ATTACHMENT 1

BVPS UNIT 1

INSERVICE TESTING PROGRAM

FOR

PUMPS AND VALVES

ISSUE 2
REVISION 3

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B.V.P.S.-1 IST

Pump Testing Requirements

Section I

ISSUE 2
REVISION 3

PUMP TESTING REQUIREMENTS

The Inservice Test (IST) Program for pumps at the Beaver Valley Power Station (BVPS), Unit 1, is based on subsection IWP of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 edition through the summer 1983 addenda (the code). The pumps included in this program are all ASME "class 1, 2 or 3 pumps that are required to perform a specific function in shutting down a reactor or in mitigating the consequences of an accident, and that are provided with an emergency power source" at BVPS, Unit 1.

The requirements of the code will be followed at all times unless specific relief has been granted by the NRC. An inservice test, run quarterly, to measure or observe the test quantities listed in Table 3100-1, below, is required for all pumps in the IST Program by the code.

TABLE IWP-3100-1
INSERVICE TEST QUANTITIES

Quantity	Measure	Observe
Speed N (if variable speed)	✓	
Inlet pressure P_i	✓ (1)	
Differential pressure ΔP	✓	
Flow rate Q	✓	
Vibration amplitude V	✓	
Proper lubricant level or pressure		✓
Bearing temperature T_b	✓	

NOTE:
(1) Measure before pump startup and during test.

Table 3100-2 shows the allowable ranges for test results that will be used to determine if corrective action is required. The test data will be compared to the ranges applied to the reference values for each parameter. If these ranges cannot be met, reduced range limits that allow the pump to fulfill its function will be used in lieu of the ranges given in Table 3100-2.

TABLE IWP-3100-2
ALLOWABLE RANGES OF TEST QUANTITIES

Test Quantity	Acceptable Range	Alert Range [Note (1)]		Required Action Range [Note (1)]	
		Low Values	High Values	Low Values	High Values
P_i	[Note (2)]	[Note (2)]	[Note (2)]	[Note (2)]	[Note (2)]
ΔP	0.93–1.02 ΔP_r	0.90–0.93 ΔP_r	1.02–1.03 ΔP_r	< 0.90 ΔP_r	> 1.03 ΔP_r
Q	0.94–1.02 Q_r	0.90–0.94 Q_r	1.02–1.03 Q_r	< 0.90 Q_r	> 1.03 Q_r
V when $0 \le V_r \le 0.5$ mils	0–1 mil	None	1–1.5 mils	None	> 1.5 mils
V when $0.5 \text{ mils} < V_r \le 2.0$ mils	0–2 V_r mils	None	2 V_r–3 V_r mils	None	> 3 V_r mils
V when $2.0 \text{ mils} < V_r \le 5.0$ mils	0–(2 + V_r) mils	None	(2 + V_r)–(4 + V_r) mils	None	> (4 + V_r) mils
V when $V_r > 5.0$ mils	0–1.4 V_r mils	None	1.4 V_r–1.8 V_r mils	None	> 1.8 V_r mils
T_b	[Note (3)]	[Note (3)]	[Note (3)]	[Note (3)]	[Note (3)]

NOTES:
(1) See IWP-3230.
(2) P_i shall be within the limits specified by the Owner in the record of tests (IWP-6000).
(3) T_b shall be within the limits specified by the Owner in the record of tests (IWP-6000).

If the test quantities fall within the Alert Range, the frequency of testing shall be doubled until the cause of the deviation is determined and the condition corrected.

If the test quantities fall within the Required Action Range, the pump shall be declared inoperative and not returned to service until the cause of the deviation is determined and the condition corrected.

The following two sections of this document are the "Pump Testing Outlines" and "Pump Relief Requests" sections. The "Pump Testing Outlines" section is a listing of all the pumps in the IST Program, their testing requirements, and their specific relief request reference numbers. The pumps are arranged according to system and pump mark number. The following abbreviations and designations are used throughout the IST Program for pumps:

P	Power Operations
CSD	Cold Shutdown
RR	Relief Request
X	Meets or Exceeds ASME Requirements
OST	Operating Surveillance Test
BVT	Beaver Valley Test
W	Weekly Frequency
M	Monthly Frequency
Q	Quarterly Frequency
A	Annual Frequency
R	Refueling Frequency
SP	Special Frequency
NA	Not Applicable

The "Pump Relief Requests" section contains the detailed technical description of conditions prohibiting the testing of some of the characteristics of safety-related pumps. An alternate test method and the frequency of revised testing is also included. The relief request(s) for a specific pump is referenced by the number(s) listed on the pump's testing outline sheet.

B.V.P.S.-1 IST

Pump Testing Outlines

Section II

ISSUE 2
REVISION 3

Pump Name: 1A Charging Pump	Pump Number: CH-P-1A	Code Class: 2	System: 7 Chemical and Volume Control

Function: To provide normal RCS Inventory and Hi Head Safety Injection

Remarks: See RR2

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.7.4 (Q)	P	RR3	
ΔP	1.7.4 (Q)	P	X	ΔP is calculated using the pump discharge pressure and the calculated Pi.
Q	1.7.4 (Q)	P	X	Calculated by adding the flows for the seal water to the RCP(s) (FI-CH-130, FI-CH-127, FI-CH-124) & charging flow (FI-CH-122A) & Mini flow.
V	1.7.4 (Q)	P	RR1	
Tb	1.7.4 (A)	P	RR1	
L	1.7.4 (Q)	P	X	

Pump Name: 1B Charging Pump	Pump Number: CH-P-1B	Code Class: 2	System: 7 Chemical and Volume Control

Function: To provide normal RCS inventory and Hi Head Safety Injection

Remarks: See RR2

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.7.5 (Q)	P	RR3	
ΔP	1.7.5 (Q)	P	X	ΔP is calculated using the pump discharge pressure and the calculated Pi.
Q	1.7.5 (Q)	P	X	Calculated by adding the flows for the seal water to the RCP(s) (FI-CH-130, FI-CH-127, FI-CH-124) & charging flow (FI-CH-122A) & mini flow.
V	1.7.5 (Q)	P	RR1	
Ib	1.7.5 (A)	P	RR1	
t	1.7.5 (Q)	P	X	

Pump Name: 1C Charging Pump	Pump Number: CH-P-1C	Code Class: 2	System: 7 Chemical and Volume Control

Function: To provide normal RCS inventory and Hi Head Safety Injection

Remarks: See RC2

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.7.6 (Q)	P	RR3	
ΔP	1.7.6 (Q)	P	X	ΔP is calculated using pump the discharge pressure and the calculated Pi.
Q	1.7.6 (Q)	P	X	Calculated by adding the flows for the seal water to the RCP(s) (FI-CH-130, FI-CH-127, FI-CH-124) & charging flow (FI-CH-122A) & mini flow.
V	1.7.6 (Q)	P	RR1	
Ib	1.7.6 (A)	P	RR1	
i	1.7.6 (Q)	P	X	

Pump Name: 2A Boric Acid Transfer Pump	Pump Number: CH-P-2A	Code Class: 3	System: 7 Chemical and Volume Control

Function: Chemical Shim and Emergency Boration Supply Remarks:

Parameter	OST	Applicable	Req'd	Comment
W	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.7.1 (Q)	P	RR3	Calculate Pi from the level in the Boric Acid Storage Tank.
ΔP	1.7.1 (Q)	P	X	ΔP is calculated using the pump discharge pressure and the calculated Pi.
Q	1.7.1 (Q)	P	RR4	
V	1.7.1 (Q)	P	RR1	
Tb	1.7.1 (A)	P	RR1	
L	1.7.1 (Q)	P	X	

Pump Name: 23 Boric Acid Transfer Pump | Pump Number: CH-P-2B | Code Class: 3 | System: 7 Chemical and Volume Control

Function: Chemical Shim and Emergency Boration Supply | Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.7.2 (Q)	P	RR3	Calculate Pi from the level in the Boric Acid Storage Tank.
ΔP	1.7.2 (Q)	P	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.7.2 (Q)	P	.94	
V	1.7.2 (Q)	P	RR1	
Tb	1.7.2 (A)	P	RR1	
L	1.7.2 (Q)	P	X	

Pump Name: 1A Residual Heat Removal Pump	Pump Number: RH-P-1A	Code Class: 2	System: 10 Residual Heat Removal

Function: Long Term Decay Heat Removal

Remarks: See RR8

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.10.1 (SP)	CSD R	X	No permanently installed suction pressure gauge, temporary test gauge installed on 1RH-200 for test.
ΔP	1.10.1 (SP)	CSD R	X	
Q	1.10.1 (SP)	CSD R	X	
V	1.10.1 (SP)	CSD R	X	
Tb	1.10.1 (SP)	CSD R	X	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name: 1B Residual Heat Removal Pump	Pump Number: RH-P-1B	Code Class: 2	System: 10 Residual Heat Removal
Function: Long Term Decay Heat Removal		Remarks: See RR8	

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.10.1 (SP)	CSD R	X	No permanently installed suction pressure gauge, temporary test guage installed on 1RH-200 for test.
ΔP	1.10.1 (SP)	CSD R	X	
Q	1.10.1 (SP)	CSD R	X	
V	1.10.1 (SP)	CSD R	X	
Tb	1.10.1 (SP)	CSD R	X	
l	N/A	N/A	N/A	No lubricant level or pressure to observe, lubrication is by the fluid being pumped.

Pump Name:	Pump Number:	Code Class:	System:
1A Low Head Safety Injection Pump	S1-P-1A	2	11 Safety Injection

Function: Low Pressure - High Volume Safety Injection and long Term Recirculation

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.11.1 (Q)	P	RR3	Calculate Pi using the level in QS-1K-1.
ΔP	1.11.1 (Q)	P	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.11.1 (Q)	P	X	Flow indicator FI-SI-941. (Mini flow and test line flow indicator).
V	1.11.1 (Q)	P	X	
Ib	1.11.1 (A)	P	X	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name:	1B Low Head Safey injection Pump	Pump Number:	SI-P-1B	Code Class:	2	System:	11 Safety Injection

Function: Low Pressure - High Volume Safety Injection and Long Term Recirculation.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.11.2 (Q)	P	RR3	Calculate Pi using the level in QS-Ik-1.
ΔP	1.11.2 (Q)	P	X	ΔP is calculated using the discharge pressure gauge and the calculated Pi.
Q	1.11.2 (Q)	P	X	Flow indicator FI-SI-941. (Mini flow and test line flow indicator).
V	1.11.2 (Q)	P	X	
Tb	1.11.2 (A)	P	X	
-	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name: 1A Quench Spray Pump	Pump Number: QS- 1A	Code Class: 2	System: 13 Containment Depressurization

Function: To provide a flow of borated water for containment depressurization following a DBA.

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.1 (Q)	P	RR3	Calculate Pi using level in QS-Tk-1.
ΔP	1.13.1 (Q)	P	X	ΔP is calculated using the measured pump discharge pressure and the calculated Pi.
Q	1.13.1 (Q)	P	X	Total flow calculated by summing spray line flow (FI-1QS-104) and recirculation line flow (FI-1QS-103).
V	1.13.1 (Q)	P	RR1	
Tb	1.13.1 (A)	P	RR1	
t	1.13.1 (Q)	P	X	

Pump Name: 1B Quench Spray Pump	Pump Number: QS-P-1B	Code Class: 2	System: 13 Containment Depressurization

Function: To provide a flow of borated water for containment depressurization following a DBA.

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.2 (Q)	P	RR3	Calculate Pi using level in QS-TK-1.
ΔP	1.13.2 (Q)	P	X	ΔP is a calculated value using the measured discharge pressure and the calculated Pi.
Q	1.13.2 (Q)	P	X	Total flow calculated by summing spray line flow (FI-QS-104) and recirculation line flow (FI-QS-103).
V	1.13.2 (Q)	P	RR1	
Tb	1.13.2 (A)	P	RR1	
L	1.13.2 (Q)	P	X	

Pump Name: Chemical Injection Pumps	Pump Number: QS-P-4A	Code Class: 2	System: 13 Containment Depressurization

Function: Chemical Injection during Containment Depressurization

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.10A (Q)	P	RR5	Positive Displacement Pump
ΔP	1.13.10A (Q)	P	RR5	Positive Displacement Pump.
Q	1.13.10A (Q)	P	X	Will check using recirculation line flow instrument.
V	1.13.10A (Q)	P	RR1	
Tb	1.13.10A (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Bearings are grease lubricated.

Pump Name: Chemical Injection Pumps	Pump Number: QS-P-4B	Code Class: 2	System: 13 Containment Depressurization

function: Chemical Injection during containment Depressurization

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.10B (Q)	P	RR5	Positive Displacement Pump.
ΔP	1.13.10B (Q)	P	RP5	Positive Displacement Pump.
Q	1.13.10B (Q)	P	X	Will check using recirculation line flow instrument.
V	1.13.10B (Q)	P	RR1	
Tb	1.13.10B (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Bearings are grease lubricated.

Pump Name:	Chemical Injection Pumps	Pump Number:	QS-P-4C	Code Class:	2	System:	13 Containment Depressurization

Function: Chemical Injection during Containment Depressurization

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.10A (Q)	P	RR5	Positive Displacement Pump.
ΔP	1.13.10A (Q)	P	RR5	Positive Displacement Pump.
Q	1.13.10A (Q)	P	X	Will check using recirculation line flow instrument.
V	1.13.10A (Q)	P	RR1	
Ib	1.13.10A (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Bearings are grease lubricated.

Pump Name: Chemical Injection Pumps	Pump Number: QS-P-4D	Code Class: 2	System: 13 Containment Depressurization

Function: Chemical Injection during Containment Depressurization

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.10B (Q)	P	RR5	Positive Displacement Pump.
ΔP	1.13.10B (Q)	P	RR5	Positive Displacement Pump.
Q	1.13.10B (Q)	P	X	Will check using recirculation line flow instrument.
V	1.13.10B (Q)	P	RR1	
Tb	1.13.10B (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Bearings are grease lubricated.

Pump Name:	1A Inside Recirculation Spray Pump	Pump Number:	RS-P-1A	Code Class:	2	System:	13 Containment Depressurization

Function: Circulate containment sump water for long term containment depressurization

Remarks: See RR6

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.3(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	RR3	Calculate Pi using level in sump
ΔP	1.13.3(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.13.3(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	X	Recirculation test line available
V	1.13.3(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	RR1	
Ib	1.13.3(A)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	RR1	
I	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.
	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name:	Pump Number:	Code Class:	System:
1B Inside Recirculation Spray Pump	RS-P-1B	2	13 Containment Depressurization

Function: Circulate containment sump water for long term containment depressurization.

Remarks: See RR6

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.4(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	RR3	Calculate Pi using level in sump.
ΔP	1.13.4(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.13.4(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	X	Recirculation test line available.
V	1.13.4(Q)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	RR1	
Ib	1.13.4(A)	P CSD	RR6	
	BVI 1.4-1.13.5(R)	R	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.
	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name: 2A Outside Recirculation Spray Pump | Pump Number: RS-P-2A | Code Class: 2 | System: 13 Containment Depressurization

Function: Circulate containment sump water for long term containment depressurization | Remarks: See RR7

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.5 (Q)	P CSD	RR,	
	1.13.7 (R)	R	RR3	Calculate Pi using static head of water in the pump casing
ΔP	1.13.5 (Q)	P CSD	RR7	
	1.13.7 (R)	R	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.13.5 (Q)	P CSD	RR7	
	1.13.7 (R)	R	X	Flow recorded by local gauge (FI-RS157A).
V	1.13.5 (Q)	P CSD	RR7	
	1.13.7 (R)	R	RR1	
Tb	1.13.5 (A)	P CSD	RR7	
	1.13.7 (R)	R	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.
	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name:	2B Outside Recirculation Spray Pump	Pump Number:	RS-P-2B	Code Class:	2	System:	13 Containment Depressurization

Function: Circulate containment sump water for long term containment depressurization.

Remarks: See RR7

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.13.6 (Q)	P CSD	RR7	
	1.13.7 (R)	R	RR3	Calculate Pi using static head of water in the pump casing
ΔP	1.13.6 (Q)	P CSD	RR7	
	1.13.7 (R)	R	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.13.6 (Q)	P CSD	RR7	
	1.13.7 (R)	R	X	Flow recorded by local gauge (FI-RS157B).
V	1.13.6 (Q)	P CSD	RR7	
	1.13.7 (R)	R	RR1	
Tb	1.13.6 (A)	P CSD	RR7	
	1.13.7 (R)	R	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.
	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name:	Pump Number:	Code Class:	System:
1A Component Cooling Water Pump	CC-P-1A	3	15 Reactor Plant Component Cooling Water

Function: To provide cooling water to Rx Plant Components.

Remarks: See RR2

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.15.1 (Q)	P	X	
ΔP	1.15.1 (Q)	P	X	
Q	1.15.1 (Q)	P	X	
V	1.15.1 (Q)	P	RR1	
Tb	1.15.1 (A)	P	RR1	
t	1.15.1 (Q)	P	X	

Pump Name:	1B Component Cooling Water Pump	Pump Number:	CC-P-1B	Code Class:	3	System:	15 Reactor Plant Component Cooling Water

Function: To provide cooling water to Rx Plant Components.

Remarks: See RR2

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.15.2 (Q)	P	X	
ΔP	1.15.2 (Q)	P	X	
Q	1.15.2 (Q)	P	X	
V	1.15.2 (Q)	P	RR1	
Tb	1.15.2 (A)	P	RR1	
L	1.15.2 (Q)	P	X	

Pump Name:	1C Component Cooling Water Pump	Pump Number:	CC-P-1C	Code Class:	3	System:	15 Reactor Plant Component Cooling Water.

Function: To provide water to Rx Plant Components.

Remarks: See RR2

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.15.3 (Q)	P	X	
ΔP	1.15.3 (Q)	P	X	
Q	1.15.3 (Q)	P	X	
V	1.15.3 (Q)	P	RR1	
Tb	1.15.3 (A)	P	RR1	
t	1.15.3 (Q)	P	X	

Pump Name: Steam Driven Auxiliary feed Pump
Pump Number: FW-P-2
Code Class: 3
System: 24 feedwater

Function: Provide emergency make-up during any loss of normal feedwater.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	1.24.4 (Q)	P	X	No installed rpm indication; use strobotac.
	1.24.9 (R)	R	X	No installed rpm indication; use strobotac.
P_i	1.24.4 (Q)	P	X	
	1.24.9 (R)	R	X	
ΔP	1.24.4 (Q)	P	X	
	1.24.9 (R)	R	X	
Q	1.24.4 (Q)	P	RR12	
	1.24.9 (R)	R	X	
V	1.24.4 (Q)	P	RR1	
	1.24.9 (R)	R	RR1	
1b	1.24.4 (A)	P	RR1	
	1.24.9 (R)	R	RR1	
L	1.24.4 (Q)	P	X	
	1.24.9 (R)	R	X	

Pump Name: Motor Driven Auxiliary Feed Pump | Pump Number: fW-P-3A | Code Class: 3 | System: 24 feedwater

Function: Provide emergency make-up during any loss of normal feedwater.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.24.2 (Q)	P	X	
	1.24.8 (R)	R	X	
ΔP	1.24.2 (Q)	P	X	
	1.24.8 (R)	R	X	
Q	1.24.2 (Q)	P	RR12	
	1.24.8 (R)	R	X	
V	1.24.2 (Q)	P	RR1	
	1.24.8 (R)	R	RR1	
Ib	1.24.2 (A)	P	RR1	
	1.24.8 (R)	R	RR1	
t	1.24.2 (Q)	P	X	
	1.24.8 (R)	R	X	

Pump Name: Motor Driven Auxiliary Feed Pump

Pump Number: FW-P-3B

Code Class: 3

System: 24 Feedwater

Function: Provide emergency make-up during any loss of normal feedewater.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.24.3 (Q)	P	X	
	1.24.8 (R)	R	X	
ΔP	1.24.3 (Q)	P	X	
	1.24.8 (R)	R	X	
Q	1.24.3 (Q)	P	RR12	
	1.24.8 (R)	R	X	
V	1.24.3 (Q)	P	RR1	
	1.24.8 (R)	R	RR1	
Ib	1.24.3 (Q)	P	RR1	
	1.24.8 (R)	R	RR1	
t	1.24.3 (Q)	P	X	
	1.24.8 (R)	R	X	

Pump Name: 1A River Water Pump	Pump Number: WR-P-1A	Code Class: 3	System: 30 River Water

Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.

Remarks: See RR2

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.30.2 (Q)	P	RR3	Calculate Pi using the Ohio River level.
ΔP	1.30.2 (Q)	P	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.30.2 (Q)	P	X	
V	1.30.2 (Q)	P	RR1	
Tb	1.30.2 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name: 1B River Water Pump	Pump Number: WR-P-1B	Code Class: 3	System: 30 River Water

function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.

Remarks: See RR2

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.30.3 (Q)	P	RR3	Calculate Pi using the Ohio River level.
ΔP	1.30.3 (Q)	P	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.30.3 (Q)	P	X	
V	1.30.3 (Q)	P	RR1	
Tb	1.30.3 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name: 1C River Water Pump	Pump Number: WR-P-1C	Code Class: 3	System: 30 River Water

Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.

Remarks: See RR2

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.30.6 (Q)	P	RR3	Calculate Pi using the Ohio River level.
ΔP	1.30.6 (Q)	P	X	ΔP is calculated using the discharge pressure and the calculated Pi.
Q	1.30.6 (Q)	P	X	
V	1.30.6 (Q)	P	RR1	
Tb	1.30.6 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

Pump Name:	Pump Number:	Code Class:	System:
1A DG #1 Fuel Transfer Pump	EE-P-1A	3	36-emergency 4 KV

Function: Transfer fuel from the underground tank to the day tank.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.36.1 (Q)	P	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge installed.
ΔP	1.36.1 (Q)		RR9	ΔP across a positive displacement pump is meaningless in determining pump degradation.
Q	1.36.1 (Q)	P	RR11	
V	1.36.1 (Q)	P	RR1	
Tb	1.36.1 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe.

Pump Name: 1B DG #1 Fuel Transfer Pump	Pump Number: EE-P-1B	Code Class: 3	System: 36-emergency 4 kV

Function: Transfer fuel from the underground tank to the day tank.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.36.1 (Q)	P	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge installed.
ΔP	1.36.1 (Q)	P	RR9	ΔP across a positive displacement pump is meaningless in determining pump degradation.
Q	1.36.1 (Q)	P	RR11	
V	1.36.1 (Q)	P	RR1	
Tb	1.36.1 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe.

Pump Name: 1C DG #2 Fuel Transfer Pump | Pump Number: EE-P-1C | Code Class: 3 | System: 36-emergency 4 KV

Function: Transfer fuel from the underground tank to the day tank.

Remarks:

Parameter	OSI	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed inductio.. motor.
Pi	1.36.2 (Q)	P	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge installed.
ΔP	1.36.2 (Q)	P	RR9	ΔP across a positive displacement pump is meaningless in determining pump degradation.
Q	1.36.2 (Q)	P	RR11	
V	1.36.2 (Q)	P	RR1	
Tb	1.36.2 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe.

Pump Name: 1D DG #2 fuel Transfer Pump	Pump Number: 11-P-1D	Code Class: 3	System: 36-emergency 4 kV

Function: Transfer fuel from the underground tank to the day tank.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.36.2 (Q)	P	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gage installed.
ΔP	1.36.2 (Q)	P	RR9	ΔP across a positive displacement pump is meaningless in determining pump degradation.
Q	1.36.2 (Q)	P	RR11	
V	1.36.2 (Q)	P	RR1	
Vb	1.36.2 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe.

Pump Name: 2A Circulating Oil Pump	Pump Number: EI-P-2A	Code Class: 3	System: 36-emergency 4 kV

Function: Circulate lubricating oil during shutdown periods to maintain proper temperature.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.36.1 (Q)	P	RR10	No installed pressure gauge or tank level associated with the pump. Oil pump suction is from the oil pan or reservoir.
ΔP	1.36.1 (Q)	P	RR10	
Q	1.36.1 (Q)	P	RR10	
V	1.36.1 (Q)	P	RR1	
Tb	1.36.1 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe.

