

DUQUESNE LIGHT COMPANY

Beaver Valley Power Station

## Unit 1

### INSERVICE TESTING (IST) PROGRAM FOR PUMP AND VALVES

Issue 2

Revision 10

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## **SECTION I: PUMP TESTING REQUIREMENTS**

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The Inservice Test (IST) Program for pumps at Beaver Valley Power Station (BVPS), Unit 1, is based on subsection IWP - Inservice Testing of Pumps of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 edition through the summer 1983 addenda (the code) and Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs". The pumps included in this program are all ASME "class 1, 2, or 3 centrifugal or displacement type pumps that are required to perform a specific function in shutting down the 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 IWP-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 <sub>i</sub>	✓(1)	
Differential pressure $\Delta P$	✓	
Flow rate Q	✓	
Vibration amplitude V	✓	
Proper lubricant level or pressure		✓
Bearing temperature T <sub>b</sub>	✓	
NOTE:		
(1) Measure before pump startup and during test.		

Table IWP-3100-2 shows the allowable ranges for test results that will be used to determine if corrective action is required following performance of BVPS-1 Surveillance Tests. 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 IWP-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	[Note (2)]	[Note (2)]	[Note (2)]	[Note (2)]	[Note (2)]
$\Delta P$	0.83-1.02 $\Delta P_r$	0.80-0.83 $\Delta P_r$	1.02-1.03 $\Delta P_r$	<0.80 $\Delta P_r$	>1.03 $\Delta P_r$
Q	0.84-1.02Q <sub>r</sub>	0.80-0.84Q <sub>r</sub>	1.02-1.03Q <sub>r</sub>	<0.80Q <sub>r</sub>	>1.03Q <sub>r</sub>
V when 0 ≤ V <sub>r</sub> ≤ 0.5 mils	0-1 mil	None	1-1.5 mils	None	>1.5 mils
V when 0.5 mils < V <sub>r</sub> ≤ 2.0 mils	0-2V <sub>r</sub> mils	None	2V <sub>r</sub> -3V <sub>r</sub> mils	None	>3V <sub>r</sub> mils
V when 2.0 mils < V <sub>r</sub> ≤ 5.0 mils	0-(2 + V <sub>r</sub> ) mils	None	(2 + V <sub>r</sub> )-(4 + V <sub>r</sub> ) mils	None	>(4 + V <sub>r</sub> ) mils
V when V <sub>r</sub> > 5.0 mils	0-1.4V <sub>r</sub> mils	None	1.4V <sub>r</sub> -1.8V <sub>r</sub> mils	None	>1.8V <sub>r</sub> mils
T <sub>b</sub>	[Note (3)]	[Note (3)]	[Note (3)]	[Note (3)]	[Note (3)]
NOTES:					
(1) See IWP-3230.					
(2) P <sub>i</sub> shall be within the limits specified by Owner in the record of tests (IWP-6000).					
(3) T <sub>b</sub> shall be within the limits specified by Owner in the record of tests (IWP-6000).					



Corrective action shall be taken if necessary using the following:

1. If deviations fall within the "Alert Range" of Table IWP-3100-2, the frequency of testing shall be doubled until the cause of the deviation is determined and corrected and either existing reference values reverified or a new set established.
2. If the deviations fall within the "Required Action Range" of Table IWP-3100-2, the pump shall be declared inoperative immediately and an evaluation of the pump's condition with respect to system operability and technical specifications shall be made as follows:
  - a. If the inoperative pump is specifically identified in the technical specifications, then the applicable technical specification action statements must be followed.
  - b. If the inoperative pump is in a system covered by a technical specification, an assessment of its condition must be made to determine if it makes the system inoperative. If the condition of the pump renders the system inoperative, then the applicable system technical specification action statements must be followed.
  - c. Corrective action shall be either replacement or repair per IWP-3111, or shall be an analysis to demonstrate that the condition does not impair pump operability and that the pump will still fulfill its function. A new set of reference values shall be established after such analysis.
  - d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any technical specification.
3. When tests show deviations greater than allowed (see Table IWP-3100-2), the instruments involved may be recalibrated and the test rerun. This is an alternative to replacement or repair, not an additional action that can be taken before declaring the pump inoperative.
4. The pump shall not be returned to service until the condition has been corrected. The corrective action shall be considered completed when a satisfactory inservice test has been conducted in accordance with IWP-3111.

Per IWP-3500 each pump shall run at least 5 minutes under conditions as stable as the system permits prior to measurement of the specified parameters (when bearing temperature measurements are not required). When bearing temperature measurements are required, each pump shall be run until the bearing temperatures stabilize prior to making the specified measurements. A bearing temperature is considered stable when three successive readings taken at 10 minute intervals do not vary by more than 3%. Bearing temperature measurements are required annually (normally in August).

Records of the results of inservice tests and corrective actions as required by subsection IWP-6000 are trended in tabular form. Pump performance characteristics will be examined for trends.



The following three sections of this document are the "Pump Testing Outlines", "Pump Minimum Operating Point (MOP) Curves", 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 on the Pump Testing Outlines and throughout the IST Program for pumps:

1. Under Parameter column
  - a. (N) - Speed
  - b. (PI) - Inlet Pressure
  - c. ( $\Delta P$ ) - Differential Pressure
  - d. (Q) - Flowrate
  - e. (V) - Vibration
  - f. (Tb) - Bearing Temperature
  - g. (L) - Lubricant Level or Pressure
2. Under 1OST column
  - a. (1BVT) - Unit 1 Beaver Valley Test
  - b. (1OST) - Unit 1 Operating Surveillance Test
  - c. (Q) - Quarterly Test Frequency
  - d. (A) - Annual Test Frequency
  - e. (CSD) - Cold Shutdown Frequency
  - f. (R) - Refueling Test Frequency
  - g. (NA) - Not Applicable
3. Under Req'd column
  - a. (RR) - Relief Request
  - b. (X) - Meets or exceeds ASME requirements
  - c. (E) - Exempt
  - d. (NA) - Not Applicable

The "Pump Minimum Operating Point (MOP) Curves" section contains a graphical representation of the minimum allowable pump flow versus head, which is required to meet the applicable safety analysis, for each pump in the Unit 1 IST Program.

The "Pump Relief Requests" section contains the detailed technical description of particular conditions and equipment installations 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 to meet the intent of 10CFR50.55a. The relief request(s) for a specific pump is referenced by the number(s) listed on the pump's testing outline sheet.

## **SECTION II: PUMP TESTING OUTLINES**

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 1A Charging Pump		<b>Pump Number:</b> 1CH-P-1A	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 7-1 <b>Dwg. Coord.:</b> C-4
<b>Function:</b> To provide normal RCS inventory and Hi Head Safety Injection		<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	7.4 (Q)	X	Installed instrumentation or temporary test gauge at pump suction (local).	
	11.14 (R)	X	Installed instrumentation or temporary test gauge at pump suction (local).	
$\Delta P$	7.4 (Q)	X	$\Delta P$ is calculated using the Pump Discharge Pressure Indicator [PI-1CH-151] (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).	
	11.14 (R)	X	$\Delta P$ is calculated using the Pump Discharge Pressure Indicator [PI-1CH-151] or temporary test gauge (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).	
Q	7.4 (Q)	X	Summation of flow rates from RCP Seal Injection Flow Indicators [FI-1CH-130], [FI-1CH-127], and [FI-1CH-124] and Charging Flow Indicator [FI-1CH-122A] or Fill Flow Indicator [FI-1CH-160] and assumed flow through mini flow line.	
	11.14 (R)	X	Summation of flow rates from RCP Seal Injection Flow Indicators [FI-1CH-130], [FI-1CH-127] and [FI-1CH-124] and Charging Flow Indicator [FI-1CH-122A] or HHSI to Hot & Cold Leg Hdr Flow [FI-1SI-943].	
V	7.4 (Q)	RR-1	Portable monitoring equipment using velocity units.	
	11.14 (R)	RR-1	Portable monitoring equipment using velocity units.	
Tb	NA	RR-1	Annual pump bearing temperature measurement will not be taken since vibration is measured in velocity units.	
L	7.4 (Q)	X	Lubricant Oil Filter Pressure Gauge [FI-1CH-161A1] (local). Sightglass on oil reservoir (local).	
	11.14 (R)	X	Lubricant Oil Filter Pressure Gauge [FI-1CH-161A1] (local). Sightglass on oil reservoir (local).	

BVPS-1 IST			
PUMP TESTING OUTLINE			
<b>Pump Name:</b> 1B Charging Pump		<b>Pump Number:</b> 1CH-P-1B	<b>Code Class:</b> 2
		<b>Dwg. OM No.:</b> 7-1	<b>System:</b> 7 Chemical and Volume Control
		<b>Dwg. Coord.:</b> D-4	
<b>Function:</b> To provide normal RCS inventory and Hi Head Safety Injection		<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1.
Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	7.5 (Q)	X	Installed instrumentation or temporary test gauge at pump suction (local).
	11.14 (R)	X	Installed instrumentation or temporary test gauge at pump suction (local).
$\Delta P$	7.5 (Q)	X	$\Delta P$ is calculated using the Pump Discharge Pressure Indicator [PI-1CH-152] (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
	11.14 (R)	X	$\Delta P$ is calculated using the Pump Discharge Pressure Indicator [PI-1CH-152] or temporary test gauge (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
Q	7.5 (Q)	X	Summation of flow rates from RCP Seal Injection Flow Indicators [FI-1CH-130], [FI-1CH-127], and [FI-1CH-124] and Charging Flow Indicator [FI-1CH-122A] or Fill Flow indicator [FI-1CH-160] and assumed flow through mini flow line.
	11.14 (R)	X	Summation of flow rates from RCP Seal Injection Flow Indicators [FI-1CH-130], [FI-1CH-127] and [FI-1CH-124] and Charging Flow Indicator [FI-1CH-122A] or HHSI to Hot & Cold Leg Hdr Flow [FI-1SI-943].
V	7.5 (Q)	RR-1	Portable monitoring equipment using velocity units.
	11.14 (R)	RR-1	Portable monitoring equipment using velocity units.
Tb	NA	RR-1	Annual pump bearing temperature measurement will not be taken since vibration is measured in velocity units.
L	7.5 (Q)	X	Lubricant Oil Filter Pressure Gauge [FI-1CH-161B1] (local). Sightglass on oil reservoir (local).
	11.14 (R)	X	Lubricant Oil Filter Pressure Gauge [FI-1CH-161B1] (local). Sightglass on oil reservoir (local).

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 1C Charging Pump		<b>Pump Number:</b> 1CH-P-1C	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 7-1 <b>Dwg. Coord.:</b> E-4
<b>Function:</b> To provide normal RCS inventory and Hi Head Safety Injection		<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	7.6 (Q)	X	Installed instrumentation or temporary test gauge at pump suction (local).	
	11.14 (R)	X	Installed instrumentation or temporary test gauge at pump suction (local).	
ΔP	7.6 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-153] (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).	
	11.14 (R)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-153] or temporary test gauge (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).	
Q	7.6 (Q)	X	Summation of flow rates from RCP Seal Injection Flow Indicators [FI-1CH-130], [FI-1CH-127], and [FI-1CH-124] and Charging Flow Indicator [FI-1CH-122A] or Fill Flow Indicator [FI-1CH-160] and assumed flow through mini flow line.	
	11.14 (R)	X	Summation of flow rates from RCP Seal Injection Flow Indicators [FI-1CH-130], [FI-1CH-127] and [FI-1CH-124] and Charging Flow Indicator [FI-1CH-122A] or HHSI to Hot & Cold Leg Hdr Flow [FI-1SI-943]	
V	7.6 (Q)	RR-1	Portable monitoring equipment using velocity units.	
	11.14 (R)	RR-1	Portable monitoring equipment using velocity units.	
Tb	NA	RR-1	Annual pump bearing temperature measurement will not be taken since vibration is measured in velocity units.	
L	7.6 (Q)	X	Lubricant Oil Filter Pressure Gauge [FI-1CH-161C1] (local). Sightglass on oil reservoir (local).	
	11.14 (R)	X	Lubricant Oil Filter Pressure Gauge [FI-1CH-161C1] (local). Sightglass on oil reservoir (local).	

