cold Leg (Class 1 Boundary) (Trains A, B, and C)

IST Rank	PRA RANK	FV	RAW	GQA RANK	Final IST
Medium	High	9.15E-04	3593.30	High	High

IST_FUNCTIONS

1. Open to inject borated water from the RWST to the RCS cold legs during the short term core cooling/cold-leg injectionphase of safety injection (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4 5 2.g).
2. Open to recirculate borated water from the containment sump to the RCS cold legs during the long-term core cooling/cold leg recirculation phase.
3. Close to prevent backflow from the accumulator and from the LHSI pump in the event that the corresponding HHSI pump is not running
4. Close and leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

PRA_FUNCTIONS

PRA models opening function.

DETERMINISTIC REMARKS

Open to inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection.

Open to recirculate borated water from the containment sump to the RCS cold leg during the long-term core cooling/cold leg recirculation phase.

Close for accidents requiring cooldown using RHR and leak tight (CAT A) to maintain RCS pressure boundary.

Close to prevent ISLOCA

There are 2 check valves in series to provide redundant ability to maintain pressure boundary.

Open function required for feed and bleed in addition to standard LOCA response. These valves are closed and leak tested prior to startup.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and High RAW Open function is ranked high by GQA. Close function is ranked low.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 4. Low FV with High RAW.

Note 7. High RAW is due to high CCF for check valves. Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain High until new PRA model is approved.

Compensatory measure (Open) – No measure available. Valves are not operated during normal operation and are tested during every refueling outage in accordance with TS.

Compensatory measure (Close) – Verify closed and leak tight in accordance with the Technical Specifications.

IST RANK DISCUSSION

Failure to close could challenge RCS pressure boundary. Redundant closing function provided by closed upstream and downstream valves. Failure of valve to open causes loss of one train high head safety injection. Redundant trains provide adequate flow. Based on the amount of redundancy available for this function the FV is less than 1E-03 and an IST rank of Low is reasonable. However, the RAW is high as a result of the industry failure rate data. The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW will be reduced when the new industry failure rate data for check valves is included in thePRA update. For the open function this valve group will remain IST Rank HIGH until new PRA model is approved. Currently GQA Risk Rank and PRA rank are the same (HIGH) which is also the final ranking for IST.

Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
SI20	High Head Safety Injection Pump Discharge Check to Hot Leg (Class 1 Boundary) (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			High	Low

IST_FUNCTIONS

1. Open to recirculate borated water from the containment sump to the RCS hot legs during the long-term core cooling/hot leg recirculation phase (Flow rate required is >1,470 gpm and <1620 gpm for HHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4 5 2 g).
2. Close to prevent backflow from an LHSI pump in the event that the corresponding HHSI pump is not running during the hot leg recirculation phase
3. Close and leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

PRA_FUNCTIONS

Remain closed (ISLOCA pressure boundary)

DETERMINISTIC REMARKS

Open to recirculate borated water from the containment sump to the RCS hot leg during the long-term core cooling recirculation phase.

Remain close to maintain RCS pressure boundary. There are 2 check valves in series to provide redundant ability to maintain RCS pressure boundary. Closing function is backed up by upstream valves. Valves are closed and leak tested prior to startup.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA – Hot leg injection is not modeled in the PRA, therefore the FV is low for this function. Open function is ranked medium by GQA. Close function is ranked high.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth (Three valves would have to fail to fail the function)

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

IST RANK DISCUSSION

If this valve fails to open, the plant will keep the train running on cold leg injection and use another line for the hot leg injection. Only one train is required to be aligned for hot leg injection. Redundancy of function provided by other trains. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary Pressure Isolation Valves are closed and leaked tested in accordance with the Technical Specifications in Mode 3, prior to Start Up. After testing the valves remain closed in the position required for RCPB during normal operations and are not routinely repositioned.