Pump Name: 2B Circulating Oil Pump	Pump Number: 11-P-2B	Code Class: 3	System: 36-emergency 4 kV

Function: Circulation lubricating oil during shutdown periods to maintain proper temperature.

Remarks:

Parameter	OST	Applicable	Req'd	Comment
N	N/A	N/A	N/A	Constant speed induction motor.
Pi	1.36.2 (Q)	P	RR10	No installed pressure gauge or tank level associated with the pump. Oil pump suction is from the oil pan or reservior.
ΔP	1.36.2 (Q)	P	RR10	
Q	1.36.2 (Q)	P	RR10	
V	1.36.2 (Q)	P	RR1	
Tb	1.36.2 (A)	P	RR1	
L	N/A	N/A	N/A	No lubricant level or pressure to observe.

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Pump Testing Relief Requests

Section III

ISSUE 2
REVISION 3

RELIEF REQUEST 1

Pump Mark No(s).				
	CH-P-1A	QS-P-4B	CC-P-1B	WR-P-1C
	CH-P-1B	QS-P-4C	CC-P-1C	EE-P-1A
	CH-P-1C	QS-P-4D	FW-P-2	EE-P-1B
	CH-P-2A	RS-P-1A	FW-P-3A	EE-P-1C
	CH-P-2B	RS-P-1B	FW-P-3B	EE-P-1D
	QS-P-1A	RS-P-2A	WR-P-1A	EE-P-2A
	QS-P-1B	RS-P-2B	WR-P-1B	EE-P-2B
	QS-P-4A	CC-P-1A		

Code Test Requirements: Quarterly Vibration Readings in mils and annual Bearing Temperature Measurements.

Basis for Relief: The mechanical characteristics of a pump can be better determined by taking vibration readings in velocity units than by taking the vibration readings in displacement units and by bearing temperature readings taken annually.

Vibration severity is a function of both displacement and frequency. Therefore, vibration in velocity units is the more accurate description of the vibration. In addition, velocity measurements are more sensitive to small changes that are indicative of developing mechanical problems and hence more meaningful than displacement measurements. Velocity measurements detect not only high amplitude vibrations that indicate a major mechanical problem, but also the equally harmful low amplitude high frequency vibrations due to misalignment, imbalance or bearing wear that usually go undetected by simple displacement measurements.

Also, a bearing will be seriously degraded prior to the detection of increased heat at the bearing housing. Therefore, quarterly vibration velocity readings should achieve a much higher probability of detecting developing problems than the once a year reading of bearing temperatures.

Alternate Test: Pump vibration measurements will be taken in vibration velocity units (in/sec), using the ranges listed in OM-6 revision 8 as acceptance criteria. (See the attached table). Annual pump bearing temperature measurements will not be taken.

RELIEF REQUEST 1

TABLE

RANGES OF TEST PARAMETERS (1)

PUMP TYPE	TEST PARAMETER	ACCEPTABLE RANGE	ALERT RANGE	REQUIRED ACTION RANGE
Centrifugal (2) and Vertical Line Shaft (3)	Vv	≤2.5 Vr	>2.5 Vr to 6Vr but not >0.325 in/sec	>6 Vr but not >0.70 in/sec
Reciprocating (4)	Vv	≤2.5 Vr	>2.5 Vr to 6 Vr	>6 Vr

NOTES:

(1) Vv represents the peak vibration velocity. Vr is vibration reference value in the selected units.

(2) On centrifugal pumps, measurements shall be taken in a plane approximately perpendicular to the rotating shaft in two orthogonal directions on each accessible pump bearing housing. Measurement also shall be taken in the axial direction on each accessible pump thrust bearing housing.

(3) On vertical line shaft pumps, measurements shall be taken on the upper motor bearing housing in three orthogonal directions, one of which is the axial direction.

(4) On reciprocating pumps, the location shall be on the bearing housing of the crankshaft, approximately perpendicular to both the crankshaft and the line of plunger travel.

RELIEF REQUEST 2

Pump Mark No(s).:	CH-P-1A	CC-P-1A	WR-P-1A
	CH-P-1B	CC-P-1B	WR-P-1B
	CH-P-1C	CC-P-1C	WR-P-1C

Code Test Requirement: "The resistance of the system shall be varied until either the measured differential pressure or the measured flowrate equals the corresponding reference value. The other test quantities shown in Table IWV-3100-1 shall then be measured or observed and recorded."

Basis for Relief: Plant conditions may preclude returning to the same point for each pump surveillance. Relief is, therefore, requested to use a pump curve, which is the fixed response of the pump to various conditions.

Alternate Test: A pump curve will be used to compare flowrate with developed head.

RELIEF REQUEST 3

Pump Mark No(s).:	CH-P-1A	CH-P-2B	QS-P-1B	RS-P-2B
	CH-P-1B	SI-P-1A	RS-P-1A	WR-P-1A
	CH-P-1C	SI-P-1B	RS-P-1B	WR-P-1B
	CH-P-2A	QS-P-1A	RS-P-2A	WR-P-1C

Code Test Requirements: Measurement of pump suction pressure before pump startup and during test.

Basis for Relief: No installed instrumentation exists to measure suction pressure, therefore, relief is requested from this requirement.

Alternate Test: The static head from tanks or the Ohio River will be used to calculate suction pressure, once per test.

RELIEF REQUEST 4

Pump Mark No(s).: CH-P-2A
CH-P-2B

Code Test Requirement: Measurement of flow and ΔP.

Basis for Relief: These pumps are tested in fixed resistance recirculation lines. Therefore, either the measured flowrate or the measured differential pressure can be considered constant and at its reference value. The other test quantities may then be measured or observed and recorded.

Alternate Test: Test quarterly through recirculation lines while measuring pump ΔP per OST 1.7.1 & 2. Test at refuelings by measuring pump ΔP and calculating flow by transferring water between boric acid tanks and measuring the change in tank level over time, when technical specifications require only one of two boric acid sources and flow paths to be operable. Testing in this manner will require partially draining down one tank to make room for the transfer.

RELIEF REQUEST 5

Pump Mark No(s).: QS-P-4A
QS-P-4B
QS-P-4C
QS-P-4D

Code Test Requirements: Measure suction pressure, ΔP and flow.

Basis for Relief: The function of these pumps is to provide 32 gpm of NaOH water to the suction of the quench spray pumps during an accident. Since these pumps are positive displacement, flow rate and differential pressure are independent variables. Unlike centrifugal style pumps, it is not necessary to measure both parameters to assess the hydraulic performance of these pumps.

Alternate Test: Pump discharge pressure and flow rate will be utilized for evaluating pump performance. Pump discharge pressure will not be measured until after the seventh refueling outage, however, since this will require a plant modification to add the necessary instrumentation.

RELIEF REQUEST 6

Pump Mark No(s).: RS-P-1A
RS-P-1B

Code Test Requirement: Quarterly pump tests.

Basis for Relief: The function of these pumps is to take suction on the containment sump and discharge to the spray rings on the containment ceiling during a DBA. In order to test these pumps, a temporary dike must be installed in the containment around the safeguards sump to ensure adequate NPSH for each pump. Quarterly testing at power in this manner is a safety concern since it would block off the sump from the containment in the event of an accident. Pump testing during cold shutdowns, while not involving the same safety concern, would increase personnel radiation exposure, create over 2,000 gallons of additional radioactive waste, divert maintenance from higher priority items, and could extend the length of a plant shutdown due to the extensive preparatory work required to properly install the dike.

Alternate Test: Dry run quarterly per OST 1.13.3 and 1.13.4 for not more than 60 seconds and stopped when they reach 100 rpm. Also, run on recirculation per BVT 1.4 - 1.13.5 during Refueling Outages.

RELIEF REQUEST 7

Pump Mark No(s).: RS-P-2A
RS-P-2B

Code Test Requirements: Quarterly pump test.

Basis for Relief: The function of these pumps is to take suction on the containment sump and discharge to the spray rings inside containment. The pumps are designed with a recirculation flow path for testing; however, the piping arrangement and required valve lineup for post-test system restoration prevents draining the pump casing and suction lines without returning some water to the safeguards sump in the containment building. As a result, a containment entry is required to pump the sump down. Performing this test also creates radioactive waste, increases personnel radiation exposure and could increase the maintenance required on the pump suction and discharge MOVs which must be cycled closed to perform this test placing a differential pressure across these valves not normally seen under either normal or accident conditions.

Alternate Test: Run dry quarterly per OST 1.13.5 & 6 for not more than 60 seconds and stopped when they reach 100 rpm. Also, run on recirculation per OST 1.13.7 during refueling outages.

RELIEF REQUEST 8

Pump Mark No(s).: RH-P-1A
RH-P-1B

Code Test Requirement: Quarterly pump testing.

Basis for Relief: Testing the RHR pumps quarterly would require making an entry into the subatmospheric containment. In addition, any testing done at power would be limited to the pump recirculation flow path due to pressure and temperature interlocks between the RHR and RC systems which prevent lining up the two systems at power. The pump recirculation flow path lacks the necessary instrumentation to measure pump flow rate.

Alternate Test: These pumps will be tested during cold shutdowns per OST 1.10.1.

RELIEF REQUEST 9

Pump Mark No(s).: EE-P-1A
EE-P-1B
EE-P-1C
EE-P-1D

Code Test Requirements: Measure suction pressure and ΔP.

Basis for Relief: Relief is requested from measuring suction pressure and differential pressure due to a lack of installed instrumentation. Also, these are positive displacement pumps and the flowrate is more indicative of pump degradation than the pressures are.

Alternate Test: Discharge pressure is recorded and trended as a further indication of pump performance.

RELIEF REQUEST 10

Pump Mark No(s).: EE-P-2A
EE-P-2B

Code Test Requirement: Measure inlet and differential pressure and flowrate during quarterly test.

Basis for Relief: The circulating oil pumps are integral parts of generators and have no separate installed instrumentation. Also, any pump degradation will be observed by a temperature increase in the lubricating oil. Therefore, relief is requested from measuring Pi, ΔP or flowrate.

Alternate Test: The Diesel Generators' lube oil temperature is continuously monitored, any degradation of the hydraulic characteristics of the pump will be indicated by the temperature change.

RELIEF REQUEST 11

Pump Mark No(s).: EE-P-1A
EE-P-1B
EE-P-1C
EE-P-1D

Code Test Requirement: Flowrate shall be measured using a rate or quantity meter installed in the pump test circuit.

Basis for Relief: There is no installed instrumentation.

Alternate Test: The level change over time in the floor mounted day tank will be measured and converted to the flowrate.

RELIEF REQUEST 12

Pump Mark No(s).: FW-P-2
FW-P-3A
FW-P-3B

Code Test Requirement: Measurement of flow and ΔP.

Basis for Relief: These pumps are tested in fixed resistance recirculation lines. Therefore, either the measured flowrate or the measured differential pressure can be considered constant and at its reference value. The other test quantities may then be measured or observed and recorded.

Alternate Test: Test quarterly through their recirculation lines while measuring pump ΔP only per OSTs 1.24.2, 3 & 4. Test at refuelings when plant conditions permit directing flow to the steam generators and measure pump ΔP and flowrate using the flow instrumentation in the S/G supply headers per OSTs 1.24.8 & 9.

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Valve Testing Requirements

Section IV

ISSUE 2
REVISION 3

VALVE TESTING REQUIREMENTS

The Inservice Test (IST) Program for valves at the Beaver Valley Power Station (BVPS), Unit 1, is based on subsection IWV of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 edition through the summer 1983 addenda (the code). The valves included in this section are those which are required to perform a specific function in shutting down a reactor to cold shutdown or in mitigating the consequences of an accident".

The requirements of the code will be followed at all times unless specific relief has been granted by the NRC.

A. Category A and B valves will be exercised at least once every three months to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the valves will be part-stroke exercised at power and full-stroke exercised during cold shutdowns. Valves that cannot be stroked at power will be full stroked during cold shutdowns. The time to full-stroke exercise each valve will also be measured and compared to a maximum stroke time. In addition, Category A valves are leak rate tested at the same (or greater) frequency as scheduled refueling outages, not to exceed every two years.

   Exception is taken to part stroke testing motor-operated valves, unless specifically stated. This is necessary because the motor-operated valve circuitry prevents throttling of these valves. Under normal operation, the valves must travel to either the full open or shut position prior to reversing direction.

   If the stroke time of a power-operated valve exceeds its previous stroke time by 25% for valves with full-stroke times greater than 10 seconds or 50% for valves with full-stroke times less than or equal to 10 seconds, the test frequency will be increased to monthly. At BVPS the stroke times of the valves will be examined for trends semi-annually. During the trend review, it will be determined if corrective action is necessary for any valve based on its stroke time history. When either the corrective action is complete or the review determines it is unnecessary, the original test frequency will be resumed.

   All valves with fail-safe actuators (Air-Operated Trip Valves) that are applicable to this program are tested from the Control Room by the remote operating switch. By placing the control switch to the closed position, or de-energizing the control power, air is vented off of the valve actuator thus positioning the valve in the fail-safe position.

If a valve fails to exhibit the required change of valve stem or disk position or exceeds its specified limiting value of full-stroke time then corrective action will be initiated immediately. If the condition is not, or cannot be, corrected within 24 hours, the valve will be declared inoperative. Before returning the valve to service after corrective action, a retest showing acceptable operation will be run.

Valves with remote position indicators shall be observed at least once every two years to verify that valve operation is accurately indicated.

If the leak rate exceeds the allowable limit, the valve will be repaired or replaced.

B. Category C valves are divided into two groups; safety or relief valves and check valves.

1. Safety and relief valves are set point tested in accordance with ASME PTC 25.3-1976, at a frequency as defined in Table IWV-3510-1 of the code.

2. Check valves will be exercised to the position required to fulfill their function every three months, unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the check valve will be part-stroke exercised at power and full-stroke exercised every cold shutdown, not to exceed every three months.

If a safety or relief valve fails to function properly during a test, it will be repaired or replaced.

If a check valve fails to exhibit the required change of disk position by this testing, corrective action will be initiated immediately. If the condition is not, or cannot be, corrected within 24 hours, the check valve will be declared inoperative. Before returning the valve to service after corrective action, a retest showing acceptable operation will be run.

C. Category D valves are explosively actuated. There are no Category D valves at Beaver Valley, Unit 1.

All the inservice testing requirements for each different category of valve in the IST Program are summarized in Table IWV-3700-1. This table lists the subarticles of the code that apply to each different type of valve.

TABLE IWV-3700-1
INSERVICE TEST REQUIREMENTS[1]

Category	Valve Function (IWV-2100)	Leak Test Procedure	Exercise Test Procedure	Special Test Procedure
A	Active	IWV-3420	IWV-3410	None
A	Passive	IWV-3420	None	None
B	Active	None	IWV-3410	None
C-Safety & Relief	Active	None	IWV-3510	None
C-Check	Active	None	IWV-3520	None
D	Active	None	None	IWV-3600

NOTE:
(1) No tests required for Category B, C, and D passive valves.

As stated in the table, passive valves are not required to be exercised. Therefore, relief is not requested from exercising any passive valve and no testing requirement is listed in the outline section.

The following three sections of this document are the "Valve Testing Outlines", "Cold Shutdown Justifications" and "Valve Relief Requests" sections. The "Valve Testing Outlines" section is a listing of all the valves in the IST Program, their class, category, type, NSA, drawing number and coordinates, testing requirements, specific cold shutdown justification reference numbers, relief request reference numbers and test procedure numbers.

A. The valve class will be 1, 2 or 3, corresponding to the safety classifications.

B. The category of the valve will be A, B, C or D in accordance with the guidelines of subsection IWV-2200. In addition, combinations of categories may be utilized. If the valve is not required to change position during an accident or bring the reactor down to a cold shutdown condition, the fact that it is Passive (P) will also be indicated. For example, a containment isolation check valve that does not change position would be a category A/C/P valve.

C. The type of valve will be listed using the abbreviations below:

TV	Trip Valve
PCV	Pressure Control Valve
RV	Relief Valve
MOV	Motor Operated Valve
SOV	Solenoid Operated Valve
FCV	Flow Control Valve
LCV	Level Control Valve
HCV	Hand Control Valve
NRV	Non-return Valve
SV	Safety Valve

Manual and check valve types are also listed. The specific valve designations were determined from the BVPS Unit 1 Operating Manual.

D. The normal system arrangement will be listed using the abbreviations below:

NSA	Normal System Arrangement
O	Open
S	Shut
A	Automatic
LO	Locked Open
LS	Locked Shut
ST	Sealed Throttled
SS	Sealed Shut
SO	Sealed Open
T	Throttled

E. The drawing number and coordinates will be the ones used in the Operating Manual.

F. The test requirements will be listed using the abbreviations below:

Q	Quarterly
LT	Leak Rate Test
ST	Set Point Test
LM	Leakage Monitoring

G. The specific Cold Shutdown Justification (CSJ) reference number or the relief request (RR) reference number will be listed.

H. The specific test procedure number and any comments will be listed using the abbreviations below:

BVT	Beaver Valley Test
OST	Operating Surveillance Test
CMP	Corrective Maintenance Procedure
DBA	Design Basis Accident

The "Cold Shutdown Justification" section contains the detailed technical description of conditions prohibiting the required testing of safety-related valves and an alternate test method to be performed during cold shutdowns.

The "Valve Relief Requests" section contains the detailed technical description of conditions prohibiting the required testing of safety-related valves, an alternate test method and frequency of revised testing.

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Valve Testing Outlines

Section V

ISSUE 2
REVISION 3

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RC68	2	X		X			C36		RM155B	B-2	Q	RR2	See Relief Request
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RC72	2	X		X			C42		RM155B	B-2	Q	RR3	See Relief Request
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RC101	2	X					TV	O	RM155B	B-1	Q		OSI 1.47.3A - Quarterly Stroke and Time
											LT	RR1	BVI 1.3-1.47.* - Leak Test
1RC102A	1		X				SOV	LS	RM155B	A-8	Q	CSJ1	OSI 1.1.10
1RC102B	1		X				SOV	LS	RM155B	A-8	Q	CSJ1	OSI 1.1.10
1RC103A	1		X				SOV	LS	RM155B	A-5	Q	CSJ1	OSI 1.1.10
1RC103B	1		X				SOV	LS	RM155B	A-5	Q	CSJ1	OSI 1.1.10
1RC104	1		X				SOV	LS	RM155B	B-5	Q	CSJ1	OSI 1.1.10
1RC105	1		X				SOV	LS	RM155B	B-5	Q	CSJ1	OSI 1.1.10
1RC277	2	X				X	T58	S	RM155B	C-10	LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RC278	2	X				X	T58	S	RM155B	C-10	LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RC456	1		X				PCV	A	RM155B	B-9	Q	CSJ2	OSI 1.1.10-Cold Shutdown stroke and time
1RC519	2	X					TV	O	RM155B	B-1	Q		OSI 1.47.3A - Quarterly Stroke and Time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RC551A	1			X			RV		RM155B	A-6	SI		BVI 1.5-1.60.5
1RC551B	1			X			RV		RM155B	A-7	SI		BVI 1.5-1.60.5
1RC551C	1			X			RV		RM155B	A-7	SI		BVI 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RC455C	1		X				PCV	A	RM155B	A-9	Q	CSJ2	OST 1.6.8
1RC535	1		X				MOV	O	RM155B	A-9	Q		OST 1.6.6, OST 1.6.8
1RC536	1		X				MOV	O	RM155B	B-9	Q		OST 1.6.6, OST 1.1.10
1RC537	1		X				MOV	O	RM155B	B-9	Q		OST 1.6.6, OST 1.6.8
1RC455D	1		X				PCV	A	RM155B	B-9	Q	CSJ2	OST 1.6.8
1RC585	1		X			X	MOV	S	RM155A	D-5	N/A		Seat verification per OST 1.11.14
1RC586	1		X			X	MOV	S	RM155A	F-5	N/A		Seat verification per OST 1.11.14
1RC587	1		X			X	MOV	S	RM155A	B-5	N/A		Seat verification per OST 1.11.14

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CH22	2			X			C58		RM159A	F-2	Q	RR4	OSI 1.7.4 - Part forward stroke OSI 1.7.5, 1.7.6 - Reverse flow test OSI 1.11.14 - full stroke test
1CH23	2			X			C58		RM159A	F-4	Q	RR4	OSI 1.7.5 - Part forward stroke OSI 1.7.4, 1.7.6 - Reverse flow test OSI 1.11.14 - full stroke test
1CH24	2			X			C58		RM159A	F-5	Q	RR4	OSI 1.7.6 - Part forward stroke OSI 1.7.4, 1.7.5 - Reverse flow test OSI 1.11.14 - full stroke test
1CH25	2		X			X	C58	LO	RM159A	F-2	N/A		Locked or sealed valve log
1CH26	2		X			X	C58	LO	RM159A	E-4	N/A		Locked or sealed valve log
1CH27	2		X			X	C58	LO	RM159A	E-5	N/A		Locked or sealed valve log
1CH31	2	X		X			C58		RM159A	B-5	Q	RR5	OSI 1.11.10 - full stroke test
											LT		BVI 1.3-1.47.11
1CH75	3			X			C58B		RM159B	G-4	Q	CSJ3	OSI 1.7.1 - Part-stroke test (later) - full stroke test
1CH76	3			X			C58B		RM159B	G-5	Q	CSJ3	OSI 1.7.2 - Part-stroke test (later) - full stroke test
1CH103	2			X			RV		RM159A	A-7	SI		BVI 1.5-1.60.5
1CH115B	2		X				MOV	S	RM159A	F-6	Q		OSI 1.47.3A - Quarterly stroke and time
1CH115C	2		X				MOV	O	RM159A	D-7	Q	CSJ4	OSI 1.1.10 - cold shutdown stroke and time
1CH115D	2		X				MOV	S	RM159A	F-6	Q		OSI 1.47.3A - Quarterly stroke and time
1CH115E	2		X				MOV	O	RM159A	D-7	Q	CSJ4	OSI 1.1.10 - cold shutdown stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CH122	2		X				FCV	A	RM159A	C-5	Q		OST 1.11.10 - stroke test
1CH141	2			X			C58		RM159A	G-7	Q	CSJ5	OST 1.1.10 - full stroke test
1CH142	2	X					MOV	S	RM159A	B-4	Q	RR6	OST 1.1.10 - cold shutdown stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak test
1CH152	2			X			C58		RM159A	F-4	Q		OST 1.7.4, 1.7.5 and 1.7.6
1CH153	2			X			C58		RM159A	E-2	Q		OST 1.7.4, 1.7.5 and 1.7.6
1CH154	2			X			C58		RM159A	E-4	Q		OST 1.7.4, 1.7.5 and 1.7.6
1CH158	2		X			X	G58	LO	RM159A	F-2	N/A		Locked or sealed valve log
1CH159	2		X			X	G58	LO	RM159A	F-4	N/A		Locked and sealed valve log
1CH160	2	X				X	FCV	S	RM159A	B-5	LT		BVT 1.3-1.47.11
1CH161	2		X			X	G58	LO	RM159A	E-5	N/A		Locked or sealed valve log
1CH170	1	X		X		X	C58		RM159A	B-5	LT		BVT 1.3-1.47.11 - Leakage corrected for functional ΔP
1CH181	2	X		X			C58		RM159A	D-2	Q	RR7	BVT 1.1-1.47.11
											LT		BVT 1.3-1.47.11
1CH182	2	X		X			C58		RM159A	D-3	Q	RR7	BVT 1.1-1.47.11
											LT		BVT 1.3-1.47.11
1CH183	2	X		X			C58		RM159A	D-4	Q	RR7	BVT 1.1-1.47.11
											LT		BVT 1.3-1.47.11
1CH200A	2	X					TV	S	RM159A	A-4	Q		OST 1.47.3A - Quarterly stroke time
											LT	RR1	1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	E	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CH208B	2	X					IV	O	RM159A	A-4	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1,R28	BVT 1.3-1.47.5 - Leak Test
1CH208C	2	X					IV	S	RM159A	A-4	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1,RR8	BVT 1.3-1.47.5 - Leak Test
1CH203	2	X		X			RV		RM159A	A-4	ST		BVT 1.5-1.60.5
											LT	RR1	BVT 1.3-1.47.5
1CH204	2	X					IV	O	RM159A	B-5	Q	CSJ6	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CH209	2			X			RV		RM159A	B-8	ST		BVT 1.5-1.60.5
1CH257	2			X			RV		RM159A	B-2	ST		BVT 1.5-1.60.5
1CH275A	2		X				MOV	O	RM159A	F-3	Q		OST 1.47.3A - Quarterly stroke and time
1CH275B	2		X				MOV	O	RM159A	F-4	Q		OST 1.47.3A - Quarterly stroke and time
1CH275C	2		X				MOV	O	RM159A	F-5	Q		OST 1.47.3A - Quarterly stroke and time
1CH289	2	X					MOV	O	RM159A	B-5	Q	CSJ6	OST 1.1.10 - Cold shutdown stroke and time
											LT		BVT 1.3-1.47.11
1CH308A	2	X					MOV	O	RM159A	D-2	Q	RR11	OST 1.1.10 - cold shutdown stroke and time
											LT		BVT 1.3-1.47.11