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 2A Boric Acid Transfer Pump		<b>Pump Number:</b> 1CH-P-2A	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 7-3 <b>Dwg. Coord.:</b> C-3
<b>Function:</b> Chemical Shim and Emergency Boration Supply		<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1, RR2 and RR3.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	7.1 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi from the level in the Boric Acid Storage Tank, [LI-1CH-106(161)], Control Room.	
	7.13 (R)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi from the level in the Boric Acid Storage Tank, [LI-1CH-106(161)], Control Room.	
$\Delta P$	7.1 (Q)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1CH-110], local, and the calculated Pi, Control Room.	
	7.13 (R)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1CH-110], local, and the calculated Pi, Control Room.	
Q	7.1 (Q)	RR3	No installed instrumentation to measure flow rate quarterly.	
	7.13 (R)	X	Flow rate measurement by tank level change over time performed at refuelings.	
V	7.1 (Q)	RR1	Portable monitoring equipment using velocity units.	
	7.13 (R)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	7.1 (Q)	X	Bearing housing provided with sightglass at oil level reservoir, local.	
	7.13 (R)	X	Bearing housing provided with sightglass at oil level reservoir, local.	



## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 2B Boric Acid Transfer Pump			<b>Pump Number:</b> 1CH-P-2B	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 7-3 <b>Dwg. Coord.:</b> G-3	<b>System:</b> 7 Chemical and Volume Control
<b>Function:</b> Chemical Shim and Emergency Boration Supply				<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1, RR2 and RR3.	
<b>Parameter</b>	<b>10ST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>			
<b>N</b>	NA	NA	Constant speed induction motor.			
<b>Pi</b>	7.2 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi from the level in the Boric Acid Storage Tank, [LI-1CH-106(161)], Control Room.			
	7.14 (R)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi from the level in the Boric Acid Storage Tank, [LI-1CH-106(161)], Control Room.			
<b>ΔP</b>	7.2 (Q)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1CH-105A], local, and the calculated Pi, Control Room.			
	7.14 (R)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1CH-105A], local, and the calculated Pi, Control Room.			
<b>Q</b>	7.2 (Q)	RR3	No installed instrumentation to measure flow rate quarterly.			
	7.14 (R)	X	Flow rate measurement by tank level change over time performed at refuelings.			
<b>V</b>	7.2 (Q)	RR1	Portable monitoring equipment using velocity units.			
	7.14 (R)	RR1	Portable monitoring equipment using velocity units.			
<b>Tb</b>	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.			
<b>L</b>	7.2 (Q)	X	Bearing housing provided with sightglass at oil level reservoir, local.			
	7.14 (R)	X	Bearing housing provided with sightglass at oil level reservoir, local.			

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1A Residual Heat Removal Pump		<b>Pump Number:</b> 1RH-P-1A	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 10-1 <b>Dwg. Coord.:</b> E-3	<b>System:</b> 10 Residual Heat Removal
<b>Function:</b> Long Term Decay Heat Removal			<b>Type:</b> Vertical	<b>Remarks:</b> See RR4 Pump is tested quarterly during cold shutdowns and refueling outages.	
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
Pi	10.1 (CSD,R)	X	No permanently installed suction pressure gauge, temporary test gauge installed on [1RH-200] for test, local.		
$\Delta P$	10.1 (CSD,R)	X	Calculated using pump discharge pressure indicator [PI-1RH-600], local, and pump suction pressure (local) or from temporary $\Delta P$ gauge installed between [1RH-200] and [1RH-213], local.		
Q	10.1 (CSD,R)	X	Flow indicator [FI-1RH-605], Control Room.		
V	10.1 (CSD,P)	X	Portable monitoring equipment.		
Tb	10.1 (A)	X	Pump bearings in driver. Portable monitoring equipment required (i.e., contact pyrometer) or Control Room computer address points for thermocouples provided for bearings. Motor Inboard bearing (T0686A), Motor Outboard bearing (T0687A).		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1B Residual Heat Removal Pump		<b>Pump Number:</b> 1RH-P-1B	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 10-1 <b>Dwg. Coord.:</b> F-3	<b>System:</b> 10 Residual Heat Removal
<b>Function:</b> Long Term Decay Heat Removal			<b>Type:</b> Vertical	<b>Remarks:</b> See KR4. Pump is tested quarterly during cold shutdowns and refueling outages.	
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
PI	10.1 (CSD,R)	X	No permanently installed suction pressure gauge, temporary test gauge installed on [1RH-200] for test, local.		
$\Delta P$	10.1 (CSD,R)	X	Calculated using pump discharge pressure indicator [PI-1RH-601], local, and pump suction pressure (local) or from temporary $\Delta P$ gauge installed between [1RH-200] and [1RH-213], local.		
Q	10.1 (CSD,R)	X	Flow indicator [FI-1RH-605], Control Room.		
V	10.1 (CSD,R)	X	Portable monitoring equipment.		
Tb	10.1 (A)	X	Pump bearings in driver. Portable monitoring equipment required (i.e., contact pyrometer) or Control Room computer address points for thermocouples provided for bearings. Motor Inboard bearing (T0696A), Motor Outboard bearing (T0697A).		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1A Low Head Safety Injection Pump		<b>Pump Number:</b> 1SI-P-1A	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 11-1 <b>Dwg. Coord.:</b> F-2	<b>System:</b> 11 Safety Injection
<b>Function:</b> Low Pressure - High Volume Safety Injection and Long Term Recirculation			<b>Type:</b> Vertical	<b>Remarks:</b> See RR2. Pump is tested quarterly on recirculation flow and at full flow during refueling outages.	
<b>Parameter</b>	<b>10ST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>		
N	NA	NA	Constant speed induction motor.		
Pi	11.1 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using RWST level indicators [LI-1QS-100A-D], Control Room.		
	11.14 (R)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using RWST level indicators [LI-1QS-100A-D], Control Room.		
ΔP	11.1 (Q)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1SI-943], local, and the calculated Pi, Control Room.		
	11.14 (R)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1SI-943], local, and the calculated Pi, Control Room.		
Q	11.1 (Q)	X	Flow indicator [FI-1SI-941], local. (Mini flow and test line flow indicator).		
	11.14 (R)	X	Flow indicator [FI-1SI-941], local and [FI-1SI-945], Control Room.		
V	11.1 (Q)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.		
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.		
Tb	11.1 (A)	X	Control Room computer address points for thermocouple provided for pump bearings. Top pump bearing (T0911A)		
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 1B Low Head Safety Injection Pump		<b>Pump Number:</b> 1SI-P-1B	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 11-1 <b>Dwg. Coord.:</b> F-4
<b>Function:</b> Low Pressure - High Volume Safety Injection and Long Term Recirculation		<b>Type:</b> Vertical	<b>Remarks:</b> See RR2. Pump is tested quarterly on recirculation flow and at full flow during refueling outages.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	11.2 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using RWST level indicators [LI-1QS-100A-D], Control Room.	
	11.14 (R)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using RWST level indicators [LI-1QS-100A-D], Control Room.	
$\Delta P$	11.2 (Q)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1SI-944], local, and the calculated Pi, Control Room.	
	11.14 (R)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1SI-944], local, and the calculated Pi, Control Room.	
Q	11.2 (Q)	X	Flow indicator [FI-1SI-941], local. (Mini flow and test line flow indicator).	
	11.14 (R)	X	Flow indicator [FI-1SI-941], local and [FI-1SI-946], Control Room.	
V	11.2 (Q)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.	
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.	
Tb	11.2 (A)	X	Control Room computer address points for thermocouple provided for pump bearings. Top pump bearing (T0921A).	
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually.	
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.	

BVPS-1 IST

PUMP TESTING OUTLINE

Pump Name: 1A Quench Spray Pump		Pump Number: 1QS-P-1A	Code Class: 2	Dwg. OM No.: 13-1 Dwg. Coord.: D-5	System: 13 Containment Depressurization
Function: To provide a flow of borated water for containment depressurization following a DBA.			Type: Centrifugal	Remarks: See RR1.	
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
Pi	13.1 (Q)	X	Installed instrumentation or temporary test gauge at pump suction (local).		
ΔP	13.1 (Q)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1CH-151], local, and the pump inlet pressure from either the installed instrument or the temporary test gauge (local).		
Q	13.1 (Q)	X	Total flow calculated by summing flow rates from spray line flow indicator [FI-1QS-104] and recirculation line flow indicator [FI-1QS-103], local.		
V	13.1 (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	13.1 (Q)	X	Level indication provided at constant level oilers (local) on each bearing housing.		



**BVPS-1 IST**

**PUMP TESTING OUTLINE**

<b>Pump Name:</b> 1B Quench Spray Pump		<b>Pump Number:</b> 1QS-P-1B	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> D-6	<b>System:</b> 13 Containment Depressurization
<b>Function:</b> To provide a flow of borated water for containment depressurization following a DBA			<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1.	
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
Pi	13.2 (Q)	X	Installed instrumentation or temporary test gauge at pump suction (local).		
$\Delta P$	13.2 (Q)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1CH-151], local, and the pump inlet pressure from either the installed instrument or the temporary test gauge (local).		
Q	13.2 (Q)	X	Total flow calculated by summing flow rates from spray line flow indicator [FI-1QS-104] and recirculation line flow indicator [FI-1QS-103], local.		
V	13.2 (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	13.2 (Q)	X	Level indication provided at constant level oilers (local) on each bearing housing.		

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 4A Chemical Injection Pump		<b>Pump Number:</b> 1QS-P-4A	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> F-10
<b>Function:</b> Chemical Injection during Containment Depressurization.		<b>Type:</b> Positive Displacement	<b>Remarks:</b> See RR1 and RR5.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
PI	13.10A (Q)	RR5	Positive displacement pump. No suction pressure indication provided.	
$\Delta P$	13.10A (Q)	RR5	Positive displacement pump. Based on pump discharge pressure indicator [PI-1QS-400A], local.	
Q	13.10A (Q)	X	Will check using recirculation line flow indicator [FI-1QS-108], local.	
V	13.10A (Q)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	NA	NA	No lubricant level or pressure to observe. Bearings are grease lubricated.	

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 4B Chemical Injection Pump		<b>Pump Number:</b> 1QS-P-4B	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> F-9
<b>Function:</b> Chemical Injection during Containment Depressurization.		<b>Type:</b> Positive Displacement	<b>Remarks:</b> See RR1 and RR5.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	13.10B (Q)	RR5	Positive displacement pump. No suction pressure indication provided.	
$\Delta P$	13.10B (Q)	RR5	Positive displacement pump. Based on pump discharge pressure indicator [PI-1QS-400B], local.	
Q	13.10B (Q)	X	Will check using recirculation line flow indicator [FI-1QS-108], local.	
V	13.10B (Q)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	NA	NA	No lubricant level or pressure to observe. Bearings are grease lubricated.	

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 4C Chemical Injection Pump		<b>Pump Number:</b> 1QS-P-4C	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> G-10
<b>Function:</b> Chemical Injection during Containment Depressurization.		<b>Type:</b> Positive Displacement	<b>Remarks:</b> See RR1 and RR5.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	13.10A (Q)	RR5	Positive displacement pump. No suction pressure indication provided.	
$\Delta P$	13.10A (Q)	RR5	Positive displacement pump. Based on pump discharge pressure indicator [PI-1QS-400A], local.	
Q	13.10A (Q)	X	Will check using recirculation line flow indicator [FI-1QS-108], local.	
V	13.10A (Q)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	NA	NA	No lubricant level or pressure to observe. Bearings are grease lubricated.	