Final IST Rank - LOW

GROUP	GROUP DESCRIPTION
SI21	Low Head Safety Injection Pump Discharge Inside Cntmt Isolation Valves (Trains A, B, and C)

IST Rank	PRA RANK	FV	RAW	GQA RANK	Final IST
Low	Medium	1.04E-04	36.43	High	Low/ Medium

IST_FUNCTIONS

1. Open to inject borated water from the RWST to the RCS cold legs during the short term core cooling/cold-leg injectionphase of safety injection (Flow rate required is >2550 gpm and <2800 gpm for LHSI pump lines following completion of modifications to the system that alters its flow characteristics per Technical Specification 4.5.2.g).
2. Open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long term core cooling/cold and hot leg recirculation phase.
3. Close to prevent backflow from the RHR system during post accident recovery operations.
4. Close and leak tight (CAT A) to maintain containment integrity.

PRA_FUNCTIONS

PRA models open and closing for the ISLOCA scenario

DETERMINISTIC REMARKS

Open to inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection.

Open to recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hot leg recirculation phase.

Close for accidents requiring cooldown using RHR and leak tight (CAT A) to provide containment integrity.

Close to prevent ISLOCA

There are 3 check valves in series to provide redundant ability to strengthen pressure boundary. This valve may have LERF impacts.

Discussion (The following general IST ranking notes apply to this valve group)

Low FV and Medium RAW. Open function is ranked high by GQA. Close function is ranked low.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth (Three valves would have to fail to fail the function)

Note 4. Low FV with Medium RAW.

Note 7. Medium RAW is due to high CCF for check valves.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 11. For close function, IST rank should be the same as GQA function rank. Current relief request approved by the NRC agrees with low risk for closing function. Testing of close function will continue to be performed in accordance with Appendix J testing.

Note 12. For open function, valve group will remain Medium until new PRA model is approved.

IST RANK DISCUSSION

Failure of valve to open causes loss of one train high head safety injection. Adequate flow provided by alternate trains. Based on the amount of redundancy available for this function the FV is less than 1E-03 and an IST rank of Low is reasonable. However, the RAW is Medium as a result of the industry failure rate data. The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW will be reduced when the new industry failure rate data for check valves is included in the PRA update. For the open function this valve group will remain IST Rank Medium until new PRA model is approved.

Final IST Rank - MEDIUM (for the open function).

Failure to close could challenge containment integrity. STP has documented, using Valve Relief Request (VRR-03), that the close function is low risk and the impact to the Large Early Release Frequency is minimal. Since the relief request describes that close exercise testing will be performed in accordance with Appendix J, Option B, we will administratively rank the close function as IST Low.

Final IST Rank – LOW (for the close function)

GROUP	*GROUP DESCRIPTION*
SI22	Safety Injection System Pumps Discharge Check to Hot Leg (Class 1 Boundary) (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			High	Low

IST_FUNCTIONS

1. Open to recirculate borated water from the containment sump to the RCS hot legs during the long-term core cooling/hot leg recirculation phase (Flow rate required is 3,917 gpm per DBD Table T-6).
2. Close to prevent RCS backflow into the LHSI and HHSI pumping systems.
3. Close and leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

PRA_FUNCTIONS

Remain closed (ISLOCA pressure boundary)

DETERMINISTIC REMARKS

Open to recirculate borated water from the containment sump to the RCS hot leg during the long-term core cooling recirculation phase.

Remain close to maintain RCS pressure boundary.

There are 2 check valves in series to provide redundant ability to maintain RCS pressure boundary.

Closing function is backed up by upstream valves.

Valves are closed and leak tested prior to startup.

Common path for high head and low head injection.

Discussion (The following general IST ranking notes apply to this valve group.)

PRA – Hot leg injection is not modeled in the PRA, therefore the FV is low for this function. Open function is ranked medium by GQA. Close function is ranked high.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 3. The close unction to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

IST RANK DISCUSSION

Low. If this valve fails to open, the plant will keep the train running on cold leg injection and use another line for the hot leg injection. Only one train is required to be aligned for hot leg injection. Redundancy of function provided by other trains. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary Pressure Isolation Valves are closed and leaked tested in accordance with the Technical Specifications in Mode 3, prior to Start Up. After testing the valves remain closed in the position required for RCPB during normal operations and are not routinely repositioned.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SI23	Accumulator to Cold Leg Inboard Check Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	1.50E-03	704.92	High	High

IST_FUNCTIONS

1. Open when the RCS pressure falls below the accumulator pressure to force borated water into the RCS cold legs.
2. Close to prevent backflow from the RCS into the low pressure SI system.
3 Close and be leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV).