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CH308B	2	X					MOV	O	RM159A	D-3	Q	RR11	OSI 1.1.10 - cold shutdown stroke and time
											LT		BVI 1.3-1.47.11
1CH308C	2	X					MOV	O	RM159A	D-4	Q	RR11	OSI 1.1.10 - cold shutdown stroke and time
											LT		BVI 1.3-1.47.11
1CH310	1		X				MOV	O	RM159A	A-2	Q	CSJ7	CSI 1.1.10 - Cold shutdown stroke and time
1CH350	3		X				MOV	S	RM159A	G-7	Q		OSI 1.11.10
1CH369	2	X		X			C58		RM159A	D-5	Q	RR9	See Relief Request
											LT	RR1, RR10	BVI 1.3-1.47.5 - Leak Test
1CH370	2		X				MOV	O	RM159A	E-2	Q	RR12	OSI 1.1.10 cold shutdown stroke and time
1CH378	2	X					MOV	O	RM159A	D-5	Q	RR13	OSI 1.1.10 - cold shutdown stroke and time
											LT	RR1, RR10	BVI 1.3-1.47.5 - Leak Test
1CH381	2	X					MOV	O	RM159A	D-5	Q	RR13	OSI 1.1.10 - cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CH382A	2			X			RV		RM159A	C-4	SI		BVI 1.5-1.60.5
1CH382B	2			X			RV		RM159A	C-7	SI		BVI 1.5-1.60.5
1CH373	2		X				MOV	O	RM159A	D-6	Q	CSJ8	OSI 1.1.10 - Cold shutdown stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CH460A	1		X				LCV	O	RM159A	A-2	Q	CSJ7	OST 1.1.10 - Cold shutdown stroke and time
1CH460B	1		X				LCV	O	RM159A	A-3	Q	CSJ7	OST 1.1.10 - Cold shutdown stroke and time
1CH383	2			X			RV		RM159A	B-3	ST		BVT 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1DA100A	2	X					IV	A	RM169A	G-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1DA100B	2	X					IV	O	RM169A	G-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1DG108A	2	X					IV	A	RM169A	G-8	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1DG108B	2	X					IV	A	RM169A	G-8	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1DG109A1	2	X					IV	A	RM169A	A-9	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1DG109A2	2	X					IV	A	IM169A	A-8	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RH14	2	X				X	YGW30M	SS	RM156A	D-7	LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RH15	2	X				X	YGW15X	SS	RM156A	C-8	LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RH16	2	X				X	YBW15Y	SS	RM156A	C-9	LT	RR1	BVI 1.3-1.47.5 - Leak Test
1RH700	1	X					MOV	S	PM156A	F-6	Q	CSJ11	OSI 1.10.1 - Stroke and time
											LM		OSI 1.10.5 - Leakage Monitoring
1RH701	1	X					MOV	S	RM156A	F-6	Q	CSJ11	OSI 1.10.1 - Stroke and time
											LM		OSI 1.10.5 - Leakage Monitoring
1RH720A	1		X				MOV	S	RM156A	D-9	Q	CSJ11	OSI 1.10.1 - Stroke and time
											LM		Continuous Monitoring of RHR Pump Discharge Pressure
1RH720B	1		X				MOV	S	RM156A	E-9	Q	CSJ11	OSI 1.10.1 - Stroke and time
											LM		Continuous Monitoring of RHR Pump Discharge Pressure
1RH721	2			X			RV		RM156A	D-7	ST		BVI 1.5-1.60.5
1RH3	2			X			C54		RM156A	E-2	Q	CSJ9	OSI 1.10.1 - forward and reverse flow
1RH4	2			X			C54		RM156A	E-3	Q	CSJ9	OSI 1.10.1 - forward and reverse flow
1RH13	2		X				I58	O	RM156A	C-5	Q	CSJ10	OSI 1.10.1 - Stroke test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI1	2			X			C42		RM167A	G-3	Q	RR14	Sample Visual Inspection at Refueling per CMP 1-75-86
1SI2	2			X			C42		RM167A	G-5	Q	RR14	Sample Visual Inspection at Refueling per CMP 1-75-86
1SI5	2			X			C42		RM167A	F-6	Q	RR15	OSI 1.11.14-Full Flow Test at Refueling OSI 1.11.1 and 1.11.2 - Part stroke
1SI6	2			X			C42		RM167A	F-3	Q	RR16	OSI 1.11.14 - Forward flow full stroke at refueling. OSI 1.11.1 - Part forward stroke. OSI 1.11.2 - Reverse flow test.
1SI7	2			X			C42		RM167A	F-6	Q	RR16	OSI 1.11.14 - Forward flow full stroke at refueling. OSI 1.11.1 - Reverse flow test. OSI 1.11.2 - Part forward stroke.
1SI10	1	X		X			C58		RM167B	C-2	Q	RR17	OSI 1.11.14-Full Flow Test at Refueling
											LT		OSI 1.11.16
1SI11	1	X		X			C58		RM167B	B-2	Q	RR17	OSI 1.11.14-Full Flow Test at Refueling
											LT		OSI 1.11.16
1SI12	1	X		X			C58		RM167B	B-2	Q	RR17	OSI 1.11.14-Full Flow Test at Refueling
											LT		OSI 1.11.16
1SI13	2	X		X		X	C58		RM167B	C-9	N/A		
											LT		BVI 1.3-1.47.11
1SI14	2	X		X		X	C58		RM167B	B-9	N/A		
											LT		BVI 1.3-1.47.11

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI15	1	X		X			C58		RM167B	B-2	Q	RR17	OST 1.11 ull Flow Test at Refueling
											LT		OST 1.11.19 - Leak Test
1SI16	1	X		X			C58		RM167B	B-2	Q	RR17	OST 1.11.14-Full Flow Test at Refueling
											LT		OST 1.11.19 - Leak Test
1SI17	1	X		X			C58		RM167B	B-2	Q	RR17	OST 1.11.14-Full Flow Test at Refueling
											LT		OST 1.11.19 - Leak Test
1SI20	1			X			C58		RM167B	A-1	Q	RR18	OST 1.11.14-Full Flow Test at Refueling
1SI21	1			X			C58		RM167B	A-1	Q	RR18	OST 1.11.14-Full Flow Test at Refueling
1SI22	1			X			C58		RM167B	A-1	Q	RR18	OST 1.11.14-Full Flow Test at Refueling
1SI23	1	X		X			C58		RM167B	B-1	Q	RR19	OST 1.11.14-Full Flow Test at Refueling
											LT		OST 1.11.16
1SI24	1	X		X			C58		RM167B	B-1	Q	RR19	OST 1.11.14-Full Flow Test at Refueling
											LT		OST 1.11.16
1SI25	1	X		X			C58		RM167B	B-1	Q	RR19	OST 1.11.14-Full Flow Test at Refueling
											LT		OST 1.11.16
1SI27	2			X			C58		RM167A	E-7	Q	RR20	OST 1.11.14-Full Flow Test at Refueling OST 1.7.4 and 1.7.5 and 1.7.6-Part Stroke

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI28	2			X			C58		RM167A	F-5	Q		OST 1.11.1 Reverse flow test OST 1.11.2 Forward flow test
1SI29	2			X			C58		RM167A	F-3	Q		OST 1.11.2 Reverse flow test OST 1.11.1 Forward flow test
1SI41	2	X				X	I58	LS	RM167A	D-2	N/A		Locked or sealed valve log
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1SI42	2	X		X		X	C58		RM167B	D-9	LT	RR1	BVT 1.3-1.47.5 - Leak Test
1SI48	1	X		X			C48Z		RM167B	G-3	Q	RR21	BVT 1.6-1.11.3
											LT		OST 1.11.4 - Leak Test
1SI49	1	X		X			C48Z		RM167B	F-6	Q	RR21	BVT 1.6-1.11.3
											LT		OST 1.11.4 - Leak Test
1SI50	1	X		X			C48Z		RM167B	D-3	Q	RR21	BVT 1.6-1.11.3
											LT		OST 1.11.4 - Leak Test
1SI51	1	X		X			C48Z		RM167B	G-2	Q	RR21	BVT 1.6-1.11.3
											LT		OST 1.11.4 - Leak Test
1SI52	1	X		X			C48Z		RM167B	F-2	Q	RR21	BVT 1.6-1.11.3
											LT		OST 1.11.4 - Leak Test
1SI53	1	X		X			C48Z		RM167B	E-2	Q	RR21	BVT 1.6-1.11.3
											LT		OST 1.11.4 - Leak Test
1SI83	1	X		X			C58		RM167B	A-7	Q	RR22	OST 1.11.14 - Full stroke at refueling
											LT		BVT 1.3-1.47.11

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI84	1	X		X			C58		RM167B	A-7	Q	RR22	OSI 1.11.14 - Full stroke at refueling
											LT		BVT 1.3-1.47.11
1SI91	2	X				X	T58		RM167A	A-6	LT		BVT 1.3-1.47.11
1SI94	2	X		X			C58		RM167B	B-7	Q	RR23	OSI 1.11.14-Full stroke at refueling
											LT		BVT 1.3-1.47.11
1SI95	2	X		X			C58		RM167B	B-7	Q	RR23	OSI 1.11.14-Full stroke at refueling
											LT		BVT 1.3-1.47.11
1SI100	1			X			C58		RM167B	B-2	Q	RR18	OSI 1.11.14-Full stroke at refueling
1SI101	1			X			C58		RM167B	B-2	Q	RR18	OSI 1.11.14-Full stroke at refueling
1SI102	1			X			C58		RM167B	B-2	Q	RR18	OSI 1.11.14-Full stroke at refueling
1SI101-1	2	X					TV	S	RM167B	C-9	Q		OSI 1.47.3A-Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1SI101-2	2	X					TV	S	RM167B	C-9	Q		OSI 1.47.3A-Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1SI836	2	X					MOV	S	RM167A	A-2	Q	CSJ12	OSI 1.1.10-cold shutdown stroke and time
											LT		BVT 1.3-1.47.11

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI842	2	X					MOV	S	RM167B	D-9	Q		OSI 1.47.3A
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SI845A	2			X			RV		RM167A	E-3	ST		BVI 1.5-1.60.5
1SI845B	2			X			RV		RM167A	E-3	ST		BVI 1.5-1.60.5
1SI845C	2			X			RV		RM167A	E-5	ST		BVI 1.5-1.60.5
1SI857	2			X			RV		RM167A	A-4	ST		BVI 1.5-1.60.5
1SI858A	2			X			RV		RM167B	E-3	ST		BVI 1.5-1.60.5
1SI858B	2			X			RV		RM167B	E-6	ST		BVI 1.5-1.60.5
1SI858C	2			X			RV		RM167B	C-3	ST		BVI 1.5-1.60.5
1SI860A	2	X					MOV	S	RM167A	G-2	Q	CSJ13	OSI 1.1.10 - cold shutdown stroke and time
											LT		BVI 1.3-1.47.11
1SI860B	2	X					MOV	S	RM167A	G-5	Q	CSJ13	OSI 1.1.10 - cold shutdown stroke and time
											LT		BVI 1.3-1.47.11
1SI862A	2		X				MOV	O	RM167A	G-4	Q		OSI 1.11.6 Stroke and time.
1SI862B	2		X				MOV	O	RM167A	G-5	Q		OSI 1.11.7 Stroke and time
1SI863A	2		X				MOV	S	RM167A	E-4	Q		OSI 1.47.3A - Quarterly stroke and time
1SI863B	2		X				MOV	S	RM167A	E-6	Q		OSI 1.47.3A - Quarterly stroke and time
1SI864A	2		X				MOV	O	RM167A	E-3	Q		OSI 1.47.3A - Quarterly stroke and time
1SI864B	2		X				MOV	O	RM167A	E-3	Q		OSI 1.47.3A - Quarterly stroke and time
1SI867A	2		X				MOV	S	RM167A	C-7	Q	RR24	OSI 1.11.14 - Stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI867B	2		X				MOV	S	RM167A	C-7	Q	RR24	OST 1.11.14 - Stroke and time
1SI867C	2	X					MOV	S	RM167A	B-2	Q	RR25	OST 1.11.14 - Stroke and time
											LT		BVT 1.3-1.47.11
1SI867D	2	X					MOV	S	RM167A	B-2	Q	RR25	OST 1.11.14 - Stroke and time
											LT		BVT 1.3-1.47.11
1SI869A	2	X					MOV	S	RM167A	A-2	Q	CSJ12	OST 1.1.10 - cold shutdown stroke and time
											LT		BVT 1.3-1.47.11
1SI869B	2	X					MOV	S	RM167A	C-4	Q	CSJ14	OST 1.1.10 - cold shutdown stroke and time
											LT		BVT 1.3-1.47.11
1SI884A	2		X				IV	O	RM167A	A-5	Q		OST 1.47.3A - Quarterly stroke and time
1SI884B	2		X				IV	O	RM167A	A-5	Q		OST 1.47.3A - Quarterly stroke and time
1SI884C	2		X				IV	O	RM167A	B-6	Q		OST 1.47.3A - Quarterly stroke and time
1SI885A	2		X				MOV	O	RM167A	E-2	Q		OST 1.47.3A - Quarterly stroke and time
1SI885B	2		X				MOV	O	RM167A	E-3	Q		OST 1.47.3A - Quarterly stroke and time
1SI885C	2		X				MOV	O	RM167A	E-3	Q		OST 1.47.3A - Quarterly stroke and time
1SI885D	2		X				MOV	O	RM167A	E-3	Q		OST 1.47.3A - Quarterly stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SI889	2	X					IV	S	RM167A	D-1	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RRI	BVI 1.3-1.47.5 - Leak Test
1SI890A	2	X				X	MOV	S	RM167A	E-2	N/A		
											LT		BVI 1.3-1.47.11
1SI890B	2	X				X	MOV	S	RM167A	E-2	N/A		
											LT		BVI 1.3-1.47.11
1SI890C	2	X					MOV	S	RM167A	E-2	Q	CSJ15	OSI 1.1.10 - cold shutdown stroke and time
											LT		BVI 1.3-1.47.11
1SI-451	2		X			X	I58	LO	RM167A	E-2	N/A		Locked or sealed valve log
1SI-452	2		X			X	I58	LO	RM167A	E-2	N/A		Locked or sealed valve log
1SI-447	2		X			X	I58	LO	RM167A	G-3	N/A		Locked or sealed valve log
1SI-448	2		X			X	I58	LO	RM167A	G-5	N/A		Locked or sealed valve log

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CV35	2	X				X	VSS200A	SS	RM168A	C-7	N/A		Sealed valve log
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CV36	2	X				X	VSS200A	SS	RM168A	D-7	N/A		Sealed valve log
											LT	RR1	PVI 1.3-1.47.5 - Leak Test
1LM100A1	2	X					TV	O	RM168A	C-3	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1LM100A2	2	X					TV	O	RM168A	C-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1LM101A	2	X					TV	S	RM168A	C-8	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1LM101B	2	X					TV	S	RM168A	D-8	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CV101A	2	X					TV	O	RM168A	D-7	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CV101B	2	X					TV	O	RM168A	D-7	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CV102	2	X					TV	O	RM168A	E-7	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CV102-1	2	X					TV	O	RM168A	E-8	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CV150A	2	X					TV	O	RM168A	F-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1, RR40	BVT 1.3-1.47.5 - Leak Test
1CV150B	2	X					TV	S	RM168A	F-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1, RR40	BVT 1.3-1.47.5 - Leak Test
1CV150C	2	X					TV	O	RM168A	F-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1, RR41	BVT 1.3-1.47.5 - Leak Test
1CV150D	2	X					TV	S	RM168A	F-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1, RR41	BVT 1.3-1.47.5 - Leak Test
1CV151	2	X				X	HCV	LS	RM168A	F-8	LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CV151-1	2	X				X	HCV	LS	RM168A	F-7	LT	RR1	PVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1QS3	2	X		X			WLC1		RM165A	B-5	Q	CSJ16	OST 1.1.10 - cold shutdown stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1QS4	2	X		X			WLC2		RM164A	B-5	Q	CSJ16	OST 1.1.10 - cold shutdown stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1QS100A	2		X				MOV	O	RM165A	C-7	Q		OST 1.47.3A - Quarterly stroke and time
1QS100B	2		X				MOV	O	RM165A	C-7	Q		OST 1.47.3A - Quarterly stroke and time
1QS101A	2	X					MOV	S	RM165A	B-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1QS101B	2	X					MOV	S	RM165A	B-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1QS103A	2		X				MOV	O	RM165A	C-5	Q		OST 1.47.3A - Quarterly stroke and time
1QS103B	2		X				MOV	O	RM165A	C-6	Q		OST 1.47.3A - Quarterly stroke and time
1QS104A	2		X				MOV	S	RM165A	E-8	Q		OST 1.13.10A - Stroke and time
1QS104B	2		X				MOV	S	RM165A	E-7	Q		OST 1.13.10B - Stroke and time
1QS100A	2			X			RV		RM165A	E-8	ST		BVT 1.5-1.60.5
1QS100B	2			X			RV		RM165A	E-8	ST		BVT 1.5-1.60.5
1RS100	2	X		X			WLC-3		RM165A	E-5	Q	CSJ16	OST 1.1.1C - Cold shutdown exercise
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RS101	2	X		X			WLC-3		RM165A	E-5	Q	CSJ16	OST 1.1.10 - Cold shutdown exercise
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1RS155A	2		X				MOV	O	RM165A	G-6	Q		OST 1.47.3A - Quarterly stroke and time
1RS155B	2		X				MOV	O	RM165A	G-7	Q		OST 1.47.3A - Quarterly stroke and time
1RS156A	2		X				MOV	O	RM165A	E-5	Q		OST 1.47.3A - Quarterly stroke and time
1RS156B	2		X				MOV	O	RM165A	E-5	Q		OST 1.47.3A - Quarterly stroke and time
1RS157	2		X				G72	LS	RM165A	E-6	Q		OST 1.47.3A
1RS158	2			X			C48		RM165A	E-6	Q	RR26	Sample Visual Inspection
1RS159	2		X				G72	LS	RM165A	E-7	Q		OST 1.47.3A
1RS160	2			X			C48		RM165A	E-7	Q	RR26	Sample Visual Inspection

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SS100A1	2	X					IV	0	RM179A	B-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	bVI 1.3-1.47.5 - Leak Test
1SS100A2	2	X					IV	0	RM179A	B-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS102A1	2	X					IV	0	RM179A	A-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS102A2	2	X					IV	0	RM179A	A-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS103A1	2	X					IV	0	RM179A	C-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS103A2	2	X					IV	0	RM179A	C-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS104A1	2	X					IV	0	RM179A	C-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS104A2	2	X					IV	0	RM179A	C-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS105A1	2	X					IV	0	RM179A	B-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SS105A2	2	X					IV	O	RM179A	B-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS109A1	2	X					IV	O	RM179A	C-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS109A2	2	X					IV	O	RM179A	C-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS111A1	2	X					IV	O	RM179A	B-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS111A2	2	X					IV	O	RM179A	B-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS112A1	2	X					IV	O	RM179A	C-4	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS112A2	2	X					IV	O	RM179A	C-5	Q		OSI 1.47.3A - Quarterly stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SS117A	2		X				IV	O	RM179A	D-1	Q		OSI 1.47.3A - Quarterly stroke and time
1SS117B	2		X				IV	O	RM179A	D-1	Q		OSI 1.47.3A - Quarterly stroke and time
1SS117C	2		X				IV	O	RM179A	D-1	Q		OSI 1.47.3A - Quarterly stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC4	3			X			VC115C		RM157A	E-6	Q		OSI 1.15.1 - Test OSI 1.15.2,3 - Reverse Flow Test
1CC5	3			X			VC115C		RM157A	E-6	Q		OSI 1.15.2 Test OSI 1.15.1,3 - Reverse Flow Test
1CC6	3			X			VC115C		RM157A	E-7	Q		OSI 1.15.3 - Test OSI 1.15.1,2 - Reverse Flow Test
1CC103A	2	X					TV	O	RM157D	A-4	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC103A1	2	X					TV	O	RM157D	A-4	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC103B	2	X					TV	O	RM157D	A-3	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC103B1	2	X					TV	O	RM157D	A-3	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC103C	2	X					TV	O	RM157D	A-3	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC103C1	2	X					TV	O	RM157D	A-3	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC105A	3		X				TV	O	RM157D	B-3	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time
1CC105B	3		X				TV	O	RM157D	D-3	Q	RR27	OSI 1.1.10 - Cold shutdown stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC105C	3		X				TV	O	RM157D	F-3	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
1CC105D1	2	X					TV	O	RM157D	G-6	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC105D2	2	X					TV	O	RM157D	G-6	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC105E1	2	X					TV	O	RM157D	G-5	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC105E2	2	X					TV	O	RM157D	G-5	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC107D1	2	X					TV	O	RM157D	G-5	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC107D2	2	X					TV	O	RM157D	G-5	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC107E1	2	X					TV	O	RM157D	G-4	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC107E2	2	X					TV	O	RM157D	G-4	Q	RR27	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC107A	3		X				TV	O	RM157D	C-5	Q	RR27	OST 1.1.10 - Cold shutdown exercise