## BVPS-1 IST

## PUMP TESTING OUTLINE

Pump Name: 4D Chemical Injection Pump		Pump Number: 1QS-P-4D	Code Class: 2	Dwg. OM No.: 13-1 Dwg. Coord.: G-9	System: 13 Containment Depressurization
Function: Chemical Injection during Containment Depressurization.			Type: Positive Displacement	Remarks: See RR1 and RR5	
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
Pi	13.10B (Q)	RR5	Positive displacement pump. No suction pressure indication provided.		
ΔP	13.10B (Q)	RR5	Positive displacement pump. Based on pump discharge pressure indicator [PI-1QS-400B], local.		
Q	13.10B (Q)	X	Will check using recirculation line flow indicator [FI-1QS-108], local.		
V	13.10B (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	NA	NA	No lubricant level or pressure to observe. Bearings are grease lubricated.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1A Inside Recirculation Spray Pump		<b>Pump Number:</b> 1RS-P-1A	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> E-2	<b>System:</b> 13 Containment Depressurization
<b>Function:</b> Circulate containment sump water for long term containment depressurization.		<b>Type:</b> Vertical		<b>Remarks:</b> See RR1, RR2 & RR6. Pump is normally tested dry in Modes 1 through 4, with flow during refueling outages only.	
Parameter	1OST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
Pi	13.3 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.		
	1BVT 1.13.5 (R)	RR2	Calculate Pi using the level in the sump, local.		
$\Delta P$	13.3 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.		
	1BVT 1.13.5 (R)	X	$\Delta P$ is calculated using the installed discharge pressure test gauge and the calculated Pi, local.		
Q	13.3 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.		
	1BVT 1.13.5 (R)	X	Recirculation test line flow measured by differential pressure across local flow orifice.		
V	13.3 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.		
	1BVT 1.13.5 (R)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		



BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 1B Inside Recirculation Spray Pump		<b>Pump Number:</b> 1RS-P-1B	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> E-3
<b>Function:</b> Circulate containment sump water for long term containment depressurization.		<b>Type:</b> Vertical	<b>Remarks:</b> See RR1, RR2 & RR6. Pump is normally tested dry in Modes 1 through 4, with flow during refueling outages only.	
Parameter	1OST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	13.4 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.	
	1BVT 1.13.5 (R)	RR2	Calculate Pi using the level in the sump, local.	
$\Delta P$	13.4 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.	
	1BVT 1.13.5 (R)	X	$\Delta P$ is calculated using the installed discharge pressure test gauge and the calculated Pi, local.	
Q	13.4 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.	
	1BVT 1.13.5 (R)	X	Recirculation test line flow measured by differential pressure across local flow orifice.	
V	13.4 (Q)	RR6	Pump run dry for not more than 60 seconds and stopped when 100 rpm is reached.	
	1BVT 1.13.5 (R)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	NA	N	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.	

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 2A Outside Recirculation Spray Pump		<b>Pump Number:</b> 1RS-P-2A	<b>Code Class:</b> 2	<b>Dwg. OM No.:</b> 13-1 <b>Dwg. Coord.:</b> F-5
<b>System:</b> 13 Containment Depressurization				
<b>Function:</b> Circulate containment sump water for long term containment depressurization.		<b>Type:</b> Vertical		<b>Remarks:</b> See RR1 and RR7. Pump is normally tested dry in Modes 1 through 4, with flow during refueling outages only.
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	13.5 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.	
	13.7 (R)	X	No permanently installed suction pressure gauge, temporary test gauge installed at pump suction (local).	
$\Delta P$	13.5 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.	
	13.7 (R)	X	$\Delta P$ is calculated using the installed Discharge Pressure Indicator [FI-1RS-156A], local, and local pressure gauge at pump suction.	
Q	13.5 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.	
	13.7 (R)	X	Flow recorded using local Flow Indicator [FI-1RS-157A].	
V	13.5 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.	
	13.7 (R)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.	

BVPS-1 IST			
PUMP TESTING OUTLINE			
<b>Pump Name:</b> 2B Outside Recirculation Spray Pump		<b>Pump Number:</b> 1RS-P-2B	<b>Code Class:</b> 2
		<b>Dwg. OM No.:</b> 13-1	<b>System:</b> 13 Containment Depressurization
		<b>Dwg. Coord.:</b> F-7	
<b>Function:</b> Circulate containment sump water for long term containment depressurization.		<b>Type:</b> Vertical	<b>Remarks:</b> See RR1 and RR7. Pump is normally tested dry in Modes 1 through 4, with flow during refueling outages only.
Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.6 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.
	13.7 (R)	X	No permanently installed suction pressure gauge, temporary test gauge installed at pump suction (local).
$\Delta P$	13.6 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.
	13.7 (R)	X	$\Delta P$ is calculated using the installed Discharge Pressure Indicator [FI-1RS-156B], local, and local pressure gauge at pump suction.
Q	13.6 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.
	13.7 (R)	X	Flow recorded using local Flow Indicator [FI-1RS-157B].
V	13.6 (Q)	RR7	Pump run dry for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation.
	13.7 (R)	RR1	Portable monitoring equipment using velocity units.
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 1A Component Cooling Water Pump		<b>Pump Number:</b> 1CC-P-1A	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 15-1 <b>Dwg. Coord.:</b> E-6
<b>Function:</b> To provide cooling water to RX Plant Components.			<b>Type:</b> Centrifugal	<b>System:</b> 15 Reactor Plant Component Cooling Water <b>Remarks:</b> See RR1.
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	15.1 (Q)	X	Local suction pressure indicator [PI-1CC-181].	
$\Delta P$	15.1 (Q)	X	Calculated using discharge pressure indicator [PI-1CC-100A] and pump suction pressure, local.	
Q	15.1 (Q)	X	Summation of total flow from indicators [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119], Control Room, or local gages.	
V	15.1 (Q)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	15.1 (Q)	X	Bearing housing provided with sightglass at oil level reservoir indicator, local.	

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1B Component Cooling Water Pump		<b>Pump Number:</b> 1CC-P-1B	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 15-1	<b>System:</b> 15 Reactor Plant Component Cooling Water
				<b>Dwg. Coord.:</b> E-7	
<b>Function:</b> To provide cooling water to RX Plant Components.			<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1.	
<b>Parameter</b>	<b>10ST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>		
<b>N</b>	NA	NA	Constant speed induction motor.		
<b>Pi</b>	15.2 (Q)	X	Local suction pressure indicator [PI-1CC-183].		
<b>ΔP</b>	15.2 (Q)	X	Calculated using discharge pressure indicator [PI-1CC-100B] and pump suction pressure, local.		
<b>Q</b>	15.2 (Q)	X	Summation of total flow from indicators [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119], Control Room, or local gages.		
<b>V</b>	15.2 (Q)	RR1	Portable monitoring equipment using velocity units.		
<b>Tb</b>	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
<b>L</b>	15.2 (Q)	X	Bearing housing provided with sightglass at oil level reservoir indicator, local.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1C Component Cooling Water Pump		<b>Pump Number:</b> 1CC-P-1C	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 15-1 <b>Dwg. Coord.:</b> E-8	<b>System:</b> 15 Reactor Plant Component Cooling Water
<b>Function:</b> To provide cooling water to RX Plant Components.			<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1.	
<b>Parameter</b>	<b>10ST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>		
N	NA	NA	Constant speed induction motor.		
Pi	15.3 (Q)	X	Local suction pressure indicator [PI-1CC-185].		
ΔP	15.3 (Q)	X	Calculated using discharge pressure indicator [PI-1CC-100C] and pump suction pressure, local.		
Q	15.3 (Q)	X	Summation of total flow from indicators [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119], Control Room, or local gages.		
V	15.3 (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	15.3 (Q)	X	Bearing housing provided with sightglass at oil level reservoir indicator, local.		



BVPS-1 IST

PUMP TESTING OUTLINE

<b>Pump Name:</b> Steam Driven Auxiliary Feed Pump		<b>Pump Number:</b> 1FW-P-2	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 24-2	<b>System:</b> 24 Auxiliary Feedwater
				<b>Dwg. Coord.:</b> F-7	
<b>Function:</b> Provide emergency make-up during any loss of normal feedwater			<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1 and RR8. Pump is tested quarterly on a staggered test basis on recirculation flow and at full flow during cold shutdowns and refueling outages.	
<b>Parameter</b>	<b>10ST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>		
<b>N</b>	24.4 (Q)	X	No installed rpm indication. Use portable monitoring equipment-stroboscope.		
	24.9 (CSD,R)	X	No installed rpm indication. Use portable monitoring equipment-stroboscope.		
<b>Pi</b>	24.4 (Q)	X	Local suction pressure indicator [PI-1FW-156].		
	24.9 (CSD,R)	X	Local suction pressure indicator [PI-1FW-156].		
<b>ΔP</b>	24.4 (Q)	X	Calculated using discharge pressure indicator [PI-1FW-155] and pump suction pressure, local.		
	24.9 (CSD,R)	X	Calculated using discharge pressure indicator [PI-1FW-155] and pump suction pressure, local.		
<b>Q</b>	24.4 (Q)	RR8	Flow measurement performed at cold shutdowns and refueling outages.		
	24.9 (CSD,R)	X	Summation of flow to Steam Generators through flow indicators [FI-1FW-100A, B and C], Control Room.		
<b>V</b>	24.4 (Q)	RR1	Portable monitoring equipment using velocity units.		
	24.9 (CSD,R)	RR1	Portable monitoring equipment using velocity units.		
<b>Tb</b>	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
<b>L</b>	24.4 (Q)	X	Visual check of oil level in oil pump suction line.		
	24.9 (CSD,R)	X	Visual check of oil level in oil pump suction line.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 3A Motor Driven Auxiliary Feed Pump		<b>Pump Number:</b> 1FW-P-3A	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 24-2	<b>System:</b> 24 Auxiliary Feedwater
				<b>Dwg. Coord.:</b> F-2	
<b>Function:</b> Provide emergency make-up during any loss of normal feedwater			<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1 and RR8. Pump is tested quarterly on a staggered test basis on recirculation flow and at full flow during cold shutdowns and refueling outages.	
<b>Parameter</b>	<b>10ST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>		
<b>N</b>	NA	NA	Constant speed induction motor.		
<b>Pi</b>	24.2 (Q)	X	Local suction pressure indicator [PI-1FW-156A].		
	24.8 (CSD,R)	X	Local suction pressure indicator [PI-1FW-156A].		
<b>ΔP</b>	24.2 (Q)	X	Calculated using discharge pressure indicator [PI-1FW-155A] and pump suction pressure, local.		
	24.8 (CSD,R)	X	Calculated using discharge pressure indicator [PI-1FW-155A] and pump suction pressure, local.		
<b>Q</b>	24.2 (Q)	RR8	Flow measurement performed at cold shutdowns and refueling outages.		
	24.8 (CSD,R)	X	Summation of flow to Steam Generators through flow indicators [FI-1FW-100A, B and C], Control Room.		
<b>V</b>	24.2 (Q)	RR1	Portable monitoring equipment using velocity units.		
	24.8 (CSD,R)	RR1	Portable monitoring equipment using velocity units.		
<b>Tb</b>	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
<b>L</b>	24.2 (Q)	X	Visual check of oil level in oil pump suction line.		
	24.8 (CSD,R)	X	Visual check of oil level in oil pump suction line.		