PRA_FUNCTIONS

Models to open and to not fail (rupture) during ISLOCA.

DETERMINISTIC REMARKS

Open to recirculate borated water from the containment sump to the RCS cold leg during injection and long term core cooling recirculation phase.

Remain closed to maintain RCS pressure boundary.

There are 2 check valves in series to provide redundant ability to maintain RCS pressure boundary.

Closing function is backed up by upstream valves.

Valves are closed and leak tested prior to startup.

Common path for accumulator, high head, and low head injection.

Discussion (The following general IST ranking notes apply to this valve group.)

Medium FV and High RAW

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain High until new PRA model is approved.

Compensatory measure (Open) – No measure available. Valves are not operated during normal operation and are tested during every refueling outage in accordance with TS.

Compensatory measure (Close) – Verify closed and leak tight in accordance with the Technical Specifications.

IST RANK DISCUSSION

A failure to open removes 1/3 of injection. Redundancy of function provided by other trains. Failure to close affects RCS pressure boundary. Redundant valves maintain RCS pressure boundary. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary Pressure Isolation Valves are closed and leaked tested in accordance with the Technical Specifications in Mode 3, prior to Start Up. After testing the valves remain closed in the position required for RCPB during normal operations and are not routinely repositioned. Based on the amount of redundancy available for this function the FV is less than 5E-03 and an IST rank of Medium is reasonable. However, the RAW is High as a result of the industry failure rate data. The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is included in RAW number. The RAW will be reduced when the new industry failure rate data for check valves is included in the PRA update. This valve group will remain IST Rank High until new PRA model is approved.
Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
SI24	Accumulator Tank Discharge MOVs (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

Remain open during plant operation to maintain the safeguards function of the accumulators.

Discussion: ensure the valve remains in the open position during normal plant operation.

Close to demonstrate the ability to allow safety grade cold shutdown utilizing RHR.

PRA_FUNCTION

Function to remain open and to close when they isolate the accumulator. This valve is opened, placed in the power lockout position, and its power supply breaker is opened to PRA does not credit accumulator for ECCS, doesn't prevent or mitigate core damage. PRA does not model.

DETERMINISTIC REMARKS

Remain open during plant operation to maintain the safeguards function of the accumulators.

This valve is opened, placed in the power lockout position, and its power supply breaker is opened to ensure the valve remains in the open position during normal plant operation.

Close to demonstrate the ability to allow safety grade cold shutdown utilizing RHR.

Closed and locked out to prevent inadvertent actuation during shutdown.

Discussion (The following general IST ranking notes apply to this valve group.)

Accumulators are not credited by PRA, Open function is Passive. Open function is ranked high by GQA. Close function is ranked low.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 3. Valve is opened, placed in power lockout position, and its power supply breaker is opened to ensure the valve remains in the open position during normal plant operation. It cannot be repositioned and the MOV fails as-is in the open position, which is the function ranked high by GQA.

Note 6. Testing of passive open safety function is not required by IST, but it is listed as an augmented test in the program.

IST RANK DISCUSSION

Function to remain open during normal plant operation and to close during shutdown to isolate the accumulator. If valve fails to close, Ops can vent nitrogen off (in EOPs). These valves are open during modes 1-4 and their power supply is locked out. This makes the open function passive since the valve does not have to reposition to perform function required during modes 1-4. The valves are closed when entering mode 5 and their power supply is again locked out (after valve closure). This makes the close safety function also passive during shutdown operation. These valves are not routinely repositioned during normal operations.