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC107B	3		X				TV	O	RM157D	D-5	Q	RR27	OSI 1.1.10 - Cold shutdown exercise
1CC107C	3		X				TV	O	RM157D	I-5	Q	RR27	OSI 1.1.10 - Cold shutdown exercise
1CC109	3			X			RV		RM157B	D-6	ST		BVI 1.5-1.60.5
1CC110	3			X			RV		RM157B	D-6	ST		BVI 1.5-1.60.5
1CC110A	3		X				TV	O	RM129B	B-1	Q		OSI 1.47.3A - Quarterly stroke and time
1CC110B	3		X				TV	O	RM129B	B-3	Q		OSI 1.47.3A - Quarterly stroke and time
1CC110C	3		X				TV	O	RM129B	B-5	Q		OSI 1.47.3A - Quarterly stroke and time
1CC110D	2	X					TV	O	RM129B	G-3	Q	CSJ19	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC110E2	2	X					TV	O	RM129B	A-2	Q	CSJ19	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC110E3	2	X					TV	O	RM129B	A-3	Q	CSJ19	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVI 1.3-1.47.5 - Leak Test
1CC110F1	2	X				X	TV	S	RB129B	G-2	N/A		
											LT	RR1, RR28	BVI 1.3-1.47.5 - Leak Test
1CC110F2	2	X					TV	O	RB129B	G-2	Q	CSJ19	OSI 1.1.10 - Cold shutdown stroke and time
											LT	RR1, RR28	BVI 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC111A	3			X			RV		RM157B	B-5	ST		BVT 1.5-1.60.5
1CC111A1	2	X					TV	O	RM157C	A-9	Q	CSJ17	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC111A2	2	X					TV	O	RM157C	A-9	Q	CSJ17	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC111B	3			X			RV		RM157B	B-5	ST		BVT 1.5-1.60.5
1CC111D1	2	X					TV	O	RM157C	G-8	Q	CSJ17	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC111D2	2	X					TV	O	RM157C	G-8	Q	CSJ17	OST 1.1.10 - Cold shutdown stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC112A	3			X			RV		RM129B	B-1	ST		BVT 1.5-1.60.5
1CC112A1	3			X			RV		RM129B	C-1	ST		BVT 1.5-1.60.5
1CC112A2	2	X					MOV	S	RM157D	A-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC112A2	3			X			RV		RM129B	E-1	ST		BVT 1.5-1.60.5
1CC112A3	2	X					MOV		RM151D	G-6	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC112B	3			X			RV		RM129B	B-3	ST		BVT 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC112B1	3			X			RV		RM129B	C-3	ST		BVT 1.5-1.60.5
1CC112B2	2	X					MOV	S	RM157D	A-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC112B2	3			X			RV		RM129B	E-3	ST		BVT 1.5-1.60.5
1CC112B3	2	X					MOV	S	RM157D	G-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC112C	3			X			RV		RM129B	B-5	ST		BVT 1.5-1.60.5
1CC112C1	3			X			RV		RM129B	C-5	ST		BVT 1.5-1.60.5
1CC112C2	3			X			RV		RM129B	E-5	ST		BVT 1.5-1.60.5
1CC113A	3			X			RV		RM157C	B-7	ST		BVT 1.5-1.60.5
1CC113B	3			X			RV		RM157C	B-8	ST		BVT 1.5-1.60.5
1CC113C	3			X			RV		RM157C	B-9	ST		BVT 1.5-1.60.5
1CC115A	3			X			RV		RM157D	B-3	ST		BVT 1.5-1.60.5
1CC115B	3			X			RV		RM157D	D-3	ST		BVT 1.5-1.60.5
1CC115C	3			X			RV		RM157D	E-3	ST		BVT 1.5-1.60.5
1CC116A	3			X			RV		RM157D	C-4	ST		BVT 1.5-1.60.5
1CC116B	3			X			RV		RM157D	D-5	ST		BVT 1.5-1.60.5
1CC116C	3			X			RV		RM157D	E-4	ST		BVT 1.5-1.60.5
1CC117	3			X			RV		RM157D	B-7	ST		BVT 1.5-1.60.5
1CC118	3			X			RV		RM157D	B-7	ST		BVT 1.5-1.60.5
1CC119A	3			X			RV		RM157D	C-5	ST		BVT 1.5-1.60.5
1CC119B	3			X			RV		RM158D	E-7	ST		BVT 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC121-1	3		X				TV	O	RM157D	A-1	Q		OST 1.47.3A - Quarterly stroke and time
1CC121-2	3		X				TV	O	RM157D	G-2	Q		OST 1.47.3A - Quarterly stroke and time
1CC125	3		X				TV	O	RM157B	A-2	Q		OST 1.47.3A - Quarterly stroke and time
1CC125-1	3		X				TV	O	RM157A	F-5	Q		OST 1.47.3A - Quarterly stroke and time
1CC125-2	3		X				TV	O	RM157A	F-5	Q		OST 1.47.3A - Quarterly stroke and time
1CC126	3		X				TV	O	RM157B	A-3	Q		OST 1.47.3A - Quarterly stroke and time
1CC126-1	3		X				TV	O	RM157A	G-8	Q		OST 1.47.3A - Quarterly stroke and time
1CC126-2	3		X				TV	O	RM157A	G-8	Q		OST 1.47.3A - Quarterly stroke and time
1CC127	3		X				TV	O	RM157B	B-4	Q		OST 1.47.3A - Quarterly stroke and time
1CC127-1	3		X				TV	O	RM157A	F-8	Q		OST 1.47.3A - Quarterly stroke and time
1CC127-2	3		X				TV	O	RM157A	F-8	Q		OST 1.47.3A - Quarterly stroke and time
1CC128	3		X				TV	O	RM157B	B-5	Q		OST 1.47.3A - Quarterly stroke and time
1CC129	3		X				TV	O	RM157B	A-9	Q		OST 1.47.3A - Quarterly stroke and time
1CC129-1	3		X				TV	O	RM157A	A-9	Q		OST 1.47.3A - Quarterly stroke and time
1CC129-2	3		X				TV	O	RM157A	D-9	Q		OST 1.47.3A - Quarterly stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC130	3		X				TV	O	RM157B	D-6	Q	CSJ20	OSI 1.1.10 - Cold shutdown stroke and time
1CC132	3		X				TV	O	RM157B	E-6	Q	CSJ20	OSI 1.1.10 - Cold shutdown stroke ant time
1CC133-2	3		X				TV	O	RM157B	G-7	Q		OSI 1.47.3A - Quarterly stroke and time
1CC133-3	3		X				TV	O	RM157B	G-6	Q		OSI 1.47.3A - Quarterly stroke and time
1CC134-1	3		X				TV	O	RM157B	A-7	Q		OSI 1.47.3A - Quarterly stroke and time
1CC134-2	3		X				TV	O	RM157B	B-7	Q		OSI 1.47.3A - Quarterly stroke and time
1CC134-3	3		X				TV	O	RM157B	G-6	Q		OSI 1.47.3A - Quarterly stroke and time
1CC136	3		X				TV	O	RM157B	A-4	Q		OSI 1.47.3A - Quarterly stroke and time
1CC136A	3			X			RV		RM157D	B-6	SI		BVT 1.5-1.60.5
1CC136B	3			X			RV		RM157D	D-6	SI		BVT 1.5-1.60.5
1CC137	3		X				TV	O	RM157D	A-1	Q		OSI 1.47.3A - Quarterly stroke and and time
1CC137A	3		X				TV	O	RM157D	D-1	Q		OSI 1.47.3A - Quarterly stroke and and time
1CC137B	3		X				TV	S	RM157D	E-1	Q		OSI 1.47.3A - Quarterly stroke and and time
1CC139A	3			X			RV		RM157D	D-8	SI		BVT 1.5-1.60.5
1CC139B	3			X			RV		RM157D	D-8	SI		BVT 1.5-1.60.5
1CC139C	3			X			RV		RM157D	D-8	SI		BVT 1.5-1.60.5
1CC139D	3			X			RV		RM157D	E-8	SI		BVT 1.5-1.60.5
1CC139E	3			X			RV		RM157D	E-8	SI		BVT 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC139F	3			X			RV		RM157D	F-8	ST		BVT 1.5-1.60.5
1CC139G	3			X			RV		RM157D	F-8	ST		BVT 1.5-1.60.5
1CC139H	3			X			RV		RM157D	F-8	ST		BVT 1.5-1.60.5
1CC139I	3			X			RV		RM157D	F-8	ST		BVT 1.5-1.60.5
1CC139J	3			X			RV		RM157D	F-8	ST		BVT 1.5-1.60.5
1CC139K	3			X			RV		RM157D	G-8	ST		BVT 1.5-1.60.5
1CC139L	3			X			RV		RM157D	G-8	ST		BVT 1.5-1.60.5
1CC139M	3			X			RV		RM157D	E-8	ST		BVT 1.5-1.60.5
1CC139N	3			X			RV		RM157D	E-8	ST		BVT 1.5-1.60.5
1CC139P	3			X			RV		RM157D	E-8	ST		BVT 1.5-1.60.5
1CC139R	3			X			RV		RM157D	D-8	ST		BVT 1.5-1.60.5
1CC140A	3			X			RV		RM157D	B-10	ST		BVT 1.5-1.60.5
1CC140B	3			X			RV		RM157D	B-10	ST		BVT 1.5-1.60.5
1CC140C	3			X			RV		RM157D	[illegible]	ST		BVT 1.5-1.60.5
1CC140D	3			X			RV		RM157D	C-10	ST		BVT 1.5-1.60.5
1CC140E	3			X			RV		RM157D	C-10	ST		BVT 1.5-1.60.5
1CC140F	3			X			RV		RM157D	C-10	ST		BVT 1.5-1.60.5
1CC140G	3			X			RV		RM157D	D-10	ST		BVT 1.5-1.60.5
1CC140H	3			X			RV		RM157D	D-10	ST		BVT 1.5-1.60.5
1CC140I	3			X			RV		RM157D	D-10	ST		BVT 1.5-1.60.5
1CC140J	3			X			RV		RM157D	D-10	ST		BVT 1.5-1.60.5
1CC140K	3			X			RV		RM157D	[illegible]-10	ST		BVT 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1CC140L	3			X			RV		RM157D	E-10	ST		BVT 1.5-1.60.5
1CC140M	3			X			RV		RM157D	C-10	ST		BVT 1.5-1.60.5
1CC140N	3			X			RV		RM157D	C-10	ST		BVT 1.5-1.60.5
1CC140P	3			X			RV		RM157D	B-10	ST		BVT 1.5-1.60.5
1CC140R	3			X			RV		RM157D	B-10	ST		BVT 1.5-1.60.5
1CC247	2	X					VVF15A	LS	RM157D	A-5	Q	CSJ18	Operating Manual Chapter 10.4.A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC248	2	X					VVF15A	LS	RM157D	A-7	Q	CSJ18	Operating Manual Chapter 10.4.A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC251	2	X					VVF15A	LS	RM157D	G-6	Q	CSJ18	Operating Manual Chapter 10.4.A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC252	2	X					VVF15A	LS	RM157D	G-6	Q	CSJ18	Operating Manual Chapter 10.4.A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1CC289	3			X			VCS150C		RM157D	C-3	Q	RR29	Reverse flow leak test (LATER)
1CC290	3			X			VCS150C		RM157D	D-3	Q	RR29	Reverse flow leak test (LATER)
1CC291	3			X			VCS150C		RM157D	F-3	Q	RR29	Reverse flow leak test (LATER)

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1PC9	2	X				X	VBW15Y	LS	RM162A	D-7	N/A		Locked Valve Log
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1PC10	2	X				X	VBW15Y	LS	RM162A	D-7	N/A		Locked Valve Log
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1PC37	2	X				X	VBW15Y	LS	RM162A	D-7	N/A		Locked Valve Log
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1PC38	2	X				X	VBW15Y	LS	RM162A	D-7	N/A		Locked Valve Log
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1MS15	2		X				VGW60A	LO	RM120A	C-2	Q	CSJ21	OSI 1.24.9
1MS16	2		X				VGW60A	LO	RM120A	D-2	Q	CSJ21	OSI 1.24.9
1MS17	2		X				VGW60A	LS	RM120A	F-2	Q	CSJ21	OSI 1.24.9
1MS18	3			X			VCW60A		RM120A	F-5	Q	RR30	OSI 1.24.9 - Forward flow Later - Reverse flow
1MS19	3			X			VCW60A		RM120A	G-5	Q	RR30	OSI 1.24.9 - Forward flow Later - Reverse flow
1MS20	3			X			VCW60A		RM120A	G-5	Q	RR30	OSI 1.24.9 - Forward flow Later - Reverse flow
1MS80	2			X			VCW60A		RM120A	C-3	Q	RR31	Sample Visual Check at Refueling per CMP 1-75-77
1MS81	2			X			VCW60A		RM120A	D-3	Q	RR31	Sample Visual Check at Refueling per CMP 1-75-77
1MS82	2			X			VCW60A		RM120A	E-3	Q	RR31	Sample Visual Check at Refueling per CMP 1-75-77
1MS101A	2		X				MOV	S	RM120A	C-3	Q		OSI 1.47.3A - Quarterly stroke and time
1MS101A	2		X	X			NRV	O	RM120A	C-3	Q	CSJ22	OSI 1.1.10 - Cold shutdown stroke and time
1MS101A	2		X				PCV	A	RM120A	C-3	Q	CSJ23	OSI 1.1.10 - Cold shutdown stroke and time
1MS101A	2			X			SV		RM120A	C-3	ST		BVI 1.1-1.21.1 or BVI 1.5-1.21.2
1MS101A	2		X				TV	O	RM120A	C-3	Q	CSJ24	OSI 1.21.1 - Partial, OSI 1.21.4 Full
1MS101B	2		X				MOV	S	RM120A	D-3	Q		OSI 1.47.3A - Quarterly stroke and time
1MS101B	2		X	X			NRV	O	RM120A	D-3	Q	CSJ22	OSI 1.1.10 - Cold shutdown stroke and time
1MS101B	2		X				PCV	A	RM120A	D-3	Q	CSJ23	OSI 1.1.10 - Cold shutdown stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1MS101B	2			X			SV		RM120A	D-3	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS101B	2		X				TV	O	RM120A	D-3	Q	CSJ24	OST 1.21.2 - Partial - OST 1.21.5 - Full
1MS101C	2		X				MOV	S	RM120A	F-3	Q		OST 1.47.3A - Quarterly stroke and time
1MS101C	2		X	X			NPV	O	RM120A	F-3	Q	CSJ22	OST 1.1.10 - Cold Shutdown stroke and time
1MS101C	2		X				PCV	A	RM120A	E-3	Q	CSJ23	OST 1.1.10 - Cold shutdown stroke and time
1MS101C	2			X			SV		RM120A	F-3	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS101C	2		X				TV	Q	RM120A	F-3	Q	CSJ24	OST 1.21.3 - Partial, OST 1.21.6 - Full
1MS102A	2			X			SV		RM120A	C-3	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS102B	2			X			SV		RM120A	D-3	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS102C	2			X			SV		RM120A	E-3	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS103A	2			X			SV		RM120A	C-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS103B	2			X			SV		RM120A	D-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS103C	2			X			SV		RM120A	E-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS104A	2			X			SV		RM120A	C-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS104B	2			X			SV		RM120A	D-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS104C	2			X			SV		RM120A	E-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS105A	2			X			SV		RM120A	C-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS105B	2			X			SV		RM120A	D-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS105C	2			X			SV		RM120A	E-2	ST		BVT 1.1-1.21.1 or BVT 1.5-1.21.2
1MS105A	3		X				TV	S	RM120A	G-5	Q		OST 1.24.4

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1MS105B	3		X				TV	S	RM120A	G-5	Q		OST 1..4.4
1MS105	3		X				MOV	O	RM120A	G-5	Q		OST 1.47.3A - Quarterly stroke and time
1MS111A	2		X				TV	O	RM137A	A-1	Q		OST 1.47.3A - Quarterly stroke and time
1MS111B	2		X				TV	O	RM137A	B-1	Q		OST 1.47.3A - Quarterly stroke and time
1MS111C	2		X				TV	O	RM137A	C-1	Q		OST 1.47.3A - Quarterly stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1FW33	3			X			VCF60A		RM124A	E-5	Q	CSJ25	OST 1.24.9 - Startup from cold shutdown OST 1.24.8 - Reverse Flow Test
1FW34	3			X			VCF60A		RM124A	F-3	Q	CSJ25	OST 1.24.8 - Startup from cold shutdown OST 1.24.8 - Reverse Flow Test
1FW35	3			X			VCF60A		RM124A	F-4	Q	CSJ25	OST 1.24.8 - Startup from cold shutdown OST 1.24.8 - Reverse Flow Test
1FW36	3		X				VGW60A	LO	RM124A	F-2	Q		OST 1.24.4
1FW37	3		X				VGW60A	LO	RM124A	F-3	Q		OST 1.24.2
1FW38	3		X				VGW60A	S	RM124A	F-4	Q		OST 1.24.3
1FW39	3		X				VGW60A	S	RM124A	F-5	Q		OST 1.24.4
1FW40	3		X				VGW60A	S	RM124A	F-3	Q		OST 1.24.2
1FW41	3		X				VGW60A	LO	RM124A	F-4	Q		OST 1.24.3
1FW42	2			X			VCW60A		RM124A	B-3	Q	CSJ25	OST 1.24.8, 9 - Startup from cold shutdown
1FW43	2			X			VCW60A		RM124A	C-3	Q	CSJ25	OST 1.24.8, 9 - Startup from cold shutdown
1FW44	2			X			VCW60A		RM124A	F-3	Q	CSJ25	OST 1.24.8, 9 - Startup from cold shutdown
1FW151A	2		X				MOV	O	RM124A	E-3	Q		OST 1.24.1 Stroke and Time
1FW151B	2		X				MOV	O	RM124A	D-3	Q		OST 1.24.1 Stroke and Time
1FW151C	2		X				MOV	O	RM124A	D-3	Q		OST 1.24.1 Stroke and Time
1FW151D	2		X				MOV	O	RM124A	D-3	Q		OST 1.24.1 Stroke and Time
1FW151E	2		X				MOV	O	RM124A	B-3	Q		OST 1.24.1 Stroke and Time
1FW151F	2		X				MOV	O	RM124A	B-3	Q		OST 1.24.1 Stroke and Time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1FW156A	2		X				MOV	O	RM124A	B-3	Q	CSJ26	OST 1.1.10 - Cold shutdown stroke and time
1FW156B	2		X				MOV	O	RM124A	C-3	Q	CSJ26	OST 1.1.10 - Cold shutdown stroke and time
1FW156C	2		X				MOV	O	RM124A	D-3	Q	CSJ26	OST 1.1.10 - Cold shutdown stroke and time
1WI225	3		X			X	VV115AQ	LO	RM124A	G-5	N/A		locked or sealed valve log
1WI226	3		X			X	VV115AQ	LO	RM124A	G-3	N/A		locked or sealed valve log
1WI227	3		X			X	VV115AQ	LO	RM124A	G-4	N/A		locked or sealed valve log
1FW622	2			X			VCW150Q		RM124A	E-3	Q	CSJ25	OST 1.24.8 - Startup from C/S
1FW623	2			X			VCW150Q		RM124A	E-3	Q	CSJ25	OST 1.24.8 - Startup from C/S
1FW624	2			X			VCW150Q		RM124A	D-3	Q	CSJ25	OST 1.24.8 - Startup from C/S
1FW625	2			X			VCW150Q		RM124A	D-3	Q	CSJ25	OST 1.24.8 - Startup from C/S
1FW626	2			X			VCW150Q		RM124A	B-3	Q	CSJ25	OST 1.24.8 - Startup from C/S
1FW627	2			X			VCW150Q		RM124A	B-3	Q	CSJ25	OST 1.24.8 - Startup from C/S
1FW158A	2		X			X	MOV	O	RM124A	B-3	N/A		
1FW158B	2		X			X	MOV	O	RM124A	C-3	N/A		
1FW158C	2		X			X	MOV	O	RM124A	E-3	N/A		

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1BD100A	2		X				TV	O	RM180A	B-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD100B	2		X				TV	O	RM180A	D-5	Q		OSI 1.47.3A - Quarterly stroke and time
1BD100C	2		X				TV	O	RM180A	F-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD101A1	2		X				TV	O	RM180A	B-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD101A2	2		X				TV	O	RM180A	B-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD101B1	2		X				TV	O	RM180A	D-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD101B2	2		X				TV	O	RM180A	D-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD101C1	2		X				TV	O	RM180A	F-4	Q		OSI 1.47.3A - Quarterly stroke and time
1BD101C2	2		X				TV	O	RM180A	F-4	Q		OSI 1.47.3A - Quarterly stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SV100A	2	X					IV	S	RM122A	B-7	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1AS278	2	X		X			VCW15A		RM122A	B-7	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

NOTE: 1AS-278 full stroke verified by stroking IV-SV100A.

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RW57	3			X			VC115C		RM127B	F-2	Q		OST 1.30.2 - Test OST 1.30.3,6 Reverse flow test
1RW58	3			X			VC115C		RM127B	F-3	Q		OST 1.30.3 - Test OST 1.30.2,6 Reverse flow test
1RW59	3			X			VC115C		RM127B	F-4	Q		OST 1.30.6 - Test OST 1.30.2,3 Reverse flow test
1RW101A	2			X			RV		RM127B	D-1	ST		BVT 1.5-1.60.5
1RW101B	2			X			RV		RM127B	E-1	ST		BVT 1.5-1.60.5
1RW101C	2			X			RV		RM127B	F-1	ST		BVT 1.5-1.60.5
1RW101D	2			X			RV		RM127B	F-1	ST		BVT 1.5-1.60.5
1RW102A	3			X			RV		RM127B	B-3	ST		BVT 1.5-1.60.5
1RW102A1	3		X				MOV	S	RM127B	F-2	Q		OST 1.47.3A - Quarterly stroke and time
1RW102A2	3		X				MOV	O	RM127B	F-2	Q		OST 1.47.3A - Quarterly stroke and time
1RW102B	3			X			RV		RM127B	B-3	ST		BVT 1.5-1.60.5
1RW102B1	3		X				MOV	S	RM127B	F-3	Q		OST 1.47.3A - Quarterly stroke and time
1RW102B2	3		X				MOV	S	RM127B	F-3	Q		OST 1.47.3A - Quarterly stroke and time
1RW102C	3			X			RV		RM127B	C-3	ST		BVT 1.5-1.60.5
1RW102C1	3		X				MOV	S	RM127B	F-4	Q		OST 1.47.3A - Quarterly stroke and time
1RW102C2	3		X				MOV	S	RM127B	F-4	Q		OST 1.47.3A - Quarterly stroke and time
1RW103A	3		X				MOV	S	RM127A	D-4	Q		OST 1.30.4 - Stroke and time
1RW103B	3		X				MOV	S	RM127A	D-4	Q		OST 1.30.4 - Stroke and time
1RW103C	3		X				MOV	S	RM127A	F-4	Q		OST 1.30.5 - Stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RW103D	3		X				MOV	S	RM127A	F-4	Q		OST 1.30.5 - Stroke and
1RW104	3		X				MOV	S	RM127A	E-4	Q		OST 1.30.4 - Stroke and time
1RW104A	2		X				MOV	O	RM127A	D-3	Q		OST 1.30.4 - Stroke and time
1RW104B	2		X				MOV	O	RM127A	E-3	Q		OST 1.30.5 - Stroke and time
1RW104C	2		X				MOV	O	RM127A	E-3	Q		OST 1.30.4 - Stroke and time
1RW104D	2		X				MOV	O	RM127A	F-3	Q		OST 1.30.5 - Stroke and time
1RW105A	2		X				MOV	S	RM127A	D-1	Q		OST 1.30.4 - Stroke and time
1RW105B	2		X				MOV	S	RM127A	F-1	Q		OST 1.30.5 - Stroke and time
1RW105C	2		X				MOV	S	RM127A	E-1	Q		OST 1.30.4 - Stroke and time
1RW105D	2		X				MOV	S	RM127A	F-1	Q		OST 1.30.5 - Stroke and time
1RW106A	3		X				MOV	O	RM127A	D-5	Q		OST 1.30.4 - Stroke and time
1RW106A	3			X			RV		RM127A	F-4	SI		BVT 1.5-1.60.5
1RW106B	3		X				MOV	O	RM127A	E-5	Q		OST 1.30.5 - Stroke and time
1RW106B	3			X			RV		RM127A	G-4	SI		BVT 1.5-1.60.5
1RW108	3			X			VC115C		RM127A	D-4	Q		OST 1.30.2; OST 1.30.6
1RW109	3			X			VC115C		RM127A	F-4	Q		OST 1.30.3; OST 1.30.6
1RW113A	3		X				MOV	S	RM127A	G-5	Q		OST 1.30.5 - Stroke and time
1RW113B	3		X				MOV	S	RM127A	G-5	Q		OST 1.30.4 - Stroke and time
1RW113C	3		X				MOV	S	RM127A	G-5	Q		OST 1.30.5 - Stroke and time
1RW113D1	3		X				MOV	S	RM127A	G-5	Q		OST 1.30.4 - Stroke and time
1RW114A	3		X				MOV	O	RM127A	D-5	Q		OST 1.30.4 - Stroke and time
1RW114B	3		X				MOV	O	RM127A	E-5	Q		OST 1.30.5 - Stroke and time
1RW116	3		X				MOV	S	RM127A	D-4	Q		OST 1.30.4 - Stroke and time