BVPS-1 IST			
PUMP TESTING OUTLINE			
<b>Pump Name:</b> 3B Motor Driven Auxiliary Feed Pump		<b>Pump Number:</b> 1FW-P-3B	<b>Code Class:</b> 3 <b>Dwg. OM No.:</b> 24-2 <b>Dwg. Coord.:</b> F-5
<b>Function:</b> Provide emergency make-up during any loss of normal feedwater		<b>Type:</b> Centrifugal	<b>Remarks:</b> See RR1 and RR8. Pump is tested quarterly on a staggered test basis on recirculation flow and at full flow during cold shutdowns and refueling outages.
Parameter	IOST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	24.3 (Q)	X	Local suction pressure indicator [PI-1FW-156B].
	24.8 (CSD,R)	X	Local suction pressure indicator [PI-1FW-156B].
$\Delta P$	24.3 (Q)	X	Calculated using discharge pressure indicator [PI-1FW-155B] and pump suction pressure, local.
	24.8 (CSD,R)	X	Calculated using discharge pressure indicator [PI-1FW-155B] and pump suction pressure, local.
Q	24.3 (Q)	RR8	Flow measurement performed at cold shutdowns and refueling outages.
	24.8 (CSD,R)	X	Summation of flow to Steam Generators through flow indicators [FI-1FW-100A, B and C], Control Room.
V	24.3 (Q)	RR1	Portable monitoring equipment using velocity units.
	24.8 (CSD,R)	RR1	Portable monitoring equipment using velocity units.
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.
L	24.3 (Q)	X	Visual check of oil level in oil pump suction line.
	24.8 (CSD,R)	X	Visual check of oil level in oil pump suction line.

BVPS-1 IST			
PUMP TESTING OUTLINE			
<b>Pump Name:</b> 1A River Water Pump		<b>Pump Number:</b> 1WR-P-1A	<b>Code Class:</b> 3
		<b>Dwg. OM No.:</b> 30-1 <b>Dwg. Coord.:</b> B-1	<b>System:</b> 30 River Water
<b>Function:</b> To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.		<b>Type:</b> Vertical	<b>Remarks:</b> See RR1 and RR2.
Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	30.2 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using the Ohio river level recorder [LR-1CW-101], local.
$\Delta P$	30.2 (Q)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1RW-101A] and the calculated Pi, local.
Q	30.2 (Q)	X	Flow indicator [FI-1RW-102A], Control Room.
V	30.2 (Q)	RR1	Portable monitoring equipment using velocity units.
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity.
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1B River Water Pump		<b>Pump Number:</b> 1WR-P-1B	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 30-1 <b>Dwg. Coord.:</b> C-1	<b>System:</b> 30 River Water
<b>Function:</b> To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.			<b>Type:</b> Vertical	<b>Remarks:</b> See RR1 and RR2.	
<b>Parameter</b>	<b>1OST (Frequency)</b>	<b>Req'd</b>	<b>Comments</b>		
N	NA	NA	Constant speed induction motor.		
Pi	30.3 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using the Ohio river level recorder [LR-1CW-101], local.		
$\Delta P$	30.3 (Q)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1RW-101B] and the calculated Pi, local.		
Q	30.3 (Q)	X	Flow indicator [FI-1RW-102B], Control Room.		
V	30.3 (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		

BVPS-1 IST			
PUMP TESTING OUTLINE			
<b>Pump Name:</b> 1C River Water Pump		<b>Pump Number:</b> 1WR-P-1C	<b>Code Class:</b> 3
		<b>Dwg. OM No.:</b> 30-1	<b>System:</b> 30 River Water
		<b>Dwg. Coord.:</b> D-1	
<b>Function:</b> To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.		<b>Type:</b> Vertical	<b>Remarks:</b> See RR1 and RR2.
Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	10.6 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using the Ohio river level recorder [LR-1CW-101], local.
$\Delta P$	30.6 (Q)	X	$\Delta P$ is calculated using the pump discharge pressure indicator [PI-1RW-101C] and the calculated Pi, local.
Q	30.6 (Q)	X	Flow indicator [FI-1RW-102A or B], Control Room.
V	30.6 (Q)	RR1	Portable monitoring equipment using velocity units.
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.



## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1A DG #1 Fuel Transfer Pump		<b>Pump Number:</b> 1EE-P-1A	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 36-2 <b>Dwg. Coord.:</b> B-4	<b>System:</b> 36 Station Service 4KV
<b>Function:</b> Transfer fuel from the underground tank to the day tank.			<b>Type:</b> Positive Displacement		<b>Remarks:</b> See RR1, RR9 and RR10. Pump is normally tested monthly.
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
PI	36.1 (Q)	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge is installed (positive displacement pump).		
$\Delta P$	36.1 (Q)	RR9	$\Delta P$ across a positive displacement pump is meaningless in determining pump degradation. Based on pump discharge pressure indicator [PI-1EE-101A], local.		
Q	36.1 (Q)	RR10	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate.		
V	36.1 (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

<b>Pump Name:</b> 1B DG #1 Fuel Transfer Pump		<b>Pump Number:</b> 1EE-P-1B	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 36-2 <b>Dwg. Coord.:</b> A-4	<b>System:</b> 36 Station Service 4KV
<b>Function:</b> Transfer fuel from the underground tank to the day tank.			<b>Type:</b> Positive Displacement	<b>Remarks:</b> See RR1, RR9 and RR10. Pump is normally tested monthly.	
Parameter	10ST (Frequency)	Req'd	Comments		
N	NA	NA	Constant speed induction motor.		
Pi	36.1 (Q)	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge is installed (positive displacement pump).		
$\Delta P$	36.1 (Q)	RR9	$\Delta P$ across a positive displacement pump is meaningless in determining pump degradation. Based on pump discharge pressure indicator [PI-1EE-101A], local.		
Q	36.1 (Q)	RR10	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate.		
V	36.1 (Q)	RR1	Portable monitoring equipment using velocity units.		
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.		
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.		

## BVPS-1 IST

## PUMP TESTING OUTLINE

Pump Name: 1C DG #2 Fuel Transfer Pump			Pump Number: 1EE-P-1C	Code Class: 3	Dwg. OM No.: 36-2 Dwg. Coord.: F-4	System: 36 Station Service 4KV
Function: Transfer fuel from the underground tank to the day tank.			Type: Positive Displacement		Remarks: See RR1, RR9 and RR10. Pump is normally tested monthly	
Parameter	10ST (Frequency)	Req'd	Comments			
N	NA	NA	Constant speed induction motor.			
Pi	36.2 (Q)	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge is installed (positive displacement pump).			
ΔP	36.2 (Q)	RR9	ΔP across a positive displacement pump is meaningless in determining pump degradation. Based on pump discharge pressure indicator [PI-1EE-102A], local.			
Q	36.2 (Q)	RR10	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate			
V	36.2 (Q)	RR1	Portable monitoring equipment using velocity units.			
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.			
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.			

BVPS-1 IST				
PUMP TESTING OUTLINE				
<b>Pump Name:</b> 1D DG #2 Fuel Transfer Pump		<b>Pump Number:</b> 1EE-P-1D	<b>Code Class:</b> 3	<b>Dwg. OM No.:</b> 36-2 <b>Dwg. Coord.:</b> E-4
<b>Function:</b> Transfer fuel from the underground tank to the day tank.		<b>Type:</b> Positive Displacement	<b>Remarks:</b> See RR1, RR9 and RR10. Pump is normally tested monthly.	
Parameter	10ST (Frequency)	Req'd	Comments	
N	NA	NA	Constant speed induction motor.	
Pi	36.2 (Q)	RR9	No suction pressure at pump due to physical location of suction tank (underground). Pump is self priming and no suction pressure gauge is installed (positive displacement pump).	
$\Delta P$	36.2 (Q)	RR9	$\Delta P$ across a positive displacement pump is meaningless in determining pump degradation. Based on pump discharge pressure indicator [PI-1EE-102A], local.	
Q	36.2 (Q)	RR10	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate.	
V	36.2 (Q)	RR1	Portable monitoring equipment using velocity units.	
Tb	NA	RR1	Annual pump bearing temperature measurements will not be taken since vibration is measured in velocity units.	
L	NA	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.	