Final IST Rank - LOW

GROUP	GROUP DESCRIPTION
SI25	Safety Injection Pumps Suction Check Valves (Trains A, B, and C)

IST Rank	PRA RANK	FV	RAW	GQA RANK	Final IST
Medium	High	7.56E-04	347.04	High	High

IST_FUNCTIONS

1. Open to provide a source of borated water to the suction of the LHSI, HHSI and CS pumps during the injection mode of accident mitigation (Flow rate required is 5920 gpm This is a combination of 1470 gpm for HHSI, 2550 gpm for LHSI, and 1900 gpm for CS).
2. Close to prevent backflow to the RWST when containment sump isolation valves are opened during switchover from the injection phase to the cold leg recirculation mode before SI-MOV001A, B, and C are closed. Operator action is required to manually close SI-MOV001A, B, and C to complete the switchover process.

PRA_FUNCTIONS

Modeled to open and close

DETERMINISTIC REMARKS

Open to provide a source of borated water to the suction of the LHSI, HHSI and CS pumps during the injection mode of accident mitigation Close to prevent backflow to the RWST when containment sump isolation valves are opened during switchover from the injection phase to the cold leg recirculation mode before SI-MOV001A, B, and C are closed. Operator action is required to manually close SI-MOV001A, B, and C to complete the switchover process.Active for both directions. Considered to be the primary isolation. MOV provides the same closing function. If the valve fails to open, the plant loses 1/3 of SI capacity. Procedurally, the plant needs 1 out of 3 trains for success. RAW is very high. CCF contribution is very high.

Discussion (The following general IST ranking notes apply to this valve group.)

Low FV and High RAW. Open function is ranked high by GQA. Close function is ranked low.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth (Three valves would have to fail to fail the function)

Note 4. Low FV with High RAW.

Note 7. High RAW is due to high CCF for check valves.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

Note 12. Valve group will remain High until new PRA model is approved.

IST RANK DISCUSSION

Valve function is to close to isolate the RWST from the containment sump during switchover from the injection mode to the cold leg and hot leg recirculation modes. Redundant closing function is provided by upstream MOV. Based on the amount of redundancy available for this function the FV is less than 1E-03 and an IST rank of Medium is reasonable. However, the RAW is High as a result of the industry failure rate data. The failure rate data in the current PRA results in a larger contribution to the common cause calculation which is included in the RAW number. The RAW will be reduced when the new industry failure rate data for check valves is included in the PRA update. This valve group will remain IST Rank High until new PRA model is approved.

Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
SI27	Accumulator to Cold Leg Outboard Check Valves (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Low	Not modeled			Medium	Low

IST_FUNCTIONS

1. Open when the RCS pressure falls below the accumulator pressure to force borated water into the RCS cold legs.
2. Close to prevent backflow from the RCS into the low pressure SI system.
3. Close and be leak tight (CAT A) to maintain RCS pressure boundary, GDC 14 (PIV)

PRA_FUNCTIONS

If failed function, accumulator would fail to discharge. PRA does not credit accumulator for ECCS, as it doesn't prevent or mitigate core damage. PRA does not model.

DETERMINISTIC REMARKS

Open when the RCS pressure falls below the accumulator pressure to force borated water into the RCS cold legs. Close to prevent backflow from the RCS into the low pressure SI system. Close and be leak tight (CAT A) to maintain RCS pressure boundary. There are 2 check valves in series to provide redundant ability to maintain RCS pressure boundary Valves are closed and leak tested prior to startup.

Discussion (The following general IST ranking notes apply to this valve group)

PRA – Accumulators are not modeled in the PRA, therefore the FV is low for this function.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three valves would have to fail to fail the function)

Note 3. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up.

Note 8. Industry data has shown that check valves are reliable. Use of the industry data in the PRA model will reduce CCF term in RAW for check valves in clean systems.

IST RANK DISCUSSION

A failure to open removes 1/3 of accumulator injection. PRA does not model the accumulators therefore FV is low. Redundancy of function provided by other trains. Failure to close affects RCS pressure boundary. The close function to maintain the RCS pressure boundary is a passive function. Reactor Coolant Pressure Boundary valves are closed and leak tested in accordance with the Technical Specifications prior to start up. Redundant valves maintain RCS pressure boundary.