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RW116A	3		X				MOV	A	RM127A	F-8	Q		OSI 1.30.4A - Stroke and time
1RW116B	3		X				MOV	A	RM127A	F-8	Q		OSI 1.30.4B - Stroke and time
1RW117	3		X				MOV	S	RM127A	D-5	Q		OSI 1.30.5 - Stroke and time
1RW193	2			X			VC115C		RM127A	D-3	Q		OSI 1.30.2,6 - Stroke
1RW194	2			X			VC115C		RM127A	E-3	Q		OSI 1.30.2,6 - Stroke
1RW195	2			X			VC115C		RM127A	E-3	Q		OSI 1.36.3,6 - Stroke
1RW196	2			X			VC115C		RM127A	F-3	Q		OSI 1.30.3,6 - Stroke
1RW197	3			X			VC115C		RM127A	D-1	Q		OSI 1.30.2,3,6 BVT 1.4-1.30.2
1RW198	3			X			VC115C		RM127A	D-1	Q		OSI 1.30.2,3,6 BVT 1.4-1.30.2
1RW206	3		X				VV115A	LS	RM124A	G-6	Q		OSI 1.24.4 - Stroke
1RW207	3		X				VV115A	S	RM124A	G-6	Q		OSI 1.24.4 - Stroke
1RW208	3		X				VV115A	S	RM124A	F-5	Q		OSI 1.24.4 - Stroke
1RW209	3		X				VV115A	S	RM124A	F-3	Q		OSI 1.24.4 - Stroke
1RW210	3		X				VV115A	S	RM124A	F-4	Q		OSI 1 24.4 - Stroke
1RW486	3			X			VCW60A		RM127B	F-2	Q		OSI 1.30.2 - Stroke and reverse flow test
1RW487	3			X			VCW60A		RM127B	F-3	Q		OSI 1.30.3 - Stroke and reverse flow test
1RW488	3			X			VCW60A		RM127B	F-4	Q		OSI 1.30.6 - Stroke and Reverse flow test
1RW110	3			X			VC115C		RM127A	F-5	Q	RR33	OSI 1.36.1 and Internal Inspection Per CMP 1.75.308
1RW111	3			X			VC115C		RM127A	F-5	Q	RR33	OSI 1.36.1 and Internal Inspection Per CMP 1.75.308
1RW112	3			X			VC115C		RM127A	G-5	Q	RR33	OSI 1.36.2 and Internal Inspection Per CMP 1.75.308

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1RW113	3			X			VC115C		RM127A	G-5	Q	RR33	OSI 1.36.2 and Internal Inspection Per CMP 1.75.308
1RW106	3			X			VC115CQ		RM127A	F-8	Q	RR32	Forward Flow per OSI 1.30.2 Reverse Flow in Conjunction with RW Hydro on buried lines or OSI 1.30.8.
1RW107	3			X			VC115CQ		RM127A	F-8	Q	RR32	Forward Flow per OSI 1.30.3 Reverse Flow in Conjunction with RW Hydro on buried lines or OSI 1.30.3.
1RW135	3			X			VC115CQ		RM127A	A-7	Q	RR34	Full-stroke verified by placing Control Room Redundant Cooling Coil into service.
1RW136	3			X			VC115CQ		RM127A	B-9	Q	RR34	Full-stroke verified by placing Control Room Redundant Cooling Coil into service.
1RW158	3			X			VC115CQ		RM127A	C-6	Q		Full-stroke verified per OSI 1.7.4, 5 or 6
1RW159	3			X			VC115CQ		RM127A	B-6	Q		Full-stroke verified per OSI 1.7.4, 5 or 6
1RW95	3			X			VC		RM127B	F-1	Q		OSI 1.30.2 - Stroke
1RW96	3			X			VC		RM127B	F-2	Q		OSI 1.30.3 - Stroke
1RW97	3			X			VC		RM127B	F-3	Q		OSI 1.30.6 - Stroke
1RW675	3			X			VC		RM127B	F-1	Q	RR35	OSI 1.30.2 - Stroke
1RW676	3			X			VC		RM127B	F-2	Q	RR35	OSI 1.30.3 - Stroke
1RW677	3			X			VC		RM127B	F-3	Q	RR35	OSI 1.30.6 - Stroke

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1FP105	3	X					TV	S	RB116C	C-4	Q		OST 1.47.3A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1FP106	3	X					TV	S	RB116C	C-4	Q		OST 1.47.3A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1FP107	3	X					TV	S	RB116C	C-5	Q		OST 1.47.3A
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1FP800	3	X		X			VC115C		RB116C	D-4	Q	CSJ27	OST 1.1.10
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1FP804	3	X		X			VC115C		RB116C	D-4	Q	CSJ27	OST 1.1.10
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1FP827	3	X		X			VC115C		RB116C	D-5	Q	CSJ27	OST 1.1.10
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1SA14	2	X				X	VGS60B	LS	RM140A	D-8	LT	RR1	BVI 1.3-1.47.5 - Leak Test
1SA15	2	X		X		X	VCS60A		RM140A	D-8	LT	RR1	BVI .3-1.47.5 - Leak Test
1IA90	2	X				X	VGM20S	LS	RK1D		LT	RR1	BVI 1.3-1.47.5 - Leak Test
1IA91	2	X		X		X	VCS60A		RK1D		LT	RR1	BVI 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1DA100	3			X			Lunken Heimer		RM151A	A-1	Q		Station logs monitor air pressure
1DA101	3			X			Crane		RM151A	A-5	Q		Station logs monitor air pressure
1DA104	3		X			X	Ball Valve	LS	RM151A	A-3	N/A		Locked or sealed valve log
1DA130	3			X			Crane		RM151A	A-6	Q		Station logs monitor air pressure
1DA131	3			X			Crane		RM151A	A-10	Q		Station logs monitor air pressure
1DA134	3		X			X	Ball Valve	LS	RM151A	A-8	N/A		Locked or sealed valve log
1F07	3			X			VCS60B		RM151A	G-4	Q		OSI 1.36.1 - Stroke
1F08	3			X			VCS60B		RM151A	G-4	Q		OSI 1.36.1 - Stroke
1F09	3			X			VCS60B		RM151A	E-4	Q		OSI 1.36.2 - Stroke
1F010	3			X			VCS60B		RM151A	E-4	Q		OSI 1.36.2 - Stroke
1F015	3		X			X	VGS60B	SS	RM151A	F-4	N/A		
1F016	3		X			X	VGS60B	SS	RM151A	F-4	N/A		
1F035	3			X			VCS60B		RM151A	G-2	Q		OSI 1.36.1 - Stroke
1F036	3			X			VCS60B		RM151A	F-2	Q		OSI 1.36.2 - Stroke
1EE101A	3			X			RV		RM151A	F-4	ST		BVI 1.5-1.60.5
1EE101B	3			X			RV		RM151A	F-4	ST		BVI 1.5-1.60.5
1EE101C	3			X			RV		RM151A	E-4	ST		BVI 1.5-1.60.5
1EE101D	3			X			RV		RM151A	E-4	ST		BVI 1.5-1.60.5
1DA-101	3		X				SOV				Q	RR36	OSI 1.36.1
1DA-102	3		X				SOV				Q	RR36	OSI 1.36.2
1DA-103	3		X				SOV				Q	RR36	OSI 1.36.1
1DA-104	3		X				SOV				Q	RR36	OSI 1.36.2

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1EE201	3			X			RV		RM151A	A-1	ST		BVI 1.5-1.60.5
1EE202	3			X			RV		RM151A	A-5	ST		BVI 1.5-1.60.5
1EE203	3			X			RV		RM151A	A-6	ST		BVI 1.5-1.60.5
1EE204	3			X			RV		RM151A	A-10	ST		BVI 1.5-1.60.5
1EE201A	3			X			RV		RM151A	B-1	ST		BVI 1.5-1.60.5
1EE201B	3			X			RV		RM151A	B-1	ST		BVI 1.5-1.60.5
1EE201C	3			X			RV		RM151A	B-1	ST		BVI 1.5-1.60.5
1EE202A	3			X			RV		RM151A	B-5	ST		BVI 1.5-1.60.5
1EE202B	3			X			RV		RM151A	B-5	ST		BVI 1.5-1.60.5
1EE202C	3			X			RV		RM151A	B-5	ST		BVI 1.5-1.60.5
1EE203A	3			X			RV		RM151A	B-6	ST		BVI 1.5-1.60.5
1EE203B	3			X			RV		RM151A	B-6	ST		BVI 1.5-1.60.5
1EE203C	3			X			RV		RM151A	C-6	ST		BVI 1.5-1.60.5
1EE204A	3			X			RV		RM151A	B-10	ST		BVI 1.5-1.60.5
1EE204B	3			X			RV		RM151A	B-10	ST		BVI 1.5-1.60.5
1EE204C	3			X			RV		RM151A	C-10	ST		BVI 1.5-1.60.5

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1VS101A	3			X			RV		RM140B	E-3	ST		BVT 1.5-1.60.5
1VS101A	3		X				IV	S	RM140B	E-3	Q	RR37	BVT 2.1-1.44.1
1VS101B	3			X			RV		RM140B	D-3	ST		BVT 1.5-1.60.5
1VS101B	3		X				IV	S	RM140B	D-3	Q	RR37	BVT 2.1-1.44.1
1VS101C	3			X			RV		RM140B	D-3	ST		BVT 1.5-1.60.5
1VS101C	3		X				IV	S	RM140B	D-3	Q	RR37	BVT 2.1-1.44.1
1VS101D	3			X			RV		RM140B	C-3	ST		BVT 1.5-1.60.5
1VS101D	3		X				IV	S	RM140B	C-3	Q	RR37	BVT 2.1-1.44.1
1VS101E	3			X			RV		RM140B	C-3	ST		BVT 1.5-1.60.5
1VS101E	3		X				IV	S	RM140B	C-3	Q	RR37	BVT 2.1-1.44.1
1VS-D-5-3A	2	X					MOV	S	RB2B		Q	CSJ28	OST 1.1.10
											LT	RR1, RR38	BVT 1.3-1.47.5 - Leak Test
1VS-D-5-3B	2	X					MOV	S	RB2B		Q	CSJ28	OST 1.1.10
											LT	RR1, RR38	BVT 1.3-1.47.5 - Leak Test
1VS-D-5-5A	2	X					MOV	S	RB2B		Q	CSJ28	OST 1.1.10
											LT	RR1, RR39	BVT 1.3-1.47.5 - Leak Test
1VS-D-5-5B	2	X					MOV	S	RB2B		Q	CSJ28	OST 1.1.10
											LT	RR1, RR39	BVT 1.3-1.47.5 - Leak Test
1VS-D-5-6	2	X					VV15A	S	RB2B		Q	CSJ28	OST 1.1.10
											LT	RR1, RR39	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1HY101	2	X					VBS15Y	LS	RM150B	C-2	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1, RR40	BVT 1.3-1.47.5 - Leak Test
1HY101A	2		X				MOV	S	RM150B	C-4	Q		OST 1.47.3A - Quarterly stroke and time
1HY101B	2		X				MOV	S	RM150B	E-4	Q		OST 1.47.3A - Quarterly stroke and time
1HY102	2	X					VBS15Y	LS	RM150B	C-2	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1, RR41	BVT 1.3-1.47.5 - Leak Test
1HY102A	2		X				MOV	S	RM150B	C-5	Q		OST 1.47.3A - Quarterly stroke and time
1HY102B	2		X				MOV	S	RM150B	E-5	Q		OST 1.47.3A - Quarterly stroke and time
1HY103	2	X					VBS15Y	LS	RM150B	C-2	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1, RR40	BVT 1.3-1.47.5 - Leak Test
1HY103A	2		X				MOV	S	RM150B	C-9	Q		OST 1.47.3A - Quarterly stroke and time
1HY103B	2		X				MOV	S	RM150B	E-9	Q		OST 1.47.3A - Quarterly stroke and time
1HY104	2	X					VBS15Y	LS	RM150B	E-2	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1, RR41	BVT 1.3-1.47.5 - Leak Test
1HY110	2	X					VBS15Y	LS	RM150B	D-1	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY111	2	X					VBS15Y	LS	RM150B	F-1	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1HY196	2	X					VBS15CQ	LS	RM150B	D-2	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY197	2	X					VBS15CQ	LS	RM150B	F-2	Q		OST 1.47.3A - Quarterly stroke
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY102A1	2	X					SOV	S	RM150C	A-3	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY102A2	2	X					SOV	S	RM150C	A-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY102B1	2	X					SOV	S	RM150C	D-2	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY102B2	2	X					SOV	S	RM150C	E-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY103A1	2	X					SOV	S	RM150C	B-2	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY103A2	2	X					SOV	S	RM150C	B-5	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY103B1	2	X					SOV	S	RM150C	E-2	Q		OST 1.47.3A - Quarterly stroke and time
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
1HY103B2	2	X					SOV	S	RM150C	E-5	Q		OST 1.47.3A - Quarterly stroke and time.
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY104A1	2	X					SOV	S	RM150C	C-2	Q		OST 1.47.3A - Quarterly stroke and time.
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY104A2	2	X					SOV	S	RM150C	C-5	Q		OST 1.47.3A - Quarterly stroke and time.
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY104B1	2	X					SOV	S	RM150C	F-2	Q		OST 1.47.3A - Quarterly stroke and time.
											LT	RR1	BVT 1.3-1.47.5 - Leak Test
1HY104B2	2	X					SOV	S	RM150C	F-5	Q		OST 1.47.3A - Quarterly stroke and time.
											LT	RR1	BVT 1.3-1.47.5 - Leak Test

Valve Mark Number	Class	Valve Category A	B	C	D	P	Type	NSA	Drawing Number	Drawing Coordinates	Test Requirement	CSJ or Relief Request	Testing and Tracking
VS-167	2	X					VBS15Y	S	OM Fig 47-5		Q		Exercise Quarterly OST 1.47.3A
											LT	RR1	Type-C BVT 1.3-1.47.5 - Leak Test
VS-168	2	X					VBS15Y	S	OM Fig 47-5		Q		Exercise Quarterly OST 1.47.3A
											LT	RR1	Type-C BVT 1.3-1.47.5 - Leak Test
VS-169	2	X					VGS60B	S	OM Fig 47-5		Q	CSJ29	Cold Shutdown Exercise OST 1.1.10
											LT	RR1	Type-C BVT 1.3-1.47.5 - Leak Test
VS-170	2	X					VBS15Y	S	OM Fig 47-5		Q		Exercise Quarterly OST 1.47.3A
											LT	RR1	Type-C BVT 1.3-1.47.5 - Leak Test
VS-176	3		X				VOM500L	S	OM Fig 47-5		Q		Exercise Quarterly OST 1.47.3A
VS-177	3		X				VBS15Y	S	OM Fig 47-5		Q		Exercise Quarterly OST 1.47.3A
VS-178	3		X				VGS60B	S	OM Fig 47-5		Q	CSJ29	Cold Shutdown Exercise OST 1.1.10
VS-179	3		X				VBS15Y	S	OM Fig 47-5		Q		Exercise Quarterly OST 1.47.3A
VS-183	2		X				VOM500E	S	OM Fig 47-5		Q	CSJ30	Cold Shutdown Exercise OST 1.1.10
											LT		Type-B BVT 1.3-1.47.8 - Leak Test
VS-184	2		X				VBS15Y	S	OM Fig 47-5		Q	CSJ30	Cold Shutdown Exercise OST 1.1.10
											LT		Type-B BVT 1.3-1.47.8 - Leak Test

B.V.P.S.-1 I.S.T.

Valve Testing Cold Shutdown Justifications

Section VI

ISSUE 2
REVISION 3

COLD SHUTDOWN JUSTIFICATION 1

Valve No.: SOV-RC-102A SOV-RC-103B
SOV-RC-102B SOV-RC-104
SOV-RC-103A SOV-RC-105

Category B Class 1

Function: Reactor coolant system high point vents.

Test Requirements: Quarterly full stroke and time.

Basis for CSJ: These valves are closed during normal operation and are designed to vent the RCS in an emergency to assure that core cooling during natural circulation will not be inhibited by a buildup of noncondensible gases. Periodic stroking of these valves at power could degrade this system by repeatedly challenging the downstream valves due to a phenomenon known as "burping". This phenomenon has been previously described in ASME report "Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves - An Investigation of the Phenomenon". The phenomenon involves a rapid pressure surge buildup at the valve inlet caused by opening the upstream valve in a series double isolation arrangement or closing a valve in a parallel redundant flow path isolation arrangement. The pressure surge is sufficient enough to lift the valve plug until a corresponding pressure increase in a control chamber above the pilot and disc can create enough downward differential pressure to close the valve.

Alternate Test: Full stroke exercise and time at cold shutdowns per OST 1.1.10. This frequency is consistent with T.S. 3.4.12 which was written to comply with the requirements of NUREG 0737, "Clarification of TMI Action Plan Requirements".

COLD SHUTDOWN JUSTIFICATION 2

Valve No.: PCV-RC-455C
PCV-RC-455D
PCV-RC-456

Category 1 Class B

Function: PORVs

Test Requirements: Quarterly stroke and time.

Basis for CSJ: The PORVs are not needed for overpressure protection during power operation since the pressurizer code safety valves fullfill this function. In the event that a PORV was to fail or stick open while being cycled at power, the potential loss of RCS inventory through this relief path could lead to a forced plant shutdown. Therefore, stroking these valves at power is not considered practical.

Additionally, when the plant is shutdown only two of the three valves ([PCV-1RC-455C and D]) are actually utilized to provide protection against exceeding 10CFR50, Appendix G limits during periods of RCS water solid operation. The third PORV ([PCV-RC-456]) does not have a low pressure set point to the logic controlling it.

Alternate Test: Full stroke exercise will be performed each cold shutdown per OST 1.6.8 for the two valves used for overpressure protection. The third valve will be exercised at the normal cold shutdown frequency per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 3

Valve No.: CH-75
CH-76

Category C Class 3

Function: Discharge check valves for the boric acid transfer pumps.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves can only be full-stroke exercised by initiating flow through the emergency boration path and verifying it using the installed flow instrumentation in this flowpath. Testing in this manner would cause an undesired reactivity transient through the direct injection of 7,000 ppm borated water to the suction of the charging pumps. The resultant over boration of the RCS would cause a temperature transient as Tavg dropped to compensate and could cause a plant shutdown.

Alternate Test: Valves to be full-stroke exercised during cold shutdown per the operating procedure surveillance test program. Valves are part-stroke exercised quarterly when the boric acid transfer pumps are tested through their recirculation flow paths per OST 1.7.1 & 1.7.2.

COLD SHUTDOWN JUSTIFICATION 4

Valve No.: MOV-CH-115C
MOV-CH-115E

Category B Class 2

Function: Volume Control Tank outlet isolation valves.

Test Requirements: Quarterly full stroke and time.

Basis for CSJ: These valves are normally open and cannot be exercised during power operation without isolating the Volume Control Tank from the charging pumps. This would result in a loss of normal Reactor Cooling System makeup and reactor coolant pump seal injection water causing possible pump and system degradation.

Alternate Test: Cold shutdown valve exercise per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 5

Valve No.: CH-141

Category C Class 2

Function: Emergency boration line check valve.

Test Requirements: Quarterly stroke.

Basis for CSJ: This valve is closed during normal operation and can only be exercised by initiating flow through the emergency boration path. Testing in this manner would cause an undesired reactivity transient through the direct injection of 7,000 ppm borated water to the suction of the charging pumps. The resultant over boration of the RCS would cause a temperature transient as Tavg dropped to compensate and could cause a plant shutdown.

Alternate Test: Valve to be full stroke tested during cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 6

Valve No.: MOV-CH-289
TV-CH-204

Category A Class 2

Function: Reactor coolant makeup and letdown outside containment isolation valves.

Test Requirements: Quarterly full stroke and time.

Basis for CSJ: Quarterly stroking at power of either valve to its closed position would cause an undesirable transient in the reactor coolant makeup and letdown systems. A failure of either valve in the closed position could lead to a loss of pressurizer level control and require a plant shutdown.

Alternate Test: Full-stroke exercise and time at cold shutdowns per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 7

Valve No.: MOV-CH-310
LCV-CH-460A
LCV-CH-460B

Category B Class 1

Function: Reactor coolant makeup and letdown isolation valves.

Test Requirements: Quarterly full-stroke and time.

Basis for CSJ: Quarterly stroking at power to their closed position would cause an undesirable transient in the reactor coolant makeup and letdown systems. A failure of one or more valves in the closed position could lead to a loss of pressurizer level control and require a plant shutdown.

Alternate Test: Full-stroke exercise and time at cold shutdowns per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 8

Valve No.: MOV-CH-373

Category B Class 2

Function: HHSI pump to VCT miniflow isolation valve.

Test Requirements: Quarterly full-stroke and time.

Basis for CSJ: Quarterly stroke testing at power is considered impractical since it would cause an undesirable flow perturbation in the reactor coolant makeup system. Also the failure of this valve in the closed position could result in damage to all three charging pumps.

Alternate Test: Full-stroke exercise and time at cold shutdowns per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 9

Valve No.: RH-3
RH-4

Category C Class 2

Function: Residual Heat Removal Pumps Discharge Check Valves

Test Requirements: Quarterly stroke

Basis for CSJ: These valves can only be full stroke exercised when the RHR Pumps are running. The RHR Pumps are only run during cold shutdowns. Quarterly part stroking is also not possible due to the inaccessibility of the valves and pumps which are located inside the subatmospheric containment building.

Alternate Test: Forward and reverse flow exercised per OST 1.10.1 during cold shutdowns.

COLD SHUTDOWN JUSTIFICATION 10

Valve No : RH-13

Category B Class 2

Function: RH letdown to CVCS isolation.

Test Requirements: Quarterly full stroke.

Basis for CSJ: This valve is closed at power and is only required to open if letdown to the CVCS for purification of the RCS is necessary. Quarterly stroke is not possible due to the inaccessability of the valve, which is located inside the subatmospheric containment building.

Alternate Test: Full stroke exercise during cold shutdowns per OST 1.10.1.

COLD SHUTDOWN JUSTIFICATION 11

Valve No.: MOV-RH-700 MOV-RH-720A
MOV-RH-701 MOV-RH-720B

Category A; B Class 1

Function: Residual Heat Removal System Inlet and Outlet isolation valves.

Test Requirements: Quarterly full stroke and time.

Basis for CSJ: Cycling these valves could subject the RHR system to pressure greater than design. These valves are normally closed and de-energized during power operation and are required to be closed during an accident.

Alternate Test: These valves are full stroke exercised and timed each plant cooldown or heatup from cold shutdown per OST 1.10.1.

COLD SHUTDOWN JUSTIFICATION 12

Valve No.: MOV-SI-836
MOV-SI-869A

Category A Class 2

Function: Outside containment isolation valves from the fill and charging headers to the RCS hot and cold legs.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: These valves are shut at power and are required to remain shut at the onset of an accident. Cycling them at power would thermal shock the RCS cold leg nozzles and compromise system integrity.

Alternate Test: Full-stroke exercise and time at cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 13

Valve No.: MOV-SI-860A
MOV-SI-860B

Category A Class 2

Function: Low-head safety-injection pump containment sump suction valves.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: These valves are containment isolation valves exposed to containment atmosphere. Failure of these valves in the open position during power operation would compromise containment integrity.

Alternate Test: Full-stroke and time during cold shutdown.

COLD SHUTDOWN JUSTIFICATION 14

Valve No.: MOV-SI-869B

Category A Class 2

Function: Charging header BIT bypass to RCS hot legs outside containment isolation.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: This valve is shut at power operation and is not required to change position to fulfill its initial safety function. The valve is only opened during the simultaneous cold and hot leg recirculation phase. In addition, stroking this valve would thermal stress the hot leg injection nozzle. Therefore, relief from full- or part-stroke exercising of this valve at power is requested.

Alternate Test: Full stroke at cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 15

Valve No.: MOV-SI-890C

Category A Class 2

Function: Low-head safety injection outside containment isolation to RCS cold legs.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: This valve is open during normal operation and is required to remain open to fulfill its safety function at the onset of an accident. Relief from full- or part-stroke exercising at power is requested because failure of this valve to reopen would render LHSI cold leg injection from both trains inoperable.

Alternate Test: Full stroke at cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 16

Valve No.: QS-3 RS-100
QS-4 RS-101

Category A/C Class 2

Function: Inside containment isolation discharge check valves for the quench spray and recirculation spray pumps.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves are all physically located in the sub-atmospheric containment building. Also the valves cannot be full-stroked open with flow since any test requiring injecting water through the spray nozzles would cause damage to electrical equipment and result in a significant contamination cleanup effort in the containment building.

Alternate Test: Full-stroke exercise at cold shutdown per OST 1.1.10 utilizing their weighted swing arms.