**SECTION III: PUMP MINIMUM OPERATING POINT (MOP) CURVES**

**Note:** MOP Curves for the following pumps will be provided later:

1CH-P-1A

1SI-P-1A

1CC-P-1A

1CH-P-1B

1SI-P-1B

1CC-P-1B

1CH-P-1C

1QS-P-1A

1CC-P-1C

1CH-P-2A

1QS-P-1B

1WR-P-1A

1CH-P-2B

1RS-P-1A

1WR-P-1B

1RH-P-1A

1RS-P-1B

1WR-P-1C

1RH-P-1B

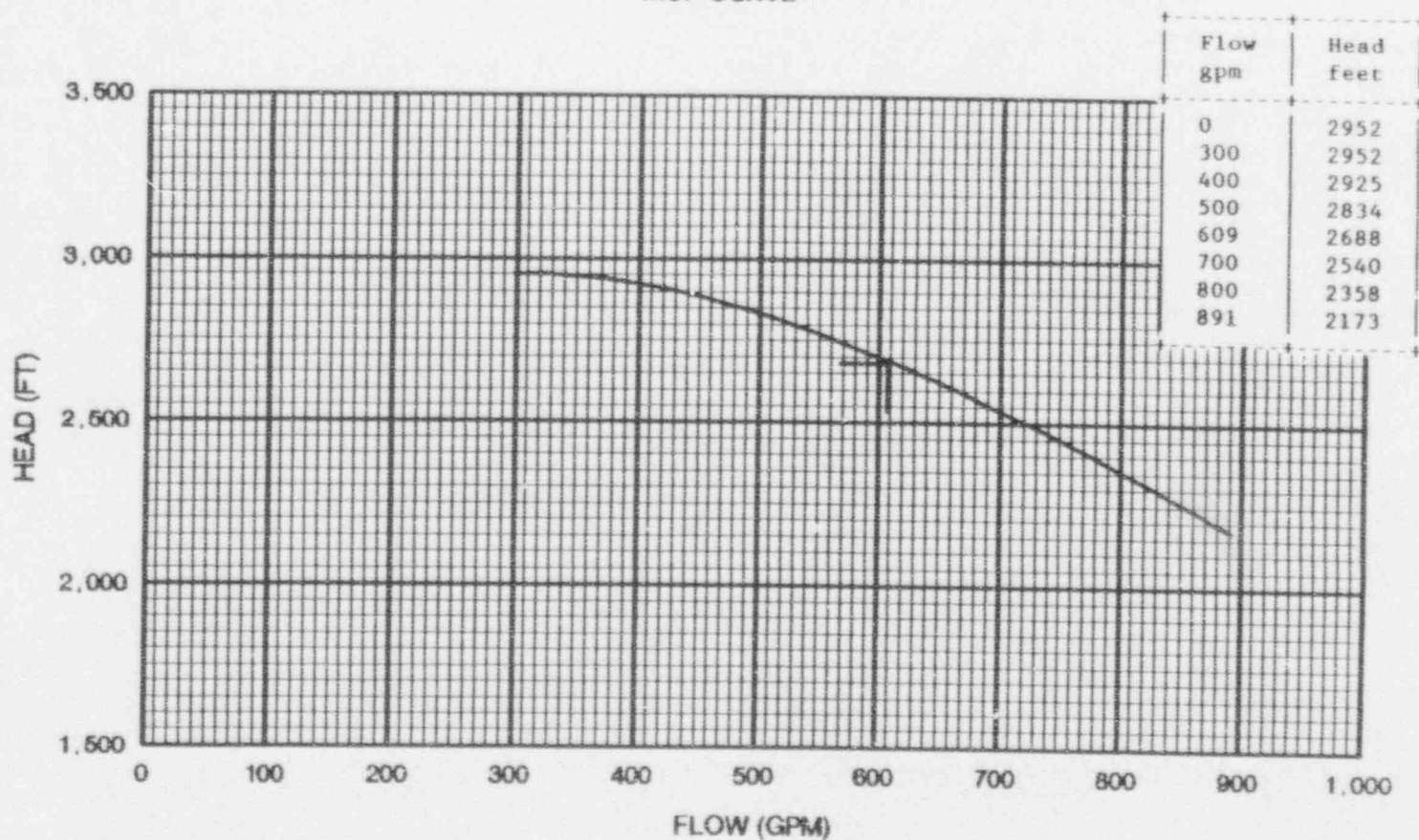
1RS-P-2A

1RS-P-2B



Pump Name: Turbine Driven Auxiliary Feed Pump

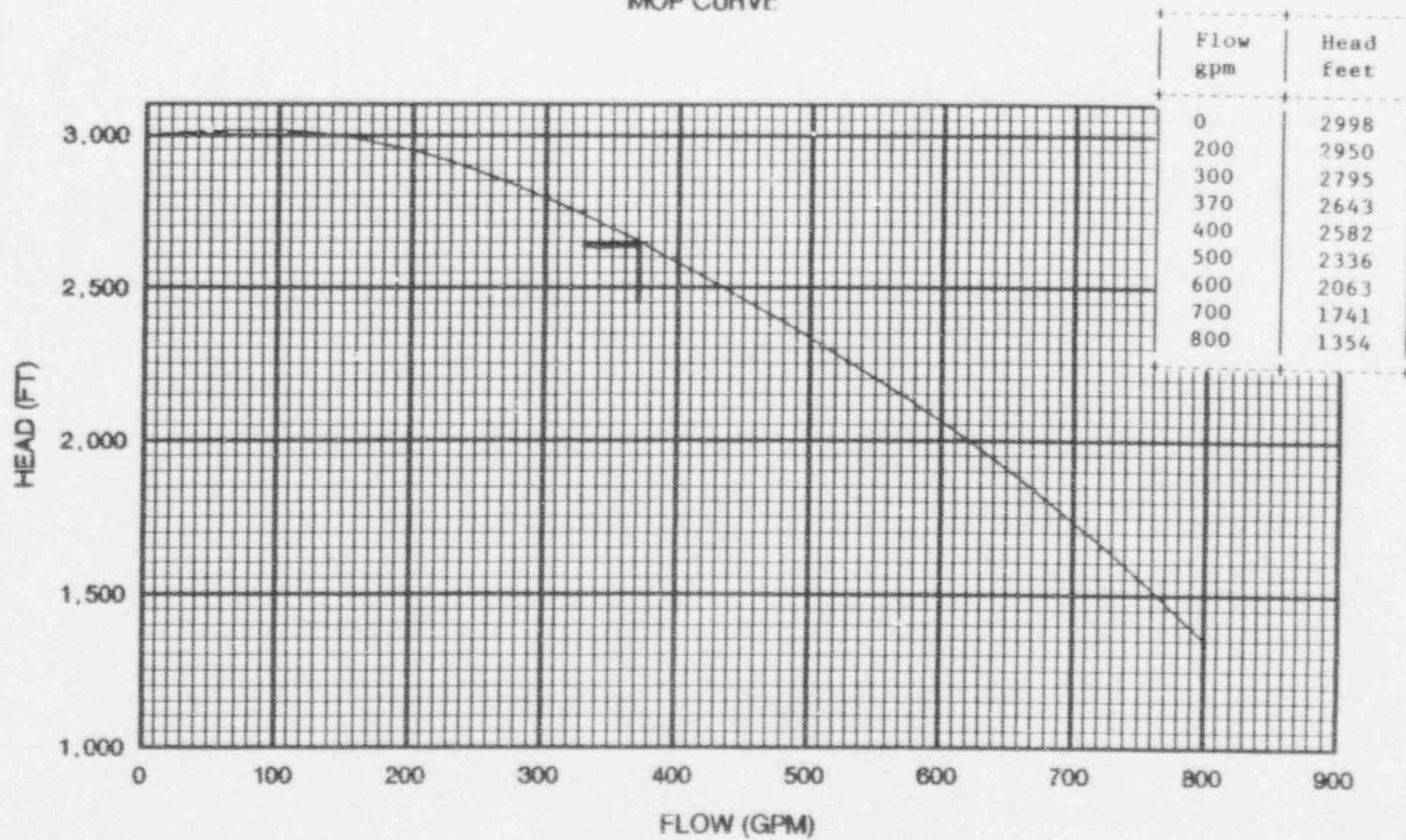
Pump Number: 1FW-P-2

1FW-P-2  
MOP CURVEDERIVED AS 90% OF MANUFACTURER'S CURVE,  
PER CALCULATION #8700.24.46 REV 0.

AUGUST 12, 1992

Pump Name: Motor Driven Auxiliary Feed Pump

Pump Number: 1FW-P-3A

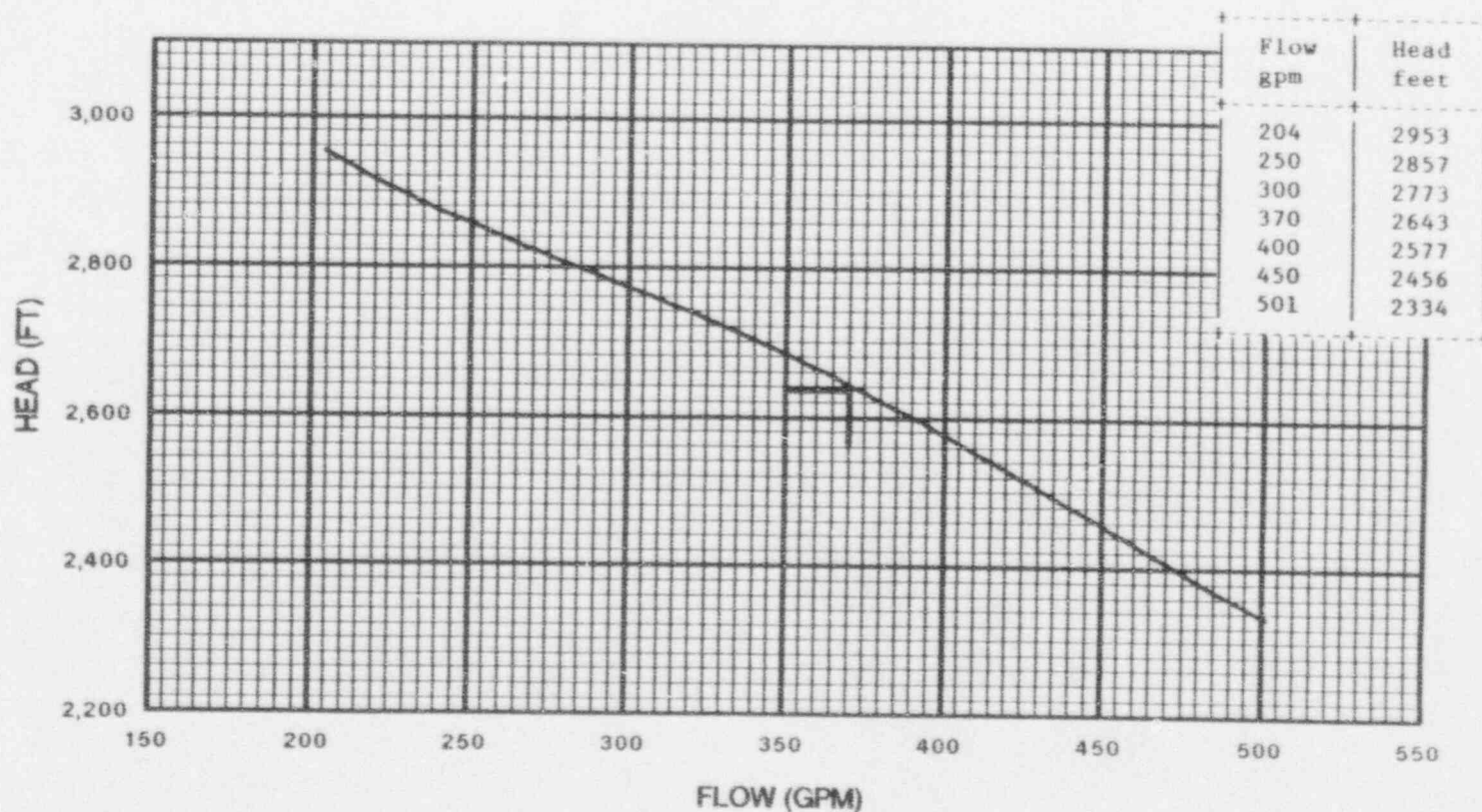
1FW-P-3A  
MOP CURVEBASED ON THE MINIMUM ANALYZED FLOW OF 350 GPM,  
PER CALCULATION #8700.24.46 REV 0.

APRIL 15, 1991

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

Pump Name: Motor Driven Auxiliary Feed Pump

Pump Number: 1FW-P-3B

1FW-P-3B  
MOP CURVE

BASED ON THE MINIMUM ANALYZED FLOW OF 350 GPM  
TO THE S/G, PER CALCULATION #8700.24.48 REV 0.  
BASELINE DATA OBTAINED ON 5/21/93 - EM 105837.

MAY 21, 1993

## **SECTION IV: PUMP TESTING RELIEF REQUESTS**

**RELIEF REQUEST** 1**Pump Mark No(s):**

1CH-P-1A	1QS-P-4A	1RS-P-2B	1WR-P-1A
1CH-P-1B	1QS-P-4B	1CC-P-1A	1WR-P-1B
1CH-P-1C	1QS-P-4C	1CC-P-1B	1WR-P-1C
1CH-P-2A	1QS-P-4D	1CC-P-1C	1EE-P-1A
1CH-P-2B	1RS-P-1A	1FW-P-2	1EE-P-1B
1QS-P-1A	1RS-P-1B	1FW-P-3A	1EE-P-1C
1QS-P-1B	1RS-P-2A	1FW-P-3B	1EE-P-1D

**Code Test Requirement:**

Quarterly Vibration amplitude measurements in mils and annual Bearing Temperature Measurements.

**Basis for Relief:**

The mechanical characteristics of a pump can be better determined by taking vibration measurements in velocity units than by taking the vibration measurements in displacement units and by bearing temperature measurements 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. Quarterly vibration velocity readings should achieve a much higher probability of detecting developing problems than the once a year reading of bearing temperatures. Therefore, relief is requested from measuring bearing temperatures annually and from measuring pump vibration in displacement units (mils).

**Alternate Test:**

Obtain pump vibration measurements in accordance with the vibration measurement requirements and corrective actions of ANSI/ASME OM-6, and measure vibration in 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)

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

**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):**

1CH-P-2A	1RS-P-1B
1CH-P-2B	1WR-P-1A
1SI-P-1A	1WR-P-1B
1SI-P-1B	1WR-P-1C
1RS-P-1A	

**Code Test Requirement:** 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 elevation will be used to calculate suction pressure, once per test.

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**RELIEF REQUEST**    3**Pump Mark No(s):**

1CH-P-2A  
1CH-P-2B

**Code Test Requirement:** Measurement of flow and  $\Delta P$ .

**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  $\Delta P$  per 1OST-7.1 & 2. Test during refueling outages per 1OST-7.13 & 14 by measuring pump  $\Delta P$  and by calculated flow. Flow will be calculated 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. Separate vibration reference and acceptance criteria values will be used for the different test conditions of the Recirc and full-flow tests.

**RELIEF REQUEST** 4**Pump Mark No(s):**

1RH-P-1A

1RH-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 quarterly during cold shutdowns and refueling outages per 1OST-10.1.

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**RELIEF REQUEST** 5**Pump Mark No(s):**

1QS-P-4A

1QS-P-4B

1QS-P-4C

1QS-P-4D

**Code Test Requirement:** Measure suction pressure,  $\Delta P$  and flow.

**Basis for Relief:** The function of these pumps is to provide 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.

**RELIEF REQUEST** 6**Pump Mark No(s):**

1RS-P-1A

1RS-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 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 1OST-13.3 and 13.4 for not more than 60 seconds and stopped when they reach 100 rpm. Also, run on recirculation per 1BVT 1.13.5 during refueling outages.

**RELIEF REQUEST** 7**Pump Mark No(s):**

1RS-P-2A

1RS-P-2B

**Code Test Requirement:**

Quarterly pumps 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 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 1OST-13.5 and 13.6 for not more than 60 seconds and stopped after visually observing an increase in motor amperage and pump shaft rotation. Also, run on recirculation per 1OST-13.7 during refueling outages.