Final IST Rank - LOW

GROUP	*GROUP DESCRIPTION*
SIHHP	High Head Safety Injection Pumps (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	High	3 26E-02	813 21	High	High

IST_FUNCTIONS

1. Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection (Flow rate required is greater than 1470 gpm and less than 1620 gpm per Technical Specification Surveillance Requirement 4.5 2 g).
2. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long-term core cooling/cold and hot leg recirculation phase.

PRA_FUNCTIONS

Fail to start/Fail to run

DETERMINISTIC REMARKS

Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long term core cooling/cold and hot leg recirculation phase. One of three trains required to an intact loop for success of function.

Discussion (The following general IST ranking notes apply to this valve group.)

High FV and High RAW.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three pumps would have to fail to fail the function)

IST RANK DISCUSSION

Failure of the pump fails one train of HHSI. Redundant trains are available. HHSI is an important EOP function. Auto failure requires operator action. PRA FV and RAW are High.

Final IST Rank - HIGH

GROUP	*GROUP DESCRIPTION*
SILHP	Low Head Safety Injection Pumps (Trains A, B, and C)

IST Rank	*PRA RANK*	*FV*	*RAW*	*GQA RANK*	*Final IST*
Medium	Medium	1.31E-03	36 44	High	Medium

IST_FUNCTIONS

1. Inject borated water from either the RWST or the containment sump to the RCS cold legs during the cold leg injection phase of safety injection (Flow rate required is greater than 2550 gpm and less than 2800 gpm per Technical Specification Surveillance Requirement 4.5.2 g).
2. Recirculate borated water from the containment sump to the RCS hot legs during the hot leg recirculation phase of safety injection.

PRA_FUNCTIONS

Fail to start/Fail to run

DETERMINISTIC REMARKS

Inject borated water from the RWST to the RCS cold legs during the short-term core cooling/cold-leg injection phase of safety injection. Recirculate borated water from the containment sump to the RCS cold or hot legs during the long term core cooling/cold and hot leg recirculation phase. One of three trains required to an intact loop for success of function.

Discussion (The following general IST ranking notes apply to this valve group.)

Medium FV and Medium RAW.

Note 1. Above average Redundancy allows for one failure but maintains Defense in Depth. (Three pumps would have to fail to fail the unction).

Compensatory Measure – LHSI pumps are started to allow slave relay testing per Tech Specs.

IST RANK DISCUSSION

Failure of the pump fails one train of LHSI. Redundant trains are available. LHSI is an important EOP function. Auto failure requires operator action. The PRA modeling assessment results in a rank of Medium based on the FV and RAW.

Final IST Rank - MEDIUM

ATTACHMENT 6

AOV LIST INCLUDING CATEGORY 1 AOVs AND ALL IST AIR-OPERATED VALVES

AOV Rank		*TPNS*	*PSA Rank for GQA*	*GQA Rank*	*Final IST Rank*	*PRA Rank for IST*	*PRA_FUNCTIONS*
AOV-1							
Group	*CC04*	*Group Description*	RHR Heat Exchanger - CCW Outlet Valves				
		A1CCFV4531	HIGH	HIGH	Medium	Medium	Modeled to open and remain open
		B1CCFV4548	HIGH	HIGH	Medium	Medium	Modeled to open and remain open.
		C1CCFV4565	HIGH	HIGH	Medium	Medium	Modeled to open and remain open.
Group	*RC10*	*Group Description*	RCS Pressurizer Spray Valves				
		N1RCPCV0655B	LOW-T	HIGH			
		N1RCPCV0655C	LOW-T	HIGH			
Group	*RH01*	*Group Description*	Residual Heat Removal Heat Exchange Control Valve (Trains A, B, and C)				
		A1RHHCV0864	MEDIUM	HIGH	Low	Not modeled	Normally open, fails open (passive)
		B1RHHCV0865	MEDIUM	HIGH	Low	Not modeled	Normally open, fails open (passive)
		C1RHHCV0866	MEDIUM	HIGH	Low	Not modeled	Normally open, fails open (passive)