COLD SHUTDOWN JUSTIFICATION 17

Valve No.: TV-CC-111A1 TV-CC-111D1
TV-CC-111A2 TV-CC-111D2

Category A Class 2

Function: Containment isolation valve for CRDM shroud cooler cooling water supply.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: This valve is normally open during power operation and is required to close to fulfill its safety function upon a CIB signal. Relief from at power full- or part-stroke testing is requested because shutting this valve and isolating cooling water, while the control or shutdown rods are energized, or the plant is above 250 degrees Fahrenheit, would result in component damage.

Alternate Test: Full-stroke exercise and time at cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 18

Valve No.: CC-247 CC-251
CC-248 CC-252

Category A Class 2

Function: Outside containment isolation for component cooling water supply to the RHR heat exchangers.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves are normally closed during power operation but are required to open to place the residual heat removal (RHR) system in service. These valves cannot be stroked quarterly without the possibility of violating containment integrity.

Alternate Test: Full-stroke exercise during cold shutdowns by Operating Manual Chapter 10.4.A, "Startup of the RHR System."

COLD SHUTDOWN JUSTIFICATION 19

Valve No.: TV-CC-110E2 TV-CC-110D
TV-CC-110E3 TV-CC-110F2

Category A Class 2

Function: Cooling water supply and return from the containment air recirculation cooling coils and instrument air compressors containment isolation valves.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: These valves are normally open during power operations. The failure of any one of these valves in its closed position during quarterly stroke testing would result in the loss of containment cooling and containment instrument air and require a plant shutdown.

Alternate Test: Full-stroke exercise and time at cold shutdowns per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 20

Valve No.: TV-CC-130
TV-CC-132

Category B Class 3

Function: Cooling water inlet isolation valves to the Seal Water and Non-Regenerative heat exchangers.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: These valves are normally open during power operations and must be stroked closed to test them. Their failure in the closed position would result in the loss of cooling water to either the Seal Water or Non-Regenerative heat exchanger causing an undesirable temperature transient. Such a transient has the potential for damaging the plant demineralizers and the RCP radial bearings.

Alternate Test: Full-stroke exercise and time at cold shutdowns per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 21

Valve No.: MS-15
MS-16
MS-17

Category B Class 2

Function: S/G Supply to FW-P-2 manual isolation.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves are normally locked in position and are only required to be stroked if one of the steam lines to the steam driven aux feedwater pump ruptures. Full- or part-stroke exercise of these valves is not possible due to the hazardous environment of the main steam valve room where they're located.

Alternate Test: Full-stroke exercise during cold shutdowns per OST 1.24.9.

COLD SHUTDOWN JUSTIFICATION 22

Valve No.: NRV-MS-101A
NRV-MS-101B
NRV-MS-101C

Category B/C Class 2

Function: Main steam non-return check valves.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: Relief is requested from stroke testing these valves at power because these valves must be open in order to remain at power. Relief from timing the stroke is also requested because the valve operator only holds the valve in position for maintenance. It does not physically operate the valve.

Alternate Test: Closure test per OST 1.1.10 cold shutdown valve exercise.

COLD SHUTDOWN JUSTIFICATION 23

Valve No.: PCV-MS-101A
PCV-MS-101B
PCV-MS-101C

Category B Class 2

Function: Atmospheric steam dump pressure control valves.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: In order to test these valves, manual isolation valves must first be closed. The manual valves are located in a potentially hazardous area and could be damaged when they are reopened against a 1000 psi Δp. Also, stroking the PCV valves could cause Reactor power transients.

Alternate Test: Full stroke at cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 24

Valve No.: TV-MS-101A
TV-MS-101B
TV-MS-101C

Category B Class 2

Function: Main steam line isolation valve (pneumatically opened).

Test Requirements: Quarterly stroke and time.

Basis for CSJ: Stroking these valves during power operation would cause a reactor trip and a possible safety injection. Therefore, relief is requested from quarterly full-stroke testing.

Alternate Test: Full stroke and time in hot standby per OST 1.21.4, 5 and 6. Part stroke quarterly per OST 1.21.1, 2 and 3.

COLD SHUTDOWN JUSTIFICATION 25

Valve No.:				
	FW-33	FW-42	FW-622	FW-625
	FW-34	FW-43	FW-623	FW-626
	FW-35	FW-44	FW-624	FW-627

Category C Class 3

Function: Auxiliary feedwater pumps discharge and loop check valves.

Test Requirements: Quarterly stroke.

Basis for CSJ: Relief is requested from stroking at power due to the thermal shock of the auxiliary and main feedwater interface. Also, feeding the steam generators with cold water would result in large level transients.

Alternate Test: Full stroke at cold shutdown per OST 1.24.8 and 9.

COLD SHUTDOWN JUSTIFICATION 26

Valve No.: MOV-FW-156A
MOV-FW-156B
MOV-FW-156C

Category B Class 2

Function: A, B and C loop feedwater containment isolation check valves.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: Full- and part-stroke testing these valves during power operation could cause a loss of feedwater resulting in a reactor trip. Also, the motor operator associated with these valves is for closure with a very small or no differential pressure across the valve; it is not for use at power.

Alternate Test: Full stroke and time at cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 27

Valve No.: FP-800
FP-804
FP-827

Category A/C Class 2

Function: Fire protection, deluge system to RHR area, to cable penetration area and to containment hose reels inside containment check valves.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves are normally closed during power operation and are only required to open in the event fire protection water is needed. Full and part stroke exercising is not possible during power operation due to the inaccessibility of the valves.

Alternate Test: Full-stroke exercise at cold shutdowns per OST 1.1.10 using the weighted arm.

COLD SHUTDOWN JUSTIFICATION 28

Valve No.: 1VS-D-5-3A
1VS-D-5-3B
1VS-D-5-5A
1VS-D-5-5B
1VS-D-5-6

Category A Class 2

Function: Containment isolation valves for refueling purge and exhaust lines.

Test Requirements: Quarterly stroke and time.

Basis for CSJ: These dampers are shut during power operation and are required to remain shut to fulfill their safety function. These dampers cannot be full or part stroke exercised during power operation without violating containment integrity.

Alternate Test: Full stroke exercised and timed per OST 1.1.10 during cold shutdown.

COLD SHUTDOWN JUSTIFICATION 29

Valve No.: VS-169
VS-178

Category A; B Class 2

Function: Manual Equalization Valves for the Personnel Airlock.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves are located inside the subatmospheric containment building and cannot be stroked at power without making a containment entry.

Alternate Test: Valves are stroked each time the airlock is used, at least once per cold shutdown per OST 1.1.10.

COLD SHUTDOWN JUSTIFICATION 30

Valve No.: VS-183
VS-184

Category B Class 2

Function: Manual Equalization Valves for the Equipment Airlock.

Test Requirements: Quarterly stroke.

Basis for CSJ: These valves are located inside the subatmospheric containment building and cannot be stroked without making a containment entry at power.

Alternate Test: Stroked during cold shutdowns per OST 1.1.10.

B.V.P.S.-1 I.S.T.

Valve Testing Relief Requests

Section VII

ISSUE 2
REVISION 3

RELIEF REQUEST 1

Valve No.: See list of Containment Isolation Valves on page 2.

Category A or A/C Class 2

Function: Containment Isolation.

Test Requirements: Leak test at least once every 2 years.

Basis for Relief: These containment isolation valves are leak tested in accordance with 10CFR50, Appendix J, Type C. Since the acceptance criteria for Appendix J, Type C is more limiting than the ASME Section XI, additional leak testing in accordance with ASME Section XI would be redundant.

Alternate Test: Leak tested during refueling outages in accordance with 10CFR50, Appendix J, per BVT 1.3 - 1.47.5.

Containment Isolation Valves

MOV-CC-112A2
CC-247
MOV-CC-112B3
CC-252
MOV-CC-112A3
CC-251
MOV-CC-112B2
CC-248
TV-CC-107D1
TV-CC-107D2
TV-CC-111D1
TV-CC-111D2
TV-CC-110D
TV-CC-110F1
TV-CC-110F2
FP-827
TV-FP-107
TV-CC-110E3
TV-CC-110E2
TV-CC-111A2
TV-CC-111A1
TV-CC-103B1
TV-CC-103B
TV-CC-103C1
TV-CC-103C
MOV-CH-378
CH-369
MOV-CH-381
SI-42
SI-41
RH-14
RH-16
RH-13
TV-CC-105D1
TV-CC-105D2
TV-CC-107E1

TV-CC-107E2
TV-CC-105E1
TV-CC-105E2
TV-CH-200A
TV-CH-200B
TV-CH-200C
RV-CH-203
MOV-CH-142
TV-CH-204
TV-DG-108A
TV-DG-108B
FP-804
TV-FP-105
FP-800
TV-FP-106
TV-DA-100A
TV-DA-100B
SA-15
SA-14
TV-CV-102-1
TV-CV-102
TV-CV-101A
TV-CV-101B
RC-72
TV-RC-519
IA-91
IA-90
TV-DG-109A2
TV-DG-109A1
RC-68
TV-RC-101
TV-SI-101-2
TV-SI-101-1
TV-SS-109A1
TV-SS-109A2
TV-LM-100A1

TV-LM-100A2
TV-SS-111A1
TV-SS-111A2
TV-SS-100A1
TV-SS-100A2
TV-SS-102A1
TV-SS-102A2
TV-SS-105A1
TV-SS-105A2
TV-LM-101A
CV-35
TV-LM-101B
CV-36
TV-CC-103A1
TV-CC-103A
QS-4
MOV-QS-101B
QS-3
MOV-QS-101A
RS-101
RS-100
HY-196
HY-111
HY-197
HY-110
AS-278
TV-SV-100A
VS-D-5-3B
VS-D-5-3A
VS-D-5-5B
VS-D-5-5A
VS-D-5-6
TV-CV-150C
HY-102
TV-CV-150D
HY-104

TV-CV-150B
HY-101
TV-CV-150A
HY-103
HCV-CV-151
HCV-CV-151-1
SOV-HY-102B1
SOV-HY-102B2
SOV-HY-103B1
SOV-HY-103B2
SOV-HY-104B1
SOV-HY-104B2
TV-SS-104A1
TV-SS-104A2
TV-SS-103A1
TV-SS-103A2
PC-38
PC-37
PC-9
PC-10
TV-SS-112A1
TV-SS-112A2
MOV-SI-842
TV-SI-889
SOV-HY-102A1
SOV-HY-102A2
SOV-HY-103A1
SOV-HY-103A2
SOV-HY-104A1
SOV-HY-104A2
RC-277
RC-278
VS-169
VS-170
VS-167
VS-168

RELIEF REQUEST 2

Valve No.: RC-68

Category A/C Class 2

Function: Inside containment isolation on the N_2 makeup line to the Pressurizer Relief Tank.

Test Requirements: Quarterly full stroke.

Basis for Relief: This valve is normally closed and is opened only during nitrogen makeup to the Pressurizer Relief Tank. Its safety position is closed for containment isolation. The only means for verifying closure is during the 10CFR50, Appendix J leak rate test performed at refuelings.

Alternate Test: Leak tested during refueling outages per BVT 1.3 - 1.47.5.

RELIEF REQUEST 3

Valve No.: RC-72

Category A/C Class 2

Function: Inside containment isolation on the primary grade water supply to the Pressurizer Relief Tank.

Test Requirements: Quarterly full stroke.

Basis for Relief: This valve is normally closed and is opened only during makeup to or while depressurizing the Pressurizer Relief Tank. Its safety position is closed for containment isolation. The only means for verifying closure is during the 10CFR50, Appendix J leak rate test performed at refuelings.

Alternate Test: Leak tested during refueling outages per BVT 1.3 - 1.47.5.

RELIEF REQUEST 4

Valve No.: CH-22
CH-23
CH-24

Category C Class 2

Function: Normal pump discharge check valves for the charging pumps.

Test Requirements: Quarterly full stroke.

Basis for Relief: The design function of these check valves is to prevent reverse flow during pump shutdown and to stroke full open for safety injection flow. A full design flow test is required to ensure full stroke. However, during normal operation, the charging pump will not develop the required flow. Therefore, relief from quarterly full-stroke exercising is requested during normal operation. Relief is also requested from cold shutdown exercising because full flow testing could result in a low temperature overpressurization of the RCS.

Alternate Test: Part-stroke quarterly per OST 1.7.4, 5 and 6. Full-stroke during refueling outages per OST 1.11.14.

RELIEF REQUEST 5

Valve No.: CH-31

Category A/C Class 2

Function:	Charging header inside containment isolation check valve.
Test Requirements:	Quarterly full stroke.
Basis for Relief:	This normally open check valve must close to fulfill its safety function. Valve closure can only be checked by a leak test and there is no instrumentation to monitor upstream pressure. Therefore, relief is requested from quarterly and cold shutdown stroke tests.
Alternate Test:	Leak rate test during refueling outages per BVT 1.3 - 1.47.11.

RELIEF REQUEST 6

Valve No.: MOV-CH-142

Category A Class 2

Function:	Residual heat removal letdown to the chemical and volume control system.
Test Requirements:	Quarterly full stroke and time.
Basis for Relief:	This valve is normally shut at power. Opening it during normal operation would divert normal letdown back into the RHR system and could cause a pressure shock in the RHR system. Also, the installed instrumentation includes a potentiometer control, not an "on-off" switch. Therefore, relief from quarterly stroking and timing this valve is requested.
Alternate Test:	Full stroke exercised but not timed each cold shutdown per OST 1.1.10.

RELIEF REQUEST 7

Valve No.: CH-181
CH-182
CH-183

Category A/C Class 2

Function: Reactor coolant seal injection inside containment isolation check valves.

Test Requirements: Quarterly stroke.

Basis for Relief: These valves are open during power operation but are required to close to fulfill their safety function. Closing the valves during power operation, c. anytime the system is pressurized to greater than 100 psig, would secure seal injection water to the reactor coolant pump seals, resulting in seal damage. In addition, valve closure can only be checked by leak testing since they have no position indication or weighted arms. Therefore, relief is requested from quarterly and cold shutdown exercising.

Alternate Test: The check valves will be full stroke verified during the leak test at refueling per BVT 1.3 - 1.47.11.

RELIEF REQUEST 8

Valve No.: TV-CH-200A
TV-CH-200B
TV-CH-200C

Category A Class 2

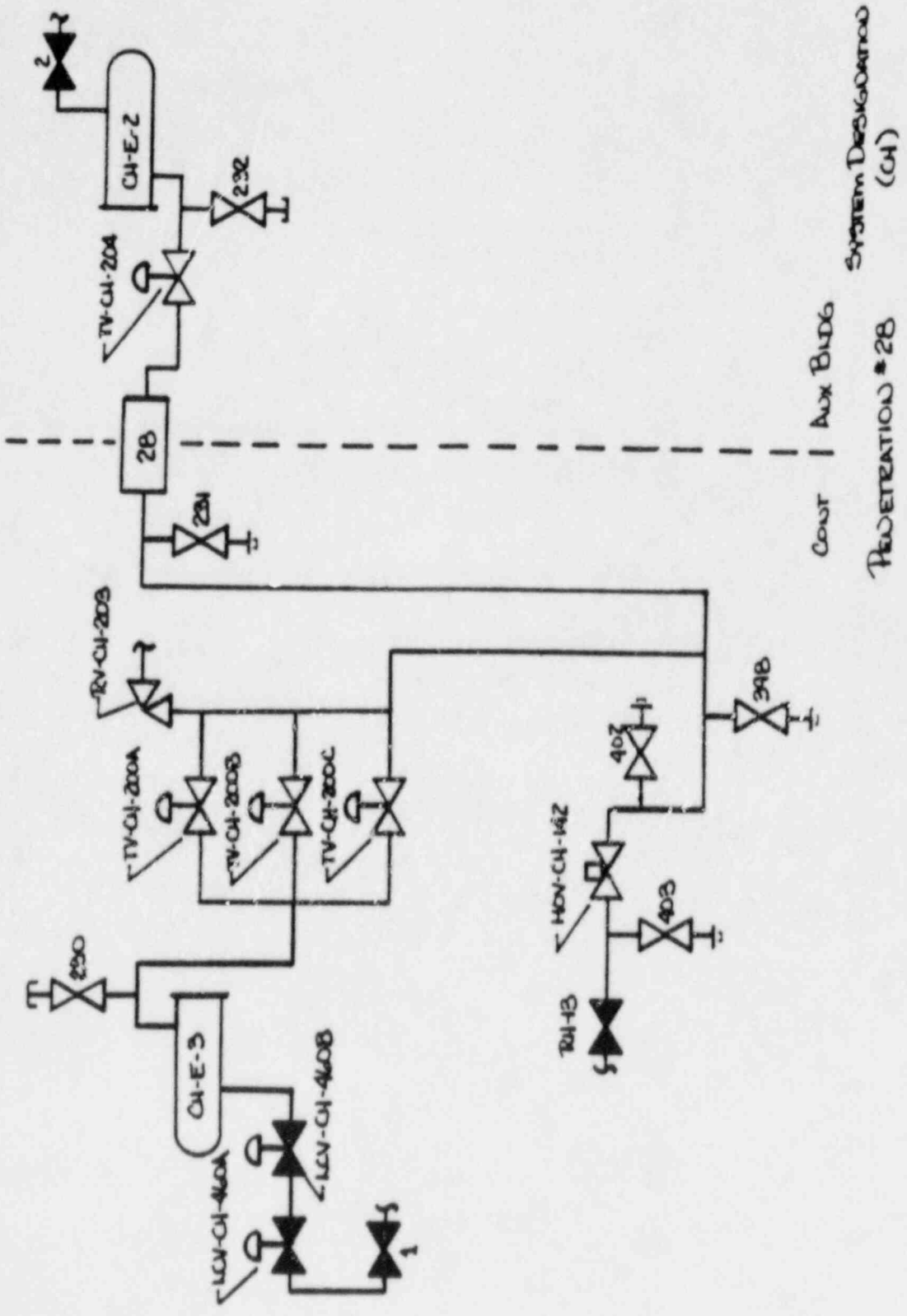
Function: Reactor coolant letdown orifice inside containment isolation valves.

Test Requirements: IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

Basis for Relief: As shown on the attached figure for penetration #28, the configuration of this containment penetration (i.e. three inside containment isolation valves in parallel) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.

Alternate Test: Assign a maximum permissable leakage rate for the entire barrier to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 8



ISSUE 2
REVISION 3

RELIEF REQUEST 9

Valve No.: CH-369

Category A/C Class 2

Function:	Penetration 19 pressure relief check around [MOV-CH-378].
Test Requirements:	Quarterly full stroke.
Basis for Relief:	This valve is normally closed during power operation and is required to remain closed to fulfill its safety function. Full stroking can only be verified by the leak test. Therefore, relief is requested from quarterly and cold shutdown stroke tests.
Alternate Test:	Leak test during refueling outages per BVT 1.3 - 1.47.5.

RELIEF REQUEST 10

Valve No.: MOV-CH-378
CH-369

Category A; A/C Class 2

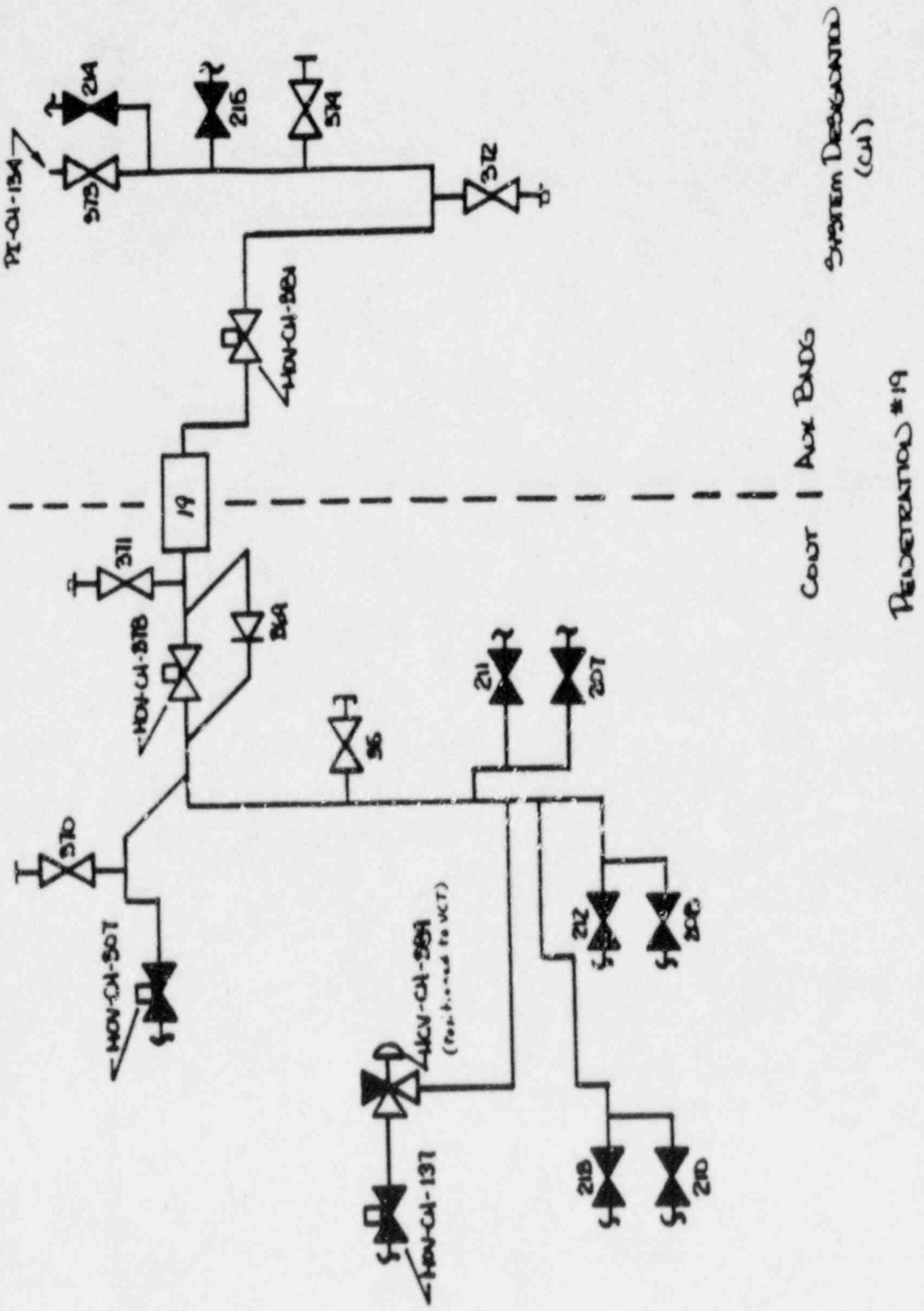
Function: RCP seal water return line inside containment isolation valves.

Test Requirements: IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

Basis for Relief: As shown on the attached figure for penetration #19, the configuration of this containment penetration (i.e. two inside containment isolation valves in parallel) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.

Alternate Test: Assign a maximum permissable leakage rate for the entire barrier to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 10



RELIEF REQUEST 11

Valve No.: MOV-CH-308A
MOV-CH-308B
MOV-CH-308C

Category A Class 2

Function: Reactor Coolant Seal Injection outside containment isolation motor-operated valves.

Test Requirements: Quarterly full stroke and time.

Basis for Relief: These valves are open during power operation but are required to close to fulfill their safety function. Closing the valves during power operation would secure seal injection water to the reactor coolant pump seals, resulting in seal damage. In addition, seal injection flow is required anytime the system is pressurized to greater than 100 psig.

Alternate Test: The MOVs will be full-stroke exercised and timed during cold shutdowns where RCS pressure has been reduced to below 100 psig and refueling outages per OST 1.1.10.

RELIEF REQUEST 12

Valve No.: MOV-CH-370

Category B Class 2

Function: Charging supply isolation to Reactor Coolant Pump Seal Injection.

Test Requirements: Quarter full stroke and time.

Basis for Relief: This valve is normally open during power operation. Closing it during power operation would secure seal injection water to the reactor coolant pump seals, resulting in seal damage. In addition, seal injection flow is required any time the system is pressurized to greater than 100 psig.