**RELIEF REQUEST** 8**Pump Mark No(s):**

1FW-P-2  
1FW-P-3A  
1FW-P-3B

**Code Test Requirement:** Measurement of flow and  $\Delta P$ .

**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  $\Delta P$  per 1OSTs-24.2, 3, & 4. Test during cold shutdowns and refueling outages when plant conditions permit directing flow to the steam generators. Measure pump  $\Delta P$  and flowrate using the flow instrumentation in the S/G supply headers per 1OSTs-24.8 & 9. Separate vibration reference and acceptance criteria values will be used for the different test conditions of the Recirc and full-flow tests.

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**RELIEF REQUEST** 9**Pump Mark No(s):**

1EE-P-1A  
1EE-P-1B  
1EE-P-1C  
1EE-P-1D

**Code Test Requirement:** Measure suction pressure and  $\Delta P$ .

**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.

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**RELIEF REQUEST** 10**Pump Mark No(s):**

1EE-P-1A

1EE-P-1B

1EE-P-1C

1EE-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.



**SECTION V:**

**VALVE TESTING REQUIREMENTS**

The Inservice Test (IST) Program for valves at Beaver Valley Power Station (BVPS), Unit 1, is based on subsection IWV - Inservice Testing of Valves of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 edition through the summer 1983 addenda (the code) and Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs". The valves included in this section are all ASME "Class 1, 2, or 3 valves (and their actuating and position indicating systems) which are required to perform a specific function in shutting down the reactor to cold shutdown or in mitigating the consequences of an accident" at BVPS, Unit 1.

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

- A. Category A valves are valves for which seat leakage in the closed position is limited to a specific maximum amount for fulfillment of their function. Category B valves are valves for which seat leakage in the closed position is inconsequential for fulfillment of their function. 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. In the case of frequent cold shutdowns, these valves need not be tested more often than once every three months. For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 30 days prior to return of the system to operable status, the valves shall be exercised and the schedule resumed.

The time to full-stroke exercise each power-operated valve will also be measured and compared to a limiting stroke time. Full-stroke time is that time interval from initiation of the actuating signal to the end of the actuating stroke. The stroke time of all power-operated valves shall be measured to at least the nearest second, for stroke times 10 seconds or less, or 10% of the specified limiting stroke time for full-stroke times longer than 10 seconds, whenever such a valve is full-stroke tested. Position indication lights on the control board are used for valve stroke indication for all testing of power-operated valves with remote position indicators. In addition, valves with remote position indicators will be observed at least once every 2 years (normally at refuelings) to verify that valve operation is accurately indicated.

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.

The necessary valve disk movement shall be determined by exercising the valve while observing an appropriate indicator, which signals the required change of disk position, or observing indirect evidence (such as changes in system pressure, flow rate, level, or temperature), which reflect stem or disk position.

All valves with fail-safe actuators (i.e., air-operated 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.

Corrective action shall be taken if necessary, using the following:

1. 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. Stroke times of the valves will be examined for trends. 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.
2. If a valve fails to exhibit the required change of valve stem or disk position or exceeds its specified ASME limiting value of full-stroke time, then the valve shall be declared inoperable immediately and an evaluation of the valve's condition with respect to system operability and technical specifications shall be made as follows:
  - a. If the inoperable valve is specifically identified in the technical specifications, then the applicable technical specification action statements must be followed.
  - b. If the inoperable valve is in a system covered by a technical specification, an assessment of its condition must be made to determine if it makes the system inoperable. If the condition of the valve renders the system inoperable, then the applicable system technical specification action statements must be followed.
  - c. Corrective action (ie., MWR) shall be initiated immediately for the valve's repair or replacement.
  - d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any technical specification.
3. When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters, which could be affected by the replacement, repair, or maintenance, are within acceptable limits. Examples of maintenance that could affect valve performance parameters are adjustment of stem packing, removal of the bonnet, stem assembly, or actuator, and disconnection of hydraulic or electrical lines.

The ASME limiting valve stroke time is based on the following criteria:

1. The Technical Specification value.
2. ESF Response Time requirements.
3. Establishing a five (5) second limit for valves with stroke times under two (2) seconds.
4. The average of past stroke times plus 100% for valves with stroke times less than or equal to ten (10) seconds.
5. The average of past stroke times plus 50% for valves with stroke times greater than ten (10) seconds.

6. The design time listed in the UFSAR.

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

- B. Category C valves are valves which are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves). Category C valves are divided into two groups; safety or relief valves and check valves.

Safety and relief valves are setpoint tested in accordance with ASME PTC 25.3-1976 at least once every five (5) years, with a portion of the valves from each system included in the IST Program tested during each refueling outage. If any valves fail the setpoint test, additional valves from that system must be tested in accordance with Table IWV-3510-1. If a safety or relief valve fails to function properly during a test, it will be repaired or replaced.

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 more than once every three months. Check valves that are normally open during plant operation and whose function is to prevent reversed flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Check valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated, or when a mechanical opening force is applied to the disk.

If a check valve fails to exhibit the required change of disk position by this testing, then the check valve shall be declared inoperable immediately and an evaluation of the check valve's condition with respect to system operability and technical specifications shall be made as follows:

1. If the inoperable check valve is specifically identified in the technical specifications, then the applicable technical specification action statements must be followed.
2. If the inoperable check valve is in a system covered by a technical specification, an assessment of its condition must be made to determine if it makes the system inoperable. If the condition of the check valve renders the system inoperable, then the applicable system technical specification action statements must be followed.
3. Corrective action (ie., MWR) shall be initiated immediately for the check valve's repair or replacement.
4. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any technical specification.

Before returning the check valve to service after corrective action, a retest showing acceptable operation will be run.

- C. Category D valves are valves which are actuated by an energy source capable of only one operation, such as rupture disks or explosively actuated valves. There are no ASME Class 1, 2, or 3 Category D valves at BVPS, 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 QUANTITIES (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.

Passive valves are valves which are not required to change position to accomplish a specific function. As stated in the table, passive valves are not required to be exercised. Therefore, relief is not required from exercising any passive valve and no testing requirement is listed in the outline section except where remote position verification is required.

Certain exemptions from the valve testing requirements of the ASME code defined by subsection IWV-1200 are listed below:

1. Valves used only for operating convenience (ie., manual vent, drain, instrument and test valves);
2. Valves used only for system control (ie., pressure, temperature or flow regulating valves);
3. Valves used only for maintenance; and
4. External control and protection systems responsible for sensing plant conditions and providing signals for valve operation.

Records of the results of inservice tests and corrective actions as required by subsection IWV-6000 are maintained in tabular form. Stroke times of valves will be reviewed for developing trends.



If a question on valve testability exists, the IST program should be the controlling document since each component is individually assessed for testability and inclusion in the IST Program. If a valve is specifically called out in the Tech. Specs. (ie., specific valve mark number or uniquely specified by valve nomenclature) to be tested at one frequency and the IST Program endorses another frequency, then the more restrictive test frequency would be applicable.

The following three sections of this document are the "Valve Testing Outlines", "Cold Shutdown Justifications" and "Valve Relief Requests" sections.

- A. The "Valve Testing Outlines" section is a listing of all the valves in the IST Program, their class, category, size, type, NSA, drawing number and coordinates, testing requirements, specific cold shutdown justification reference numbers, relief request reference numbers, and test procedure numbers and comments.
1. The valve class will be 1, 2 or 3, corresponding to the safety classifications.
  2. 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 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. From the valve mark number given, the valve actuator can be determined from the list of abbreviations below:
    - FCV - Flow Control Valve
    - HCV - Hand Control Valve
    - LCV - Level Control Valve
    - MOV - Motor Operated Valve
    - NRV - Non Return Valve
    - PCV - Pressure Control Valve
    - RV - Relief Valve
    - SOV - Solenoid Operated Valve
    - SV - Safety Valve
    - TV - Trip Valve
    - D - Damper
  3. The normal system arrangement will be listed using the abbreviations below:
    - NSA - Normal System Arrangement
    - O - Open
    - S - Shut
    - A - Automatic
    - T - Throttled
    - LO - Locked Open
    - LS - Locked Shut
  4. The drawing number and coordinates will be the ones used in the Operating Manual.



5. The test requirements will be listed using the abbreviations below:
    - QS - Quarterly Stroke
    - QST - Quarterly Stroke & Time
    - LT - Leak Rate Test
    - SPT - Set Point Test
    - LM - Leakage Monitoring
    - POS - Position Verification
    - NA - Not Applicable
  6. The specific Cold Shutdown Justification (CSJ) reference number or the Relief Request (RR) reference number will be listed.
  7. The specific test procedure number, frequency, type of testing, and any comments will be listed using the abbreviations below:
    - 1OM - Operating Manual (Unit 1)
    - 1BVT - Beaver Valley Test (Unit 1)
    - 1OST - Operating Surveillance Test (Unit 1)
    - CMP - Corrective Maintenance Procedure
    - CSD - Cold Shutdown Frequency
    - R - Refueling Frequency
    - SA - Semiannual Frequency
    - Q - Quarterly Frequency
    - M - Monthly Frequency
    - W - Weekly Frequency
    - S - Shiftly Frequency
    - FS - Full Stroke
    - PS - Partial Stroke
    - FD - Forward Direction
    - RD - Reverse Direction
    - RPV - Remote Position Verification normally at Refueling
- B. 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. Cold Shutdown valve testing will commence within 48 hours of reaching cold shutdown conditions, but need not be completed more often than once every 92 days. Attempts will be made to complete testing prior to entering Mode 4. However, completion will not be a Mode 4 requirement. The testing will resume where left off when next entering Mode 5. For planned cold shutdowns, where ample time is available to complete testing on all valves identified for the cold shutdown test frequency, exceptions to the 48 hour requirement can be taken.
- BVPS Unit 1 reactor containment is maintained subatmospheric as required by technical specifications. The subatmospheric condition presents a hazardous working environment for station personnel and is considered inaccessible for surveillance testing. Surveillance testing that requires reactor containment entry will be performed at cold shutdown and refueling.
- C. 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.
-

## **SECTION VI: VALVE TESTING OUTLINES**

BVP5-1 IST										
VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Coolant								SYSTEM NUMBER 6		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord			
1RC-68	2	A/C	3/4	Check		6-2	B-3	QS	RR2	1BVT 1.47.5-FS, RD by Leak Test (R)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1RC-72	2	A/C	3	Check		6-2	C-3	QS	RR3	1BVT 1.47.5-FS, RD by Leak Test (R)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1RC-101	2	A	3/4	Globe	S	6-2	B-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
SOV-1RC-102A	1	B	1	Globe	LS	6-2	A-1	QST	CSJ1	1OST-1.10-Stroke & Time Open (CSD) 1OST-6.9-(RPV)
SOV-1RC-102B	1	B	1	Globe	LS	6-2	A-1	QST	CSJ1	1OST-1.10-Stroke & Time Open (CSD) 1OST-6.9-(RPV)
SOV-1RC-103A	1	B	1	Globe	LS	6-2	A-2	QST	CSJ1	1OST-1.10-Stroke & Time Open (CSD) 1OST-6.9-(RPV)
SOV-1RC-103B	1	B	1	Globe	LS	6-2	A-2	QST	CSJ1	1OST-1.10-Stroke & Time Open (CSD) 1OST-6.9-(RPV)
SOV-1RC-104	1	B	1	Globe	LS	6-2	A-3	QST	CSJ1	1OST-1.10-Stroke & Time Open (CSD) 1OST-6.9-(RPV)
SOV-1RC-105	1	B	1	Globe	LS	6-2	B-2	QST	CSJ1	1OST-1.10-Stroke & Time Open (CSD) 1OST-6.9-(RPV)
1RC-277	2	A/P	1/8	Needle	S	6-2	F-10	LT	RR1	1BVT 1.47.5-Leak Test (R)
1RC-278	2	A/P	1/8	Globe	S	6-2	E-10	LT	RR1	1BVT 1.47.5-Leak Test (R)
PCV-1RC-455C	1	B	3	Plug	A	6-2	B-10	QST	CSJ2	1OST-6.8-Stroke & Time Open (CSD) (RPV)
SOV-1RC-455C1	3	B	3/4	Three way	S	11-2	G-8	QST	RR46	1OST-6.12-Stroke & Time Open & Closed (R)
SOV-1RC-455C2	3	B	3/4	Three way	S	11-2	G-9	QST	RR46	1OST-6.12-Stroke & Time Open & Closed (R)