AOV Rank		TPNS	PSA Rank for GQA	GQA Rank	Final IST Rank	PRA Rank for IST	PRA_FUNCTIONS
AOV-2A							
Group	*CV13*	*Group Description*	RCS Charging Flow Control Valve				
		A1CVFCV0205	MEDIUM	MEDIUM	Medium	Not modeled	No active function modeled
Group	*FW01*	*Group Description*	Feedwater to the Steam Generator Isolation Valves				
		A1FWFV7141		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7142		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7143		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7144		MEDIUM	Low	Not modeled	Not modeled
Group	*FW02*	*Group Description*	Feedwater flow control valves				
		N1FWFCV0551		NRS	Low	Not modeled	Not modeled
		N1FWFCV0552		NRS	Low	Not modeled	Not modeled
		N1FWFCV0553		NRS	Low	Not modeled	Not modeled
		N1FWFCV0554		NRS	Low	Not modeled	Not modeled
Group	*IA02*	*Group Description*	Instrument Air to RCB Outside Cntmt Isolation Valve (IA8565)				
		B1IAFV8565		LOW	Low	Not modeled	Not modeled
Group	*MS01*	*Group Description*	Main Steam Isolation Valves				
		A1MSFSV7414	MEDIUM	MEDIUM	Low	Low	Close for MSLB and SGTR
		A1MSFSV7424	MEDIUM	MEDIUM	Low	Low	Close for MSLB and SGTR
		A1MSFSV7434	MEDIUM	MEDIUM	Low	Low	Close for MSLB and SGTR
		A1MSFSV7444	MEDIUM	MEDIUM	Low	Low	Close for MSLB and SGTR

AOV Rank		TPNS	PSA Rank for GQA	GQA Rank	Final IST Rank	PRA Rank for IST	PRA_FUNCTIONS
AOV-2B							
Group	*AF06*	*Group Description*	Auxiliary Feedwater Pump Discharge Cross-Tie Valves				
		A1AFFV7517		MEDIUM	Low	Not modeled	Not modeled
		B1AFFV7516		MEDIUM	Low	Not modeled	Not modeled
		C1AFFV7515		MEDIUM	Low	Not modeled	Not modeled
		D1AFFV7518		MEDIUM	Low	Not modeled	Not modeled
Group	*CC03*	*Group Description*	Penetration M-40 CCW return for the RCPs				
		D1CCFV4493	LOW	LOW	Low	Not modeled	Not modeled
Group	*CC24*	*Group Description*	Chilled Water Return for the RCFCs, Outside Cntmt Isolation Valve (Trains A, B, and C)				
		A1CCFV0864		NRS	Low	Not modeled	Not modeled
		B1CCFV0862		NRS	Low	Not modeled	Not modeled
		C1CCFV0863		NRS	Low	Not modeled	Not modeled
Group	*CC34*	*Group Description*	Cross Connect Valves for CCW Supply and Return for Charging Pumps				
		A1CCFV4656	LOW	LOW	Low	no active failure	Remain open, transfer closed
		A1CCFV4657	TRUNCATED	LOW	Low	no active failure	Remain open, transfer closed
Group	*CH01*	*Group Description*	EAB Control Room Envelope Air Handling Unit Outlet Temperature Valve (Trains A, B, and C)				
		A1CHTV9476A		LOW	Low	Not modeled	Not modeled explicitly
		A1CHTV9476B		LOW	Low	Not modeled	Not modeled explicitly
		B1CHTV9486A		LOW	Low	Not modeled	Not modeled explicitly
		B1CHTV9486B		LOW	Low	Not modeled	Not modeled explicitly
		C1CHTV9496A		LOW	Low	Not modeled	Not modeled explicitly
		C1CHTV9496B		LOW	Low	Not modeled	Not modeled explicitly