Alternate Test: Full stroke exercise and time during cold shutdowns where RCS pressure has been reduced to below 100 psig and refueling outages per OST 1.1.10.

RELIEF REQUEST 13

Valve No.: MOV-CH-378
MOV-CH-381

Category A Class 2

Function: RCP seal water return line inside and outside containment isolation valves.

Test Requirements: Quarterly stroke and time.

Basis for Relief: These valves are open during power operation, but are required to close to fulfill their safety function. Exercising at power would secure RCP seal water return causing seal damage. In addition, seal injection flow is required any time the RCS is pressurized to greater than 100 psig.

Alternate Test: Full-stroke exercised and timed during cold shutdowns where RCS pressure has been reduced to below 100 psig and refueling outages per OST 1.1.10.

RELIEF REQUEST 14

Valve No.: SI-1
SI-2

Category C Class 2

Function:	To prevent RWST flow from entering the containment sump.
Test Requirements:	Quarterly stroke.
Basis for Relief:	These valves are normally closed during power operation but must open to fulfill their safety function for long-term core cooling. Any type of stroke testing at power would violate containment integrity. Due to the lack of installed or test instrumentation and the impracticality of simulating actual safety injection long-term cooling, relief from quarterly and cold shutdown exercising is requested.
Alternate Test:	Maintenance to visually inspect one valve per refueling per CMP 1-75-86.

RELIEF REQUEST 15

Valve No.: SI-5

Category C Class 2

Function:	Low head safety injection pump suction from RWST check valve.
Test Requirements:	Quarterly full stroke.
Basis for Relief:	The function of this normally closed valve is to open to permit flow from the RWST to the LHSI pump suctions. Full stroke capability can only be verified by rated safety injection flow, therefore, relief is requested from quarterly full-stroke exercising. Relief from cold shutdown full-stroke exercising is also requested because testing would require full flow injection to the RCS where there is insufficient volume to receive the additional inventory.
Alternate Test:	Part-stroke quarterly per OST 1.11.1 and 2. Full-stroke exercise at refueling outages per OST 1.11.14.

RELIEF REQUEST 16

Valve No.: SI-6
SI-7

Category C Class 2

Function: To prevent reverse flow from opposite low head safety injection pump.

Test Requirements: Quarterly full stroke.

Basis for Relief: These valves close when the opposite LHSI pump is operating but must be fully open during an accident. These valves are part-stroke exercised quarterly during pump surveillance checks, however, rated safety injection flow is needed to verify full stroke capability. Therefore, relief from stroking at power is requested due to the inability of the LHSI pumps to overcome RCS pressure. Relief from cold shutdown stroking is also requested because testing would require full flow injection to the RCS where there is insufficient volume to receive the additional inventory.

Alternate Test: Part stroke per OST 1.11.1, 2. Full stroke during full-flow test at refuelings per OST 1.11.14.

RELIEF REQUEST 17

Valve No.:	SI-10	SI-15
	SI-11	SI-16
	SI-12	SI-17

Category A/C Class 1

Function: To open on a safety injection and to prevent reverse flow from the higher pressure RCS and HHSI system to the LHSI low pressure system.

Test Requirements: Quarterly stroke.

Basis for Relief: These check valves are normally shut during power operation but are required to open in the event of a safety injection. Due to the lack of installed instrumentation, and the relative system pressures, relief from quarterly full- and part-stroke exercising is requested. In addition, relief is requested from full- or part-stroke exercising at cold shutdown because testing would require full-flow injection to the RCS where there is insufficient expansion volume to receive the additional inventory.

Alternate Test: Partial-stroke exercise per OST 1.11.14 during refueling outages, and reverse flow stroke per the leak tests, OST 1.11.16 and OST 1.11.19 during refueling outages. In addition, a full-stroke test of each valve will be performed during refueling outages.

RELIEF REQUEST 18

Valve No.:	SI-20	SI-100
	SI-21	SI-101
	SI-22	SI-102

Category C Class 1

Function: To provide isolation between the RCS and the HHSI and LHSI systems.

Test Requirements: Quarterly full stroke exercise.

Basis for Relief: These check valves are normally shut during power operation but are required to open to fulfill their safety function. Due to the lack of installed instrumentation, and the relative system pressures, relief from quarterly full- and part-stroke exercising is requested. In addition, relief is requested from full- or part-stroke exercising at cold shutdown because testing would require full-flow injection to the RCS where there is insufficient volume to receive the additional inventory.

Alternate Test: Full-flow stroke exercise per OST 1.11.14 during refueling outages.

RELIEF REQUEST 19

Valve No.: SI-23
SI-24
SI-25

Category A/C Class 1

Function: To open on a safety injection and to prevent reverse flow from the higher pressure RCS to the lower pressure LHSI system.

Test Requirements: Quarterly stroke.

Basis for Relief: These check valves are normally shut during power operation but are required to open in the event of a safety injection. Due to the lack of installed instrumentation, the relative system pressures and the potential for a premature failure of the injection nozzles caused by the thermal shock from a cold water injection, relief from quarterly full or part-stroke testing at power is requested. In addition, relief from cold shutdown stroke testing is requested since this would require a full flow injection to the RCS where there is insufficient expansion volume to receive the additional inventory.

Alternate Test: Full-flow forward stroke exercise per OST 1.11.14 during refueling outages and reverse flow stroke per leak test OST 1.11.16 during refueling outages.

RELIEF REQUEST 20

Valve No.: SI-27

Category C Class 2

Function:	High head safety injection pump suction from RWST check valve.
Test Requirements:	Quarterly full stroke.
Basis for Relief:	This valve is normally closed during power operation but is required to open at the onset of an accident to fulfill its safety function. A full design flow test is required to ensure full stroke. However, during normal operation the charging pump will not develop the required flow. Therfore, relief from quarterly full-stroke exercising is requested during normal operation. Relief is also requested from cold shutdown exercising because full-flow testing could result in low-temperature overpressurization of the RCS.
Alternate Test:	Part-stroke quarterly per OST 1.7.4, 5 and 6. Full-stroke exercise per OST 1.11.14 at refueling.

RELIEF REQUEST 21

Valve No.:	SI-48	SI-51
	SI-49	SI-52
	SI-50	SI-53

Category A/C Class 1

Function:	Safety injection accumulator series discharge check valves.
Test Requirements:	Quarterly exercise.
Basis for Relief:	These valves are shut during normal power operation but are required to open to fulfill their safety function of allowing the accumulators to discharge for core flooding. Relief from full- or part-stroke exercising at power is requested due to the high pressure differential between the reactor coolant system and the accumulators. Relief from exercising during cold shutdown is also requested due to a lack of installed instrumentation and an uncontrolled test volume change needed to achieve the flow required by the safety analysis.
Alternate Test:	Full-stroke exercised during refueling outages per BVT 1.6 - 1.11.3. Leak tested per OST 1.11.4 during refuelings.

RELIEF REQUEST 22

Valve No.: SI-83
SI-84

Category A/C Class 2

Function:	Inside containment isolation check valves - HHSI to the hot legs.
Test Requirements:	Quarterly stroke.
Basis for Relief:	These valves cannot be full or part-stroked at power due to the potential for a premature failure of the injection nozzles caused by the thermal shock from a cold water injection. Cold shutdown full-stroke testing cannot be performed since this could result in a low temperature overpressurization of the RCS.
Alternate Test:	Full-stroke exercise at refuelings per OST 1.11.14.

RELIEF REQUEST 23

Valve No.: SI-94
SI-95

Category A/C Class 2

Function:	Inside containment isolation and non-reverse check valves in the BIT injection and fill header lines.
Test Requirements:	Quarterly stroke.
Basis for Relief:	These valves are normally shut during power operation but are required to open to fulfill their safety function. Due to the lack of installed instrumentation, and the relative system pressures, relief from quarterly full- or part-stroke exercising is requested. In addition, relief from cold shutdown full- or part-stroke exercising is requested because testing would require full flow injection to the RCS where there is insufficient volume to receive the additional inventory.
Alternate Test:	Full-stroke exercised at refueling outages per OST 1.11.14, full flow test.

RELIEF REQUEST 24

Valve No.: MOV-SI-867A
MOV-SI-867B

Category B Class 2

Function: Boron Injection Tank (BIT) Inlet Isolation

Test Requirements: Quarterly stroke and time.

Basis for Relief: These valves are shut at power but are required to open to fulfill their safety function. Stroking these valves fully or partially at power has historically caused leakage past the manway flange and the other valves in the system. If the BIT outlet valves leak, boric acid would be introduced into the downstream piping which is not heat traced. Without heat tracing, the piping could become blocked by boron precipitating out of solution. Flushing out this piping to ensure that no blockage has occurred is only possible during refueling outages when the full flow SI test, OST 1.11.14, is performed. In addition, stroking these valves would dilute the boron concentration of the BIT, potentially causing entry into a Tech. Spec. Action statement.

Alternate Test: Full- stroke exercise and time at refueling outages.

RELIEF REQUEST 25

Valve No.: MOV-SI-867C
MOV-SI-867D

Category A Class 2

Function:	Boron Injection Tank BIT outlet isolation and outside containment isolation valves.
Test Requirements:	Quarterly stroke and time.
Basis for Relief:	Quarterly stroking of these valves at power could render the BIT flow path inoperable. Boron which would migrate into the non heat-traced piping downstream of the MOVs could precipitate out of solution, solidfy and block the injection line. The ability to flush out this piping to ensure that no blockage will occur is only possible during refueling outages in conjunction with the SI full flow test, OST 1.11.14.
Alternate Test:	Full-stroke exercise and time at refueling outages.

RELIEF REQUEST 26

Valve No.: RS-158
RS-160

Category C Class 2

Function:	Cross connect between the LHSI pumps and the outside recirc spray pumps.
Test Requirements:	Quarterly full stroke exercise.
Basis for Relief:	These valves are normally closed during power operation but must open to fulfill their safety function. No practical method of testing these valves exists. The volume of water used to test the outside recirc. spray pumps is insufficient to stroke the check valves. In addition, there is no installed instrumentation. Therefore, relief from quarterly and cold shutdown exercising is requested.
Alternate Test:	Maintenance to visually inspect one valve per refueling per CMP.

RELIEF REQUEST 27

Valve No.:				
	TV-CC-103A	TV-CC-103C1	TV-CC-105D2	TV-CC-107C
	TV-CC-103A1	TV-CC-105A	TV-CC-105E1	TV-CC-107D1
	TV-CC-103B	TV-CC-105B	TV-CC-105E2	TV-CC-107D2
	TV-CC-103B1	TV-CC-105C	TV-CC-107A	TV-CC-107E1
	TV-CC-103C	TV-CC-105D1	TV-CC-107B	TV-CC-107E2

Category A Class 2

Function: Component cooling outside containment isolation valves to reactor coolant pumps, stator, bearings and thermal barriers.

Test Requirements: Quarterly stroke and time.

Basis for Relief: Stroking these valves with the reactor coolant pumps running could cause damage to pump bearings, stator and thermal barrier if the valves would fail to reopen. Relief is requested from full-or part-stroke exercising during power operation and cold shutdown when the pump is running.

Alternate Test: Full-stroke exercise and time during cold shutdowns when the reactor coolant pumps are secured and refeuling outages per OST 1.1.10.

RELIEF REQUEST 28

Valve No.: TV-CC-110F1
TV-CC-110F2

Category A passive; A Class 2

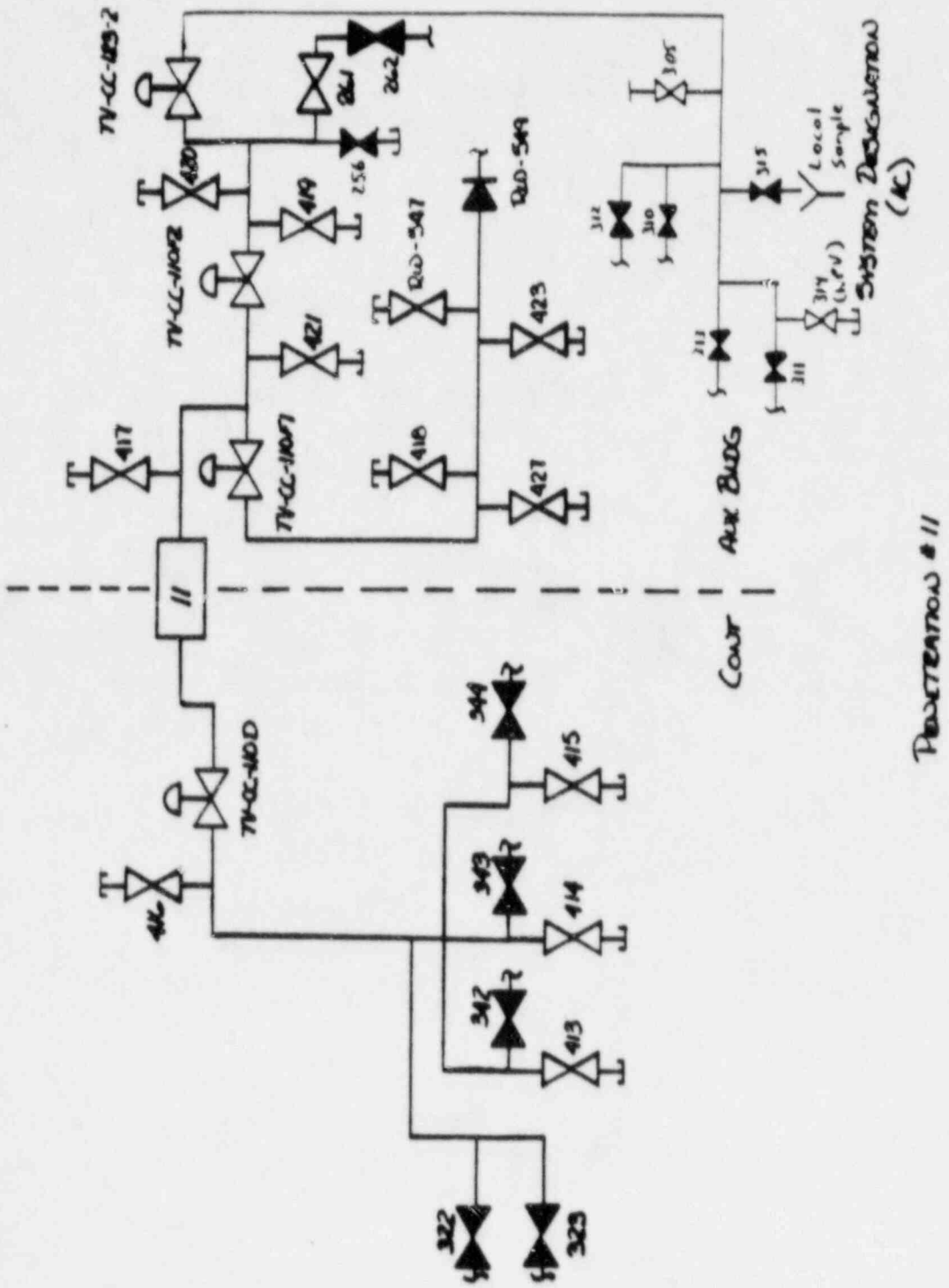
Function: Outside containment isolation cooling water return from the containment air recirculation cooling coils to the Chilled Water and River Water Systems.

Test Requirements: IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

Basis for Relief: As shown on the attached figure for Penetration #11, the configuration of this containment penetration (i.e., two outside containment isolation valves in parallel) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.

Alternate Test: Assign a maximum permissable leakage rate for the entire barrier to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 28



RELIEF REQUEST 29

Valve No.: CC-289
CC-290
CC-291

Category C Class 3

Function: To prevent reverse flow to the low pressure CCR system in the event a thermal barrier leaks.

Test Requirements: Quarterly stroke.

Basis for Relief: The function of these valves is to close upon reverse flow. The only way to test for closure is to perform a leak test on the valves. Therefore, relief is requested from quarterly and cold shutdown stroke tests.

Alternate Test: Valves will be reverse flow tested per leak test at refueling outages.

RELIEF REQUEST 30

Valve No.: MS-18
MS-19
MS-20

Category C Class 3

Function: Main Steam to Auxiliary Feed Pump Check Valves.

Test Requirements: Quarterly stroke.

Basis for Relief: The function of these valves is to open to allow steam flow to run the turbine driven aux feed pump and to close to prevent steam generator cross-connection in the event of a high energy line break. Full stroke open can only be verified by a full-flow test of the aux feed pump performed during startup from cold shutdown. The quarterly pump test runs the pump on recirculation only and does not require full steam flow. Full stroke closed can only be verified by a leak test to be performed during refueling outages.

NOTE: To prevent the loss of all three steam generators in the event of a line break, one of the manual isolation valves upstream of the check valves is locked shut during normal operation.

Alternate Test: Two of the valves will be part stroked during the quarterly pump test per OST 1.24.4. The third valve will not be part stroke exercised because the manual isolation valve is locked closed.

All three valves will be full-stroked open each startup from cold shutdown when the turbine driven aux feed pump is full-flow tested per OST 1.24.9.

The valves will be verified to full-stroke close during refueling outages per leak test.

RELIEF REQUEST 31

Valve No.: MS-80
MS-81
MS-82

Category C Class 2

Function:	The A, B and C loop residual heat release reverse flow check valves.
Test Requirements:	Quarterly stroke.
Basis for Relief:	Relief is requested from at power and cold shutdown full-stroke testing because there is no installed instrumentation to check for reverse flow and the headers are normally cross connected and pressurized. No way exists to isolate and systematically check operation of these valves.
Alternate Test:	Maintenance to disassemble and inspect one valve per refueling outage per CMP 1-75-77.

RELIEF REQUEST 32

Valve No.: RW-106
RW-107

Category C Class 3

Function: River Water Supply Header Check Valves.

Test Requirements: Quarterly stroke.

Basis for Relief: The function of these valves is to open to permit river water flow and to close if the auxiliary river water pumps are supplying the river water headers. The closure of these valves can only be verified by valve disassembly and internal inspection or by reverse flow leak testing.

Alternate Test: Full forward stroke quarterly per OST 1.30.2 and OST 1.30.3. Reverse stroke test during refueling outages in conjunction with OST 1.30.8 or the buried river water line hydro.

RELIEF REQUEST 33

Valve No.:	RW-110	RW-112
	RW-111	RW-113

Category C Class 3

Function:	Diesel Generator Heat Exchanger river water inlet check valves.
Test Requirements:	Quarterly stroke.
Basis for Relief:	The function of these valves is to permit river water flow to the diesel generator heat exchangers. In order to fulfill their function, as per IE Bulletin 83-03, the integrity of these valves must be verified. The valve integrity can only be verified through valve disassembly and internal inspection.
Alternate Test:	Full forward stroke quarterly per OST 1.36.1 & 2. Reverse stroke exercise through valve disassembly and inspection per CMP 1.75.308 every 5 years.

RELIEF REQUEST 34

Valve No.: RW-135
RW-136

Category C Class 3

Function:	River water supply check valves to the Control Room Redundant Cooling Coils.
Test Requirements:	Quarterly stroke.
Basis for Relief:	The safety function of these valves is to open to ensure a supply of cooling water to the Control Room Redundant Cooling Coils. Stroke testing to the open position can only be performed by placing these units into service and shutting down the normal Control Room Air Conditioning Units. Due to the resultant temperature transient that this transfer would cause in the Unit 1 control area (i.e., Control Room, Computer Room, Process Control, Relay and Communications Room) and the Unit 2 control area as well due to the joint Control Rooms, relief from quarterly and cold shutdown testing is requested.
Alternate Test:	Full-stroke exercise during refueling outages after placing the Control Room Redundant Cooling Coils into service.

RELIEF REQUEST 35

Valve No.: RW-675
RW-676
RW-677

Category C Class 3

Function: Unfiltered river water supply to the river water pump seals which is the backup to the normal filtered water supply.

Test Requirements: Quarterly stroke.

Basis for Relief: The only method for testing the valves in the backup seal water supply system involves putting unfiltered river water into the pump seals. In order to minimize the degradation to the pump seals that this causes and reduces maintenance, relief is requested from quarterly and cold shutdown stroke testing.

Alternate Test: Full stroked exercise during refueling outages per OST 1.30.2, 3 & 6.

RELIEF REQUEST 36

Valve No.:	SOV-DA-101	SOV-DA-103
	SOV-DA-102	SOV-DA-104

Category B Class 3

Function:	Diesel Generator Air Start SOVs.
Test Requirements:	Quarterly stroke and time.
Basis for Relief:	These valves are integral parts of the diesel generators and cannot be tested independently. These valves will be tested when the diesel generators are tested by verifying that the diesels can be started and come up to speed in the specified time. The stroke test alone can be performed in conjunction with the monthly diesel generator tests; however, the timing test can only be performed during refueling outages since it requires deenergization of the emergency buses.
Alternate Test:	Stroked in conjunction with the monthly diesel generator OSTs 1.36.1 & 2. Stroked and timed during refueling outages per OST 1.36.3.

RELIEF REQUEST 37

Valve No.: TV-VS-101A, TV-VS-101B, TV-VS-101C, TV-VS-101D, TV-VS-101E

Category B Class 3

Function: Control room emergency air bottle outlet trip isolation valves.

Test Requirements: Quarterly stroke and time.

Basis for Relief: These valves are shut at power but are required to open to fulfill their safety function. Quarterly full or part stroke exercising is not possible without risking violating Tech. Spec. bottle pressure and time requirements. In addition, the air bottles are now shared between Units 1 and 2, making testing during cold shutdowns impracticable. Also, these valves do not have control switches and lack valve position indicating lights in the control room.

Alternate Test: Full stroked exercised but not timed every 18 months.