AOV Rank		TPNS	PSA Rank for GQA	GQA Rank	Final IST Rank	PRA Rank for IST	PRA_FUNCTIONS
Group	CH02	Group Description	EAB Main Supply Air Handling Unit Outlet Temperature Valve (Trains A, B, and C)				
		A1CHTV9477A		LOW	Low	Not modeled	Not modeled explicitly
		A1CHTV9477B		LOW	Low	Not modeled	Not modeled explicitly
		B1CHTV9487A		LOW	Low	Not modeled	Not modeled explicitly
		B1CHTV9487B		LOW	Low	Not modeled	Not modeled explicitly
		C1CHTV9497A		LOW	Low	Not modeled	Not modeled explicitly
		C1CHTV9497B		LOW	Low	Not modeled	Not modeled explicitly
Group	CV01	Group Description	Reactor Coolant Auxiliary Spray Valve				
		N1CVLV3119	LOW	MEDIUM	Medium	NRS	Credited to open
Group	CV11	Group Description	CVCS SEAL WATER INJECTION FLOW CONTROL VALVE				
		C1CVHCV0218	LOW	LOW	Low	NRS	Modeled to open
Group	CV12	Group Description	Letdown Onfice Header Isolation Valve				
		C1CVFV0011	MEDIUM	MEDIUM	Low	Low	Modeled to close
Group	CV16	Group Description	Boric Acid Supply to Concentrated BA Polishing Demineralizer Isolation Valves				
		A1CVFV8400A		NRS	Low	Not modeled	Not modeled
Group	ED01	Group Description	Containment Normal Sump Discharge Outside Cntmt Isolation Valve (FV7800)				
		A1EDFV7800	LOW	LOW	Low	NRS	Modeled to close
Group	EW01	Group Description	Essential Cooling Water Blowdown Isolation Valve (Trains A, B, and C)				
		A1EWFV6935		NRS	Low	Not modeled	Not modeled
		B1EWFV6936		NRS	Low	Not modeled	Not modeled
		C1EWFV6937		NRS	Low	Not modeled	Not modeled
Group	EW09	Group Description	ECW Screen Wash Pump Discharge Valve (Trains A, B, and C)				
		A1EWFV6914		NRS	Low	Not modeled	Not modeled
		B1EWFV6924		NRS	Low	Not modeled	Not modeled
		C1EWFV6934		NRS	Low	Not modeled	Not modeled

AOV Rank		TPNS	PSA Rank for GQA	GQA Rank	Final IST Rank	PRA Rank for IST	PRA_FUNCTIONS
Group	FW03	Group Description	Feedwater Bypass Flow Control Valves				
		N1FWFV7151		NRS	Low	Not modeled	Not modeled
		N1FWFV7152		NRS	Low	Not modeled	Not modeled
		N1FWFV7153		NRS	Low	Not modeled	Not modeled
		N1FWFV7154		NRS	Low	Not modeled	Not modeled
Group	FW04	Group Description	Steam Generator Feedwater Inlet Isolation Bypass Valves				
		A1FWFV7147A		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7148A		MEDIUM	Low	Not modeled	Not modeled
		B1FWFV7145A		MEDIUM	Low	Not modeled	Not modeled
		B1FWFV7146A		MEDIUM	Low	Not modeled	Not modeled
Group	FW05	Group Description	Steam Generator Preheater Bypass Valves				
		A1FWFV7189		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7190		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7191		MEDIUM	Low	Not modeled	Not modeled
		A1FWFV7192		MEDIUM	Low	Not modeled	Not modeled
Group	HC02	Group Description	RCB Supplemental Purge Supply and Return Outside Cntmt Isolation AOVs				
		A1HCFV9776	LOW	MEDIUM	Medium	Low	Modeled to close
		A1HCFV9777	LOW	MEDIUM	Medium	Low	Modeled to close
Group	MS04	Group Description	Main Steam Bypass Isolation Valves				
		A1MSFV7412		MEDIUM	Low	Not modeled	Not modeled
		A1MSFV7422		MEDIUM	Low	Not modeled	Not modeled
		A1MSFV7432		MEDIUM	Low	Not modeled	Not modeled
		A1MSFV7442		MEDIUM	Low	Not modeled	Not modeled
Group	PS04	Group Description	Pressurizer Liquid Sample OCIV				
		C1PSFV4451B		LOW	Low	Not modeled	Not modeled