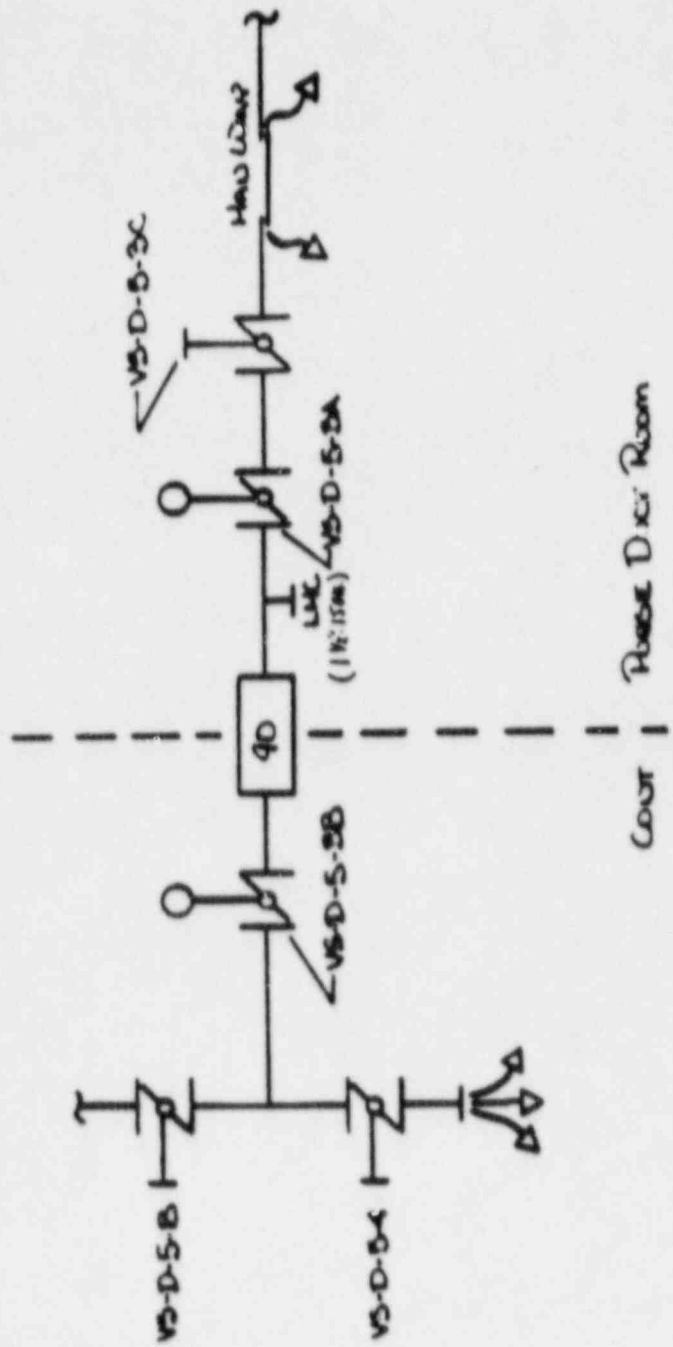
RELIEF REQUEST 38

Valve No.: VS-D-5-3A
VS-D-5-3B

Category A Class 2

Function:	Containment purge exhaust fan containment isolation dampers.
Test Requirements:	IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.
Basis for Relief:	As shown on the attached figure for Penetration #90, the configuration of this containment penetration (i.e., a single test connection located between two containment isolation dampers in series) is such that individual leakage rates for each specific damper cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each damper would not be practical.
Alternate Test:	Assign a maximum permissable leakage rate for the entire penetration to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 38



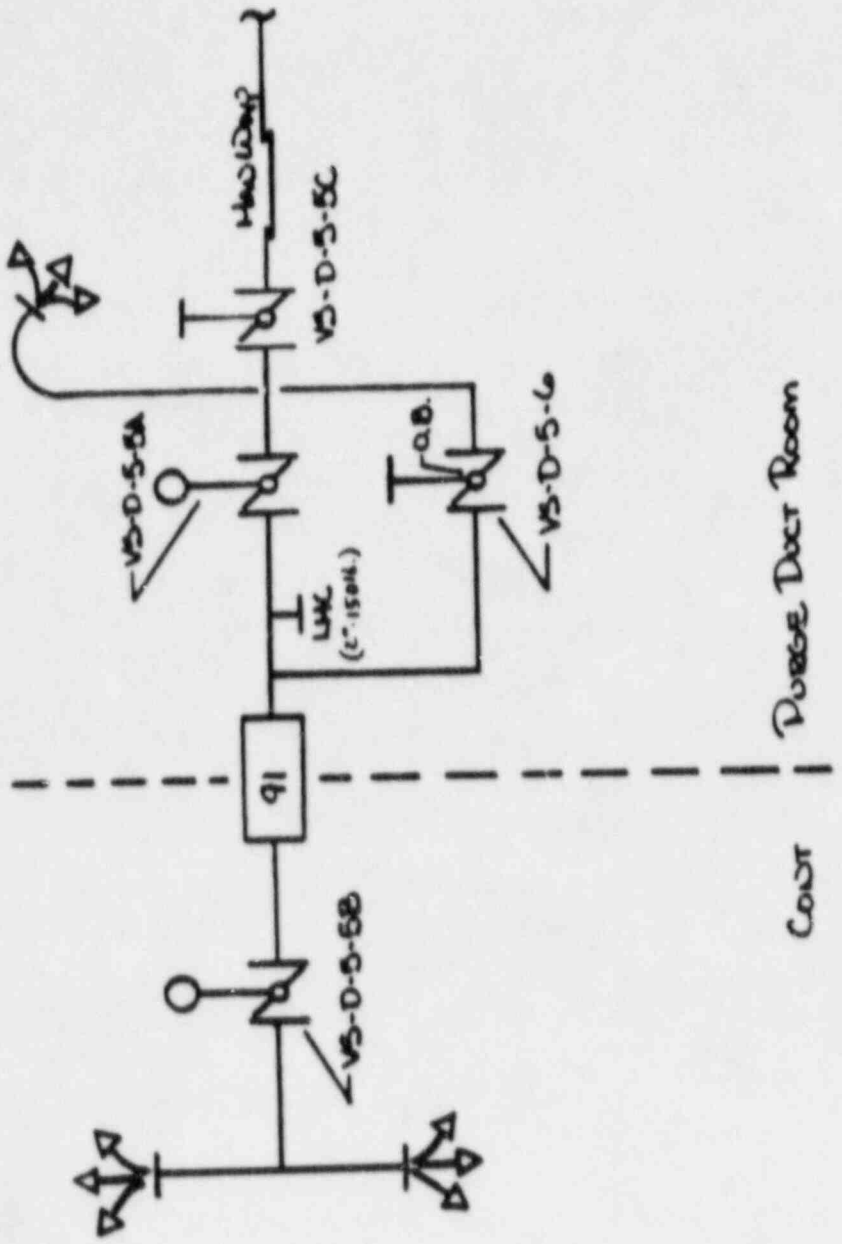
RELIEF REQUEST 39

Valve No.: VS-D-5-5A
VS-D-5-5B
VS-D-5-6

Category A Class 2

Function:	Containment purge supply fan containment isolation dampers.
Test Requirements:	IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.
Basis for Relief:	As shown on the attached figure for Penetration #91, the configuration of this containment penetration (i.e., a single test connection located between the three penetration isolation dampers) is such that individual leakage rates for each specific damper cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each damper would not be practical.
Alternate Test:	Assign a maximum permissable leakage rate for the entire penetration to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 39



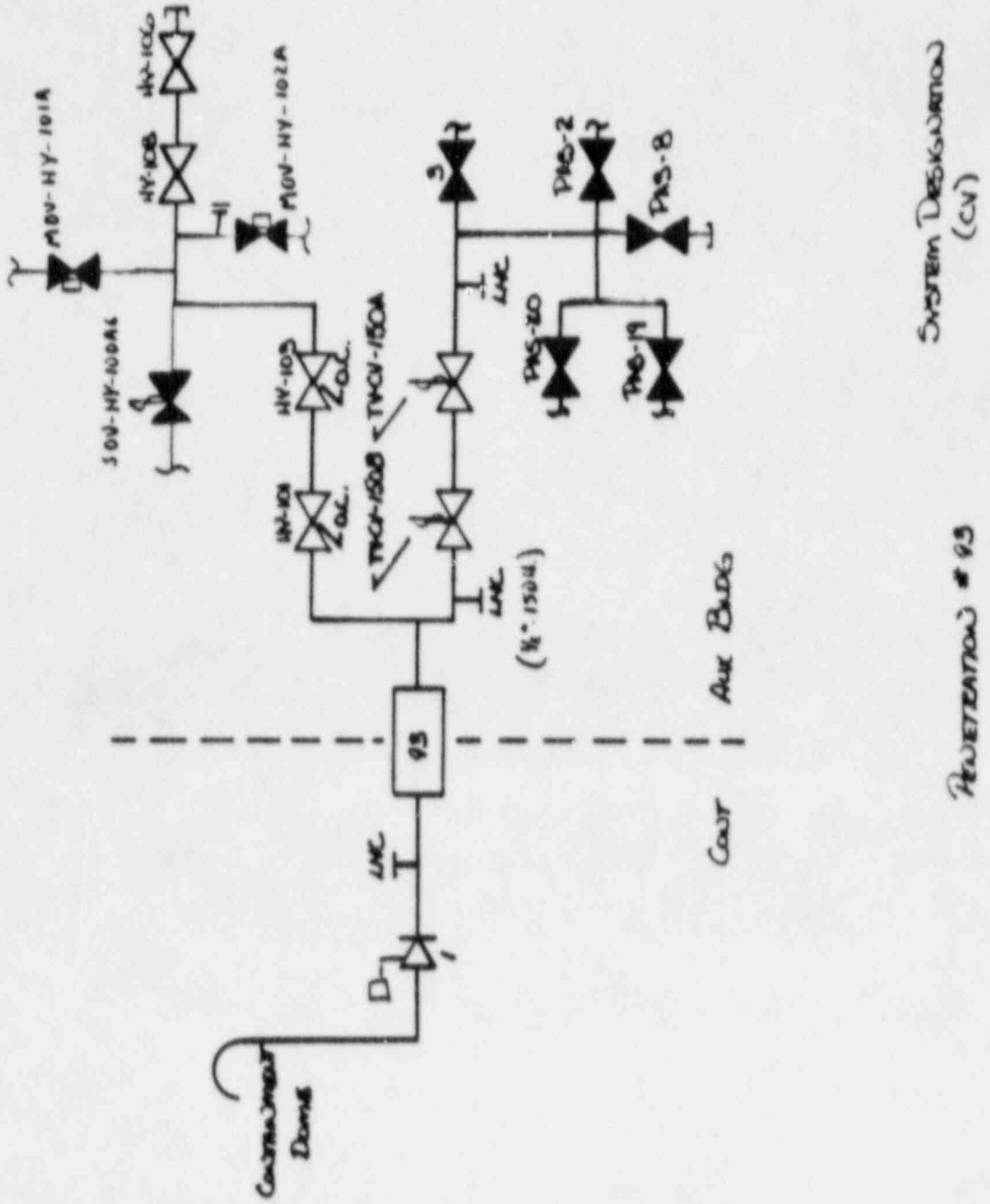
RELIEF REQUEST 40

Valve No.:	TV-CV-150B	HY-101
	TV-CV-150A	HY-103

Category A Class 2

Function:	Containment Vacuum Pump 1A and Hydrogen Recombiner 1A suction containment isolation valves.
Test Requirements:	IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.
Basis for Relief:	As shown on the attached figure for Penetration #93, the configuration of this containment penetration (i.e., two in-series isolation valves in each of two parallel branch lines) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.
Alternate Test:	Assign a maximum permissable leakage rate for the two valve combinations of TV-CV-150B & HY-101 and TV-CV-150A & HY-103 to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 40



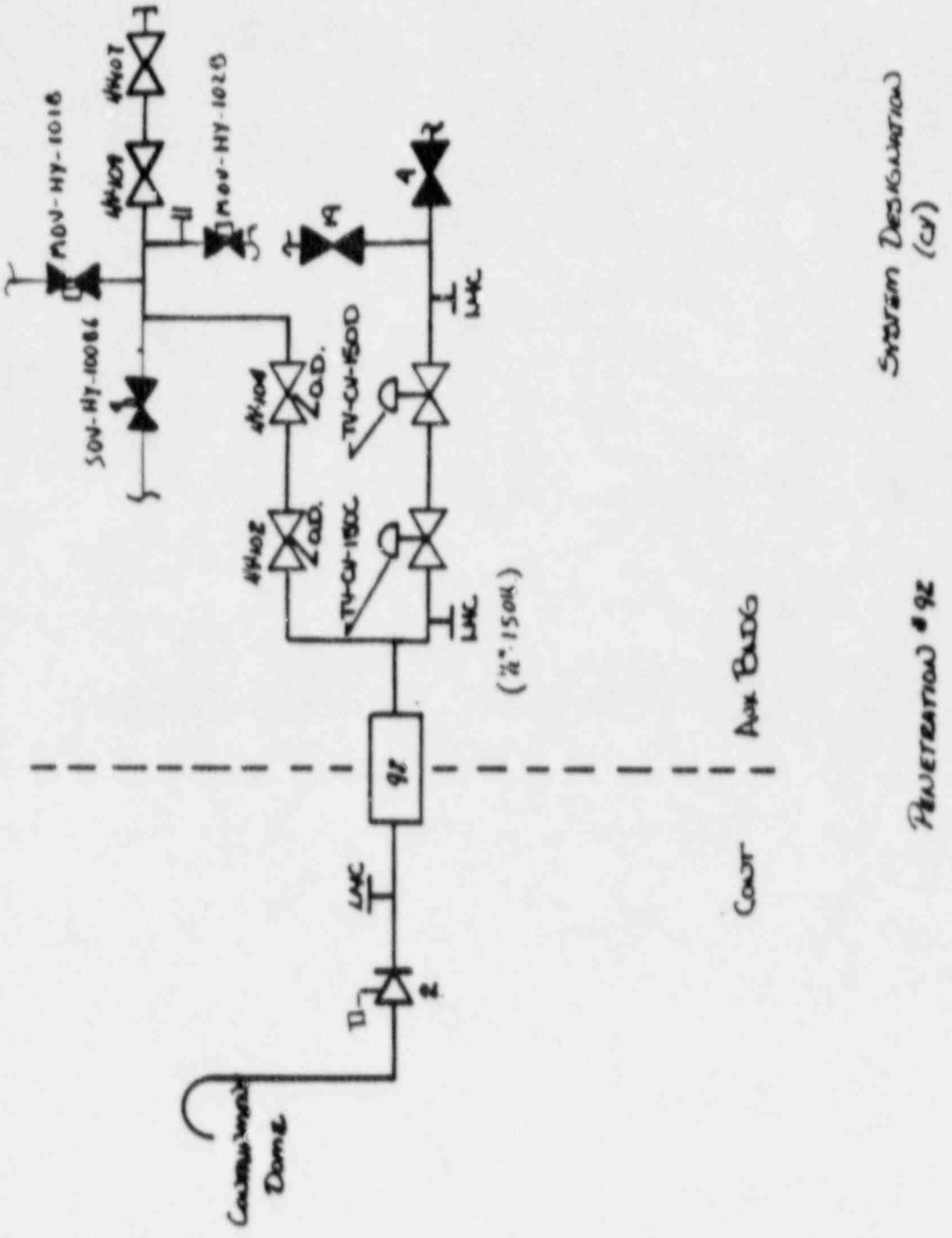
RELIEF REQUEST 41

Valve No.:	TV-CV-150C	HY-102
	TV-CV-150D	HY-104

Category A Class 2

Function:	Containment Vacuum Pump 1A and Hydrogen Recombiner 1B suction containment isolation valves.
Test Requirements:	IWV-3426 and 3427 require Owner specified maximum permissable leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.
Basis for Relief:	As shown on the attached figure for Penetration #92, the configuration of this containment penetration (i.e., two in-series isolation valves in each of two parallel branch lines)is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.
Alternate Test:	Assign a maximum permissable leakage rate for the two valve combinations of TV-CV-150C & HY-102 and TV-CV-150D & HY-104 to then be used as the criteria for initiating corrective action in accordance with IWV-3427.

RELIEF REQUEST 41



Attachment 2

Accumulator Discharge Check Valve Test Results

On December 18 and 19, 1987, the SI Accumulators were dumped in order to full stroke exercise the discharge check valves, [SI-48, 49, 50, 51, 52 and 53]. During the dump, the pressure in the Accumulator and the pressure and level of the Pressurizer were monitored. Personnel stationed at the valves also monitored the valves acoustically.

The Accumulator pressure was plotted vs. time and compared to the P-T curves generated by the computer model of the Accumulator dump. All three of the actual test curves were to the left and below the computer generated curves from the time the isolation valves were approximately one half open until the actual flow stopped. The actual curve for the 1C Accumulator, however, crosses the computer curve at 10 seconds and again at 44 seconds. This could be attributed to the longer time interval between turning the control switch to open the valve and the initiation of the pressure change.

The P-T curves obtained this outage were also compared to the curves obtained during 5R. This comparison showed the 1A and 1B curves matching very closely while the 1C curves were somewhat mismatched. The mismatch in the 1C curves indicates a change in the system, however, since the exact system conditions for the 5R test of the 1C Accumulator are uncertain, this change cannot be directly attributed to check valve degradation. In order to verify the condition of the check valves, the leak test (OST 1.11.4) will have to be performed again.

The actual flow rates were calculated using the Pressurizer level change and the Accumulator pressure change. The minimun flow required for full disc lift based on the EPRI "Application Guidelines for Check Valves in Nuclear Power Plants" is 3470 gal/min. All of the flow rates exceeded this minimum value. The flow rates were also compared with the results from the last refueling outage and each other. The results of the comparisons are shown on Table 1.

Table 1
Peak Flow Rates (gal/min)

SI-TK-1A		SI-TK-1B		SI-TK-1C		
Q(PZR)	Q(ACC)	Q(PZR)	Q(ACC)	Q(PZR)	Q(ACC)	Yr
10,200	14,774	8,400	16,900	8,160	14,275	6R
9,300	11,100	9,230	16,880	4,700	16,500	5R

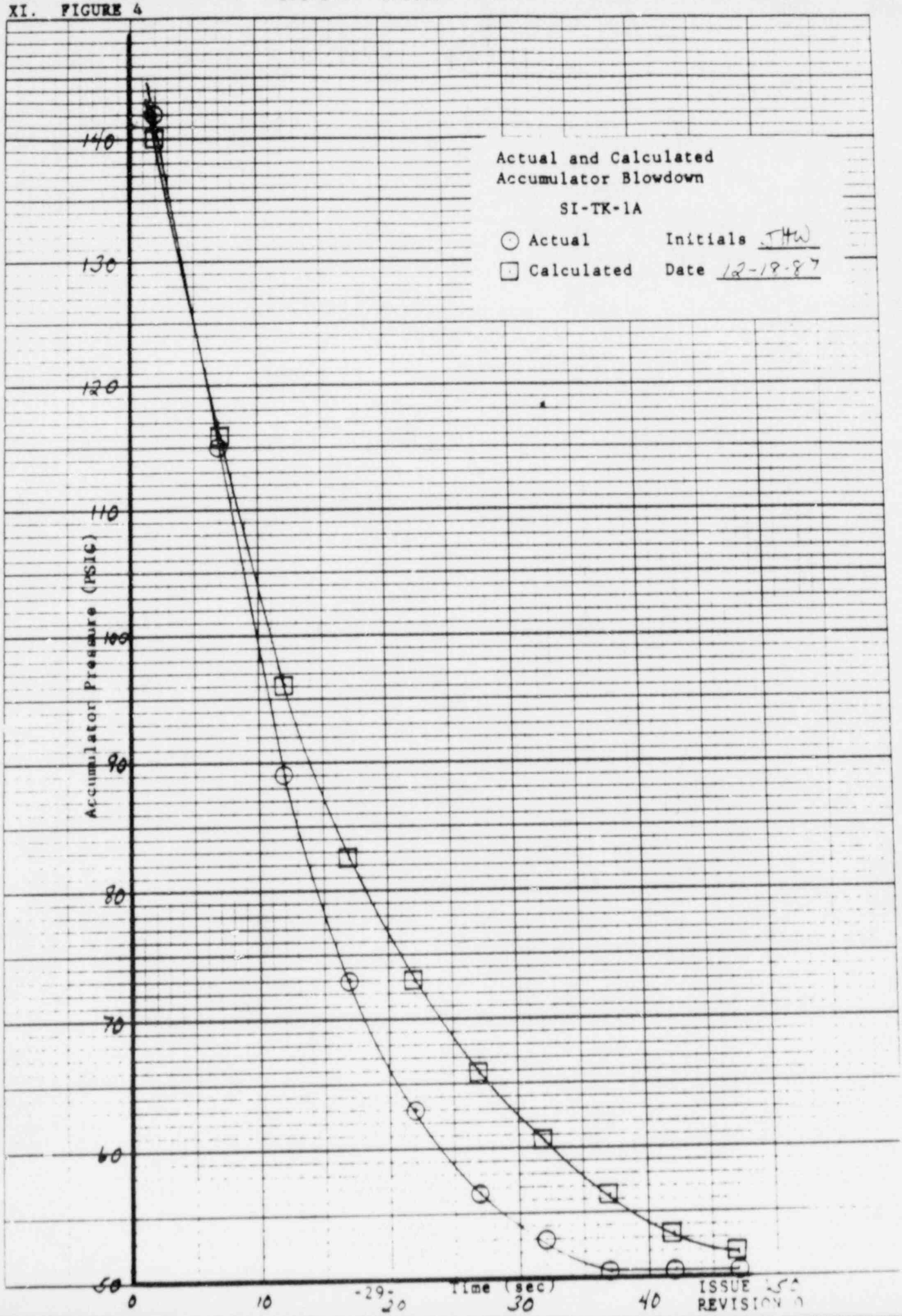
where: Q(PZR) = Flow rate based on the Pressurizer level change.
Q(ACC) = Flow rate based on calculated Accumulator volume change.

The results from the acoustic monitoring were inconclusive: only the people at the valves closest to the Accumulators heard the valve open and the traces from the IRD model 820 vibration meter indicated some noise on 4 of the 6 valves, however the deflection was less than expected.

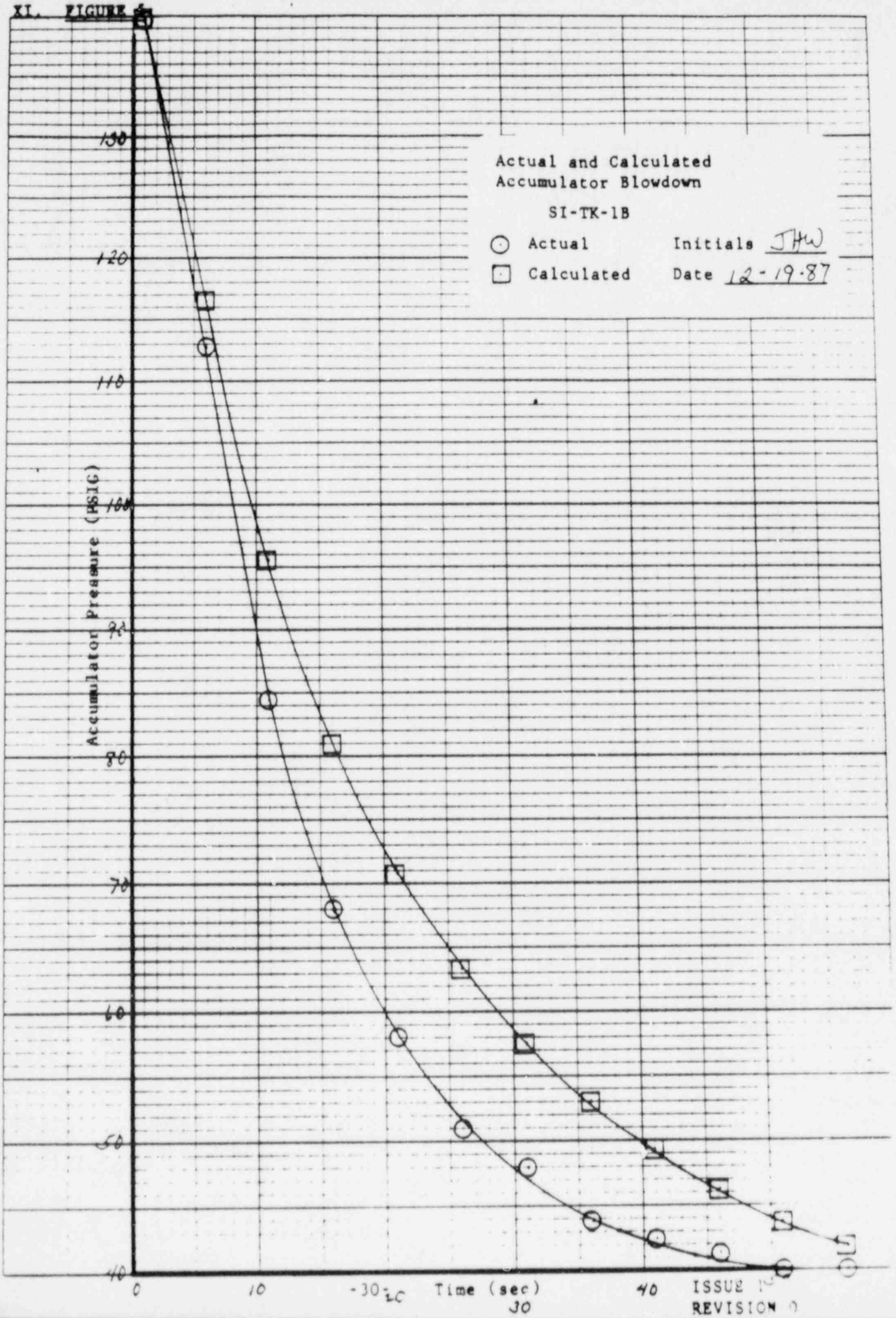
In addition, the checkmate diagnostic system for determining disc position in check valves from MOVATS Inc. was investigated for use on these valves. A test of [SI-52] using RHR flow, however, was unsuccessful in obtaining any data. MOVATS has stated that the system is presently unreliable for large stainless steel valves.

In conclusion, based on the flow rates and P-T curves for the SI Accumulators, the discharge check valves [SI-48, 49, 50, 51, 52 and 53] have been successfully exercised to the full stroke open position.

XI. FIGURE 4



XI. FIGURE 6



XI. FIGURE 6