AOV Rank		TPNS	PSA Rank for GQA	GQA Rank	Final IST Rank	PRA Rank for IST	PRA_FUNCTIONS
Group	PS05	Group Description	Pressurizer Vapor Space Sample OCIV				
		C1PSFV4452		LOW	Low	Not modeled	
Group	PS07	Group Description	Primary sampling OCIVs (FV4461 and FV4466, FV 4456)				
		B1PSFV4456		LOW	Low	Not modeled	Not modeled
		B1PSFV4466		LOW	Low	Not modeled	Not modeled
		C1PSFV4461		LOW	Low	Not modeled	Not modeled
Group	RC01	Group Description	Pressurizer Relief Tank Vent to Gaseous Waste Processing System Outside Cntmt Isolation Valve (3652)				
		B1RCFV3652	LOW	LOW	Low	Low	
Group	RC02	Group Description	Reactor Make-up Water to RCP Standpipe and PRT OCIV (3651)				
		B1RCFV3651	LOW	LOW	Low	Low	
Group	SB01	Group Description	Steam Generator Bulk Water Sample Outside Cntmt Isolation Valves				
		A1SBFV4186	LOW-T	LOW	Low	Medium	Modeled to close
		A1SBFV4189	LOW-T	LOW	Low	Medium	Modeled to close
		B1SBFV4188	LOW-T	LOW	Low	Medium	Modeled to close
		C1SBFV4187	LOW-T	LOW	Low	Medium	Modeled to close
Group	SB02	Group Description	Steam Generator Blowdown Outside Cntmt Isolation Valves				
		A1SBFV4150	LOW-T	MEDIUM	Low	Medium	Modeled to close
		A1SBFV4153	LOW-T	MEDIUM	Low	Medium	Modeled to close
		B1SBFV4152	LOW-T	MEDIUM	Low	Medium	Modeled to close
		C1SBFV4151	LOW-T	MEDIUM	Low	Medium	Modeled to close
Group	SI01	Group Description	Safety Injection System Test Line Containment Isolation Valves				
		A1SIFV3971		LOW	Low	Not modeled	3/4" penetration, normally isolated. Not modeled by the PRA.
		B1SIFV3970		LOW	Low	Not modeled	3/4" penetration, normally isolated. Not modeled by the PRA

AOV Rank		TPNS	PSA Rank for GQA	GQA Rank	Final IST Rank	PRA Rank for IST	PRA_FUNCTIONS
Group	SI02	Group Description	Accumulator Nitrogen Supply Outside Cntmt Isolation Valve (3983)				
		A1SIFV3983		LOW	Low	Not modeled	Not modeled. Does not penetrate containment atmosphere (closed system outside, closed system inside, small pipe, not normally in use). Pressure rating in piping is higher than containment pressure.
Group	SI04	Group Description	Reactor Water Storage Tank Clean-Up by SFPCCS Isolation Valves				
		A1SIFV3936		LOW	Low	Not modeled	Not modeled
		B1SIFV3937		LOW	Low	Not modeled	Not modeled
Group	SI05	Group Description	Residual Heat Exchanger Bypass Valves (Trains A, B, and C)				
		A1SIFCV0851		MEDIUM	Low	Not modeled	Not modeled.
		B1SIFCV0852		MEDIUM	Low	Not modeled	Not modeled
		C1SIFCV0853		MEDIUM	Low	Not modeled	Not modeled.
Group	WL01	Group Description	RCDT Vent Outside Containment Isolation Valve				
		B1WLFV4919	LOW	LOW	Low	NRS	Modeled to close
Group	WL02	Group Description	RCDT To LWPS Outside Containment Isolation Valve				
		B1WLFV4913	LOW	LOW	Low	NRS	Modeled to close

AOV Rank		*TPNS*	*PSA Rank for GQA*	*GQA Rank*	*Final IST Rank*	*PRA Rank for IST*	*PRA_FUNCTIONS*
AOV-3							
Group	*CV02*	*Group Description*	Centnfugal Charging Pump Minimum Recirc. Control Valves				
		N1CVFCV0201	LOW	LOW	Low	NRS	Modeled to open
		N1CVFCV0202	LOW	LOW	Low	NRS	Modeled to open