BVPS-1 IST										
VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Coolant								SYSTEM NUMBER: 6		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord			
PCV-1RC-455D	1	B	3	Plug	A	6-2	C-10	QST	CSJ2	1OST-6.8 Stroke & Time Open (CSD) (RPV)
SOV-1RC-455D1	3	B	3/4	Three-way	S	11-2	E-8	QST	RR46	1OST-6.12 Stroke & Time Open & Closed (R)
SOV-1RC-455D2	3	B	3/4	Three-way	S	11-2	E-9	QST	RR46	1OST-6.12 Stroke & Time Open & Closed (R)
PCV-1RC-456	1	B	3	Plug	A	6-2	C-10	QST	CSJ2	1OST-1.10-Stroke & Time Open (CSD) (RPV)
SOV-1RC-456-1	3	B	3/8	Three-way	S	6-2	B-10	QST	RR46	1OST-6.12 Stroke & Time Open & Closed (R)
SOV-1RC-456-2	3	B	3/8	Three-way	S	6-2	B-10	QST	RR46	1OST-6.12-Stroke & Time Open & Closed (R)
TV-1RC-519	2	A	3	Diaphragm	S	6-2	C-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1RC-535	1	B	3	Gate	O	6-2	B-9	QST		1OST-6.6 Stroke & Time Closed (Q) 1OST-6.8 Stroke Only Closed (CSD) (RPV)
MOV-1RC-536	1	B	3	Gate	O	6-2	C-9	QST		1OST-6.6 Stroke & Time Closed (Q) 1OST 1.10-Stroke & Time Closed (CSD) (RPV)
MOV-1RC-537	1	B	3	Gate	O	6-2	C-9	QST		1OST-6.6 Stroke & Time Closed (Q) 1OST 6.8 Stroke Only Closed (CSD) (RPV)
RV-1RC-551A	1	C	6 x 6	Relief		6-2	C-6	SPT		1BVT 1.60.5-(R)
RV-1RC-551B	1	C	6 x 6	Relief		6-2	C-7	SPT		1BVT 1.60.5-(R)
RV-1RC-551C	1	C	6 x 6	Relief		6-2	C-8	SPT		1BVT 1.60.5-(R)

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER	7
SYSTEM NAME: Chemical and Volume Control												
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments		
						OM No.	Coord.					
1CH-22	2	C	3	Check		7-1	C-3	QS		10ST-7.4 PS, FD (Q)		
								QS		10ST-7.5(6) FS, RD (Q)		
								QS	RR4	10ST-11.14 FS, FD (R)		
1CH-23	2	C	3	Check		7-1	D-3	QS		10ST-7.5 PS,FD (Q)		
								QS		10ST-7.4(6) FS, RD (Q)		
								QS	RR4	10ST-11.14 FS, FD (R)		
1CH-24	2	C	3	Check		7-1	E-3	QS		10ST-7.6 PS, FD (Q)		
								QS		10ST-7.4(5)-FS, RD (Q)		
								QS	RR4	10ST-11.14 FS, FD (R)		
1CH-25	2	B/P	3	Gate	LO	7-1	C-2	POS		Locked or sealed valve log		
1CH-26	2	B/P	3	Gate	LO	7-1	D-2	POS		Locked or sealed valve log		
1CH-27	2	B/P	3	Gate	LO	7-1	E-2	POS		Locked or sealed valve log		
1CH-31	2	A/C	3	Check		7-1	C-1	QS	RR5	1BVT 1.47 11-FS, RD by Leak Test (R)		
								LT		1BVT 1.47 11-Leak Test (R)		
1CH-75	3	C	2	Check		7-3	C-4	QS		10ST-7.1-PS, FD (Q)		
								QS	CSJ3	10ST-1.10 FS, FD (CSD)		

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Chemical and Volume Control								SYSTEM NUMBER 7		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1CH-76	3	C	2	Check		7-3	G-4	QS		1OST-7.2-PS, FD (Q)
								QS	CSJ3	1OST-1.10-FS, FD (CSD)
1CH-84	3	C	1	Check		7-3	E-7	QS	CSJ9	1OST-1.10-FS, FD (CSD)
FCV-1CH-113A	3	B	2	Globe	A	7-3	E-7	QST		1OST-47.3A(3B)-Stroke & Time Open (Q) (RPV)
MOV-1CH-115B	2	A	8	Gate	S	7-1	E-6	QST		1OST-47.3A(3B)-Stroke & Time Open (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1CH-115C	2	B	4	Gate	O	7-1	G-5	QST	CSJ4	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
MOV-1CH-115D	2	A	8	Gate	O	7-1	E-6	QST		1OST-47.3A(3B)-Stroke & Time Open (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1CH-115E	2	B	4	Gate	O	7-1	F-5	QST	CSJ4	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
1CH-135	3	B	1	Diaphragm	S	7-3	E-8	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
1CH-136	3	C	1	Check		7-3	F-8	QS	CSJ9	1OST-1.10-FS, FD (CSD)
1CH-141	2	C	2	Check		7-3	G-8	QS	CSJ5	1OST-1.10-FS, FD (CSD)
MOV-1CH-142	2	A/P	2	Globe	S	7-1	A-9	LT	RR1	1BVT 1.47.5-Leak Test (R), (RPV)
1CH-152	2	C	2	Check		7-1	C-3	QS		1OST-7.4-FS, FD (Q)
								QS		1OST-7.5(6)-FS, RD (Q)



BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Chemical and Volume Control								SYSTEM NUMBER: 7		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1CH-153	2	C	2	Check		7-1	D-3	QS		1OST-7.5-FS, FD (Q)
								QS		1OST-7.4(6)-FS, RD (Q)
1CH-154	2	C	2	Check		7-1	E-3	QS		1OST-7.6-FS, FD (Q)
								QS		1OST-7.4(5)-FS, RD (Q)
1CH-158	2	B/P	3	Gate	LO	7-1	C-3	POS		Locked or sealed valve log
1CH-159	2	B/P	3	Gate	LO	7-1	D-3	POS		Locked or sealed valve log
FCV-1CH-160	2	A/P	2	Globe	S	7-1	G-3	LT		1BVT 1.47.11-Leak Test (R)
1CH-161	2	B/P	3	Gate	LO	7-1	E-3	POS		Locked or sealed valve log
1CH-170	1	A/C/P	2	Check		7-1	G-2	LT		1BVT 1.47.11-Leakage corrected for functional $\Delta P$ during leak test (R)
1CH-181	2	A/C	2	Check		7-4	B-4	QS	RR6	1BVT 1.47.11-FS, RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (R)
1CH-182	2	A/C	2	Check		7-4	D-4	QS	RR6	1BVT 1.47.11-FS, RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (R)
1CH-183	2	A/C	2	Check		7-4	G-4	QS	RR6	1BVT 1.47.11-FS, RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (R)
TV-1CH-200A	2	A	2	Globe	S	7-1	A-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1,RR7	1BVT 1.47.5-Leak Test (R)

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 7
SYSTEM NAME: Chemical and Volume Control											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord.				
TV-1CH-200B	2	A	2	Globe	O	7-1	A-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	
								LT	RR1,RR7	1BVT 1.47.5-Leak Test (R)	
TV-1CH-200C	2	A	2	Globe	S	7-1	A-7	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	
								LT	RR1,RR7	1BVT 1.47.5-Leak Test (R)	
RV-1CH-203	2	A/C	2 x 3	Relief		7-1	A-5	SPT		1BVT 1.60.5-(R)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
TV-1CH-204	2	A	2	Gate	O	7-1	B-10	QST	CSJ6	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
RV-1CH-209	2	C	2 x 3	Relief		7-1	D-10	SPT		1BVT 1.60.5-(R)	
RV-1CH-257	2	C	3 x 4	Relief		7-3	B-8	SPT		1BVT 1.60.5-(R)	
MOV-1CH-275A	2	B	2	Globe	O	7-1	C-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	
MOV-1CH-275B	2	B	2	Globe	O	7-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	
MOV-1CH-275C	2	B	2	Globe	O	7-1	E-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	
MOV-1CH-289	2	A	3	Gate	O	7-1	D-1	QST	CSJ6	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
								LT		1BVT 1.47.11-Leak Test (R)	
MOV-1CH-308A	2	A	2	Globe	O	7-4	B-3	QST	RR10	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
								LT		1BVT 1.47.11-Leak Test (R)	

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 7
SYSTEM NAME: Chemical and Volume Control											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord				
MOV-1CH-308B	2	A	2	Globe	O	7-4	D-3	QST	RR10	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
								LT		1BVT 1.47 11-Leak Test (R)	
MOV-1CH-308C	2	A	2	Globe	O	7-4	G-3	QST	RR10	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
								LT		1BVT 1.47 11-Leak Test (R)	
MOV-1CH-310	1	B	3	Gate	O	7-1	B-2	QST	CSJ7	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
MOV-1CH-350	3	B	2	Gate	S	7-3	G-7	QST		1OST-47 3A(3B)-Stroke & Time Open (Q)(RPV)	
1CH-369	2	A/C	3/4	Check		7-4	D-8	QS	RR8	1BVT 1.47 5-FS,RD by Leak Test (R)	
								LT	RR1,RR9	1BVT 1.47 5-Leak Test (R)	
MOV-1CH-370	2	B	3/4	Gate	O	7-4	B-1	QST	RR11	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)	
MOV-1CH-373	2	B	3/4	Gate	O	7-4	E-9	QST	CSJ8	1OST-1.10-Stroke & Time Closed (CSD)(RPV)	
MOV-1CH-378	2	A	3/4	Gate	O	7-4	D-8	QST	RR12	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)	
								LT	RR1,RR9	1BVT 1.47 5-Leak Test (R)	
MOV-1CH-381	2	A	3/4	Gate	O	7-4	F-8	QST	RR12	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)	
								LT	RR1	1BVT 1.47 5-Leak Test (R)	
RV-1CH-382A	2	C	2 x 3	Relief		7-4	C-8	SPT		1BVT 1.60.5-(R)	
RV-1CH-382B	2	C	2 x 3	Relief		7-4	E-10	SPT		1BVT 1.60.5-(R)	
RV-1CH-383	2	C	1/4 x 1	Relief		7-1	C-2	SPT		1BVT 1.60.5-(R)	

BVPS-1 IST VALVE TESTING OUTLINE												SYSTEM NUMBER: 7	
SYSTEM NAME: Chemical and Volume Control													
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments			
						OM No.	Coord.						
LCV-1CH-460A	1	B	2	Globe	O	7-1	A-2	QST	CSJ7	10ST-1.10-Stroke & Time Closed (CSD)(RPV)			
LCV-1CH-460B	1	B	2	Globe	O	7-1	A-3	QST	CSJ7	10ST-1.10-Stroke & Time Closed (CSD)(RPV)			

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Vents and Drains (Aerated)								SYSTEM NUMBER: 9		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1DA-100A	2	A	2	Globe	A	9-1	G-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1DA-100B	2	A	2	Globe	O	9-1	G-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE									
SYSTEM NAME: Reactor Plant Vents and Drains (Non-Aerated)							SYSTEM NUMBER 9		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests
						OM No	Coord		
TV-1DG-108A	2	A	2	Globe	O	9-1	F-9	QST	10ST 47.3A(3B) Stroke & Time Closed (Q)(RPV)
								LT	1BVT 1.47.5-Leak Test (R)
TV-1DG-108B	2	A	2	Globe	O	9-1	F-10	QST	10ST 47.3A(3B) Stroke & Time Closed (Q)(RPV)
								LT	1BVT 1.47.5-Leak Test (R)
TV-1DG-109A1	2	A	1 1/2	Globe	A	9-1	E-9	QST	10ST 47.3A(3B) Stroke & Time Closed (Q)(RPV)
								LT	1BVT 1.47.5-Leak Test (R)
TV-1DG-109A2	2	A	1 1/2	Globe	A	9-1	E-8	QST	10ST 47.3A(3B) Stroke & Time Closed (Q)(RPV)
								LT	1BVT 1.47.5-Leak Test (R)



BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Residual Heat Removal								SYSTEM NUMBER: 10		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord			
1RH-3	2	C	10	Check		10-1	E-3	QS	CSJ10	1OST-10.1-FS,FD,RD (CSD)
1RH-4	2	C	10	Check		10-1	F-3	QS	CSJ10	1OST-10.1-FS,FD,RD (CSD)
1RH-14	2	A/P	6	Gate	S	10-1	D-8	LT	RR1	1BVT 1.47.5-Leak Test (R)
1RH-15	2	A/P	6	Gate	S	10-1	B-8	LT	RR1	1BVT 1.47.5-Leak Test (R)
1RH-16	2	A/P	4	Ball	S	10-1	C-9	LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1RH-700	1	A	14	Gate	S	10-1	F-1	QST	CSJ11	1OST-10.4-Stroke & Time Open (CSD)(RPV)
								LM		1OST-10.5-Leakage Monitoring (R)
MOV-1RH-701	1	A	14	Gate	S	10-1	F-2	QST	CSJ11	1OST-10.4-Stroke & Time Open (CSD)(RPV)
								LM		1OST-10.5-Leakage Monitoring (R)
MOV-1RH-720A	1	A	10	Gate	S	10-1	C-9	QST	CSJ11	1OST-10.4-Stroke & Time Open (CSD)(RPV)
								LM		Continuous Monitoring of RHR System Pressure
MOV-1RH-720B	1	A	10	Gate	S	10-1	D-9	QST	CSJ11	1OST-10.4-Stroke & Time Open (CSD)(RPV)
								LM		Continuous Monitoring of RHR System Pressure
RV-1RH-721	2	C	3 x 4	Relief		10-1	B-7	SPT		1BVT 1.60.5 (R)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE													SYSTEM NUMBER	11
SYSTEM NAME: Safety Injection													CSJ or Relief Requests	Comments
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement						
						OM No.	Coord							
1SI-1	2	C	12	Check		11-1	G-3		QS	RR13	Sample Disassembly and Inspection per 1CMP-75-ALOYCO-CHECK-1M(R)			
1SI-2	2	C	12	Check		11-1	G-3		QS	RR13	Sample Disassembly and Inspection per 1CMP-75-ALOYCO-CHECK-1M(R)			
1SI-5	2	C	12	Check		11-1	G-2		QS		1OST-11.1(2) PS,FD (Q)			
									QS	RR14	1OST-11.14 FS,FD (R)			
1SI-6	2	C	10	Check		11-1	E-2		QS		1OST-11.2 FS,RD (Q)			
									QS	RR15	1OST-11.14 FS,FD (R)			
1SI-7	2	C	10	Check		11-1	E-4		QS		1OST-11.1 FS,RD (Q)			
									QS	RR15	1OST-11.14 FS,FD (R)			
1SI-10	1	A/C	6	Check		11-1	D-8		QS	RR16	1OST-11.16 FS,RD by Leak Test (R)			
									QS	RR16	1OST-11.14 FS,FD (R)			
									LT		1OST-11.16 Leak Test (R)			
1SI-11	1	A/C	6	Check		11-1	D-8		QS	RR16	1OST-11.16 FS,RD by Leak Test (R)			
									QS	RR16	1OST-11.14 FS,FD (R)			
									LT		1OST-11.16 Leak Test (R)			
1SI-12	1	A/C	6	Check		11-1	C-8		QS	RR16	1OST-11.16 FS,RD by Leak Test (R)			
									QS	RR16	1OST-11.14 FS,FD (R)			
									LT		1OST-11.16 Leak Test (R)			

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Safety Injection								SYSTEM NUMBER: 11		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1SI-13	2	A/C/P	6	Check		11-1	F-7	LT		1BVT 1.47.11-Leak Test (R)
1SI-14	2	A/C/P	6	Check		11-1	F-7	LT		1BVT 1.47.11-Leak Test (R)
1SI-15	1	A/C/P	6	Check		11-1	F-9	LT		1OST-11.19-Leak Test (R)
1SI-16	1	A/C/P	6	Check		11-1	F-9	LT		1OST-11.19-Leak Test (R)
1SI-17	1	A/C/P	6	Check		11-1	F-9	LT		1OST-11.19-Leak Test (R)
1SI-20	1	C	6	Check		11-1	F-10	QS	RR17	1OST-11.14-FS,FD (R)
1SI-21	1	C	6	Check		11-1	F-10	QS	RR17	1OST-11.14-FS,FD (R)
1SI-22	1	C	6	Check		11-1	F-10	QS	RR17	1OST-11.14-FS,FD (R)
1SI-23	1	A/C	6	Check		11-1	C-10	QS	RR18	1OST-11.16-FS,RD by Leak Test (R)
								QS	RR18	1OST-11.14-FS,FD (R)
								LT		1OST-11.16-Leak Test (R)
1SI-24	1	A/C	6	Check		11-1	D-10	QS	RR18	1OST-11.16-FS,RD by Leak Test (R)
								QS	RR18	1OST-11.14-FS,FD (R)
								LT		1OST-11.16-Leak Test (R)
1SI-25	1	A/C	6	Check		11-1	D-10	QS	RR18	1OST-11.16-FS,RD by Leak Test (R)
								QS	RR18	1OST-11.14-FS,FD (R)
								LT		1OST-11.16-Leak Test (R)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE										SYSTEM NUMBER
SYSTEM NAME: Safety Injection										11
Valve Mark Number	Valve Class	Valve Category	Valve Size (In )	Valve Type	NSA	OM No.	Coord	Test Requirement	CSJ or Relief Requests	Comments
1SI-27	2	A/C	8	Check		11-1	G-1	Q5	RR19	1OST 7.4.5 or 6 PS, FD(Q) if RWST is supplying charging pumps.
								Q5	RR19	1OST-11.20 PS,FD (CSD)
								Q5	RR19	1OST-11.14 FS,FD (R)
								LT		1BVT 1.47.11-Leak Test (R)
1SI-28	2	C	2	Check		11-1	F-4	Q5		1OST-11.1 FS,RD (Q)
								Q5		1OST-11.2 FS,FD (Q)
1SI-29	2	C	2	Check		11-1	F-2	Q5		1OST-11.1 FS,FD (Q)
								Q5		1OST-11.2 FS,RD (Q)
1SI-41	2	A/P	1	Globe	LS	11-2	D-6	POS		Locked or sealed valve log
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1SI-42	2	A/C/P	1	Check		11-2	D-5	LT	RR1	1BVT 1.47.5-Leak Test (R)
1SI-48	1	A/C	12	Check		11-2	C-2	Q5	RR20	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B-Leak Test (R)
1SI-49	1	A/C	12	Check		11-2	E-2	Q5	RR20	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B-Leak Test (R)
1SI-50	1	A/C	12	Check		11-2	G-2	Q5	RR20	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B-Leak Test (R)

BVPS-1 IST VALVE TESTING OUTLINE												SYSTEM NUMBER 11	
SYSTEM NAME: Safety Injection													
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments			
						OM No	Coord						
1SI-51	1	A/C	12	Check		11-2	C-2	QS	RR20	1BVT 1.11.3-FS,FD (R)			
								LT		1OST-11.4A Leak Test (R)			
1SI-52	1	A/C	12	Check		11-2	E-2	QS	RR20	1BVT 1.11.3-FS,FD (R)			
								LT		1OST-11.4A Leak Test (R)			
1SI-53	1	A/C	12	Check		11-2	G-2	QS	RR20	1BVT 1.11.3-FS,FD (R)			
								LT		1OST-11.4A Leak Test (R)			
1SI-83	1	A/C	3	Check		11-1	E-7	QS	RR21	1OST-11.20-PS,FD (CSD)			
								QS	RR21	1OST-11.14 FS,FD (R)			
								LT		1BVT 1.47.11 Leak Test (R)			
1SI-84	1	A/C	3	Check		11-1	F-7	QS	RR21	1OST-11.20-PS,FD (CSD)			
								QS	RR21	1OST-11.14-FS,FD (R)			
								LT		1BVT 1.47.11-Leak Test (R)			
1SI-94	2	A/C	3	Check		11-1	B-7	QS	RR22	1OST-11.14 FS,FD (R)			
								LT		1BVT 1.47.11 Leak Test (R)			
1SI-95	2	A/C	3	Check		11-1	A-7	QS	RR21	1OST -11.20-PS,FD (CSD)			
								QS	RR21	1OST-11.14 FS,FD (R)			
								LT		1BVT 1.47.11 Leak Test (R)			

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER 11
SYSTEM NAME: Safety Injection											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No	Coord				
1SI-100	1	C	2	Check		11-1	A-9	QS	RR17	10ST-11.14 FS,FD (R)	
1SI-101	1	C	2	Check		11-1	A-9	QS	RR17	10ST-11.14 FS,FD (R)	
TV-1SI-101-1	2	A	1	Globe	S	11-2	B-6	QST		10ST-47.3A(3B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5 Leak Test (R)	
TV-1SI-101-2	2	A	1	Globe	S	11-2	B-5	QST		10ST-47.3A(3B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5 Leak Test (R)	
1SI-102	1	C	2	Check		11-1	B-9	QS	RR17	10ST-11.14 FS,FD (R)	
1SI-447	2	B/P	3/4	Globe	LO	11-1	F-3	POS		Locked or sealed valve log	
1SI-448	2	B/P	3/4	Globe	LO	11-1	F-3	POS		Locked or sealed valve log	
1SI-451	2	B/P	3/4	Globe	LO	11-1	F-3	POS		Locked or sealed valve log	
1SI-452	2	B/P	3/4	Globe	LO	11-1	F-3	POS		Locked or sealed valve log	
MOV-1SI-836	2	A	3	Gate	S	11-1	A-6	QST	CSJ12	10ST-1.10 Stroke & Time Open/Closed (CSD)(RPV)	
								LT		1BVT 1.47.11 Leak Test (R)	
MOV-1SI-842	2	A	2	Globe	S	11-2	E-5	QST		10ST-47.3A(3B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5 Leak Test (R)	
RV-1SI-845A	2	C	3/4 x 1	Relief		11-1	D-2	SPT		1BVT 1.60.5 (R)	
RV-1SI-845B	2	C	3/4 x 1	Relief		11-1	D-2	SPT		1BVT 1.60.5 (R)	



BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Safety Injection								SYSTEM NUMBER: 11		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1SI-845C	2	C	¾ x 1	Relief		11-1	D-4	SPT		1BVT 1.70.5-(R)
RV-1SI-857	2	C	¾ x 1	Relief		11-1	B-6	SPT		1BVT 1.60.5-(R)
RV-1SI-858A	2	C	1 x 2	Relief		11-2	A-2	SPT		1BVT 1.60.5-(R)
RV-1SI-858B	2	C	1 x 2	Relief		11-2	C-2	SPT		1BVT 1.60.5-(R)
RV-1SI-858C	2	C	1 x 2	Relief		11-2	E-2	SPT		1BVT 1.60.5-(R)
MOV-1SI-860A	2	A	12	Gate	S	11-1	F-3	QST	CSJ13	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-860B	2	A	12	Gate	S	11-1	F-3	QST	CSJ13	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-862A	2	B	12	Gate	O	11-1	G-3	QST		1OST-47.3A(B)-Stroke & Time Closed (Q)(RPV)
MOV-1SI-862B	2	B	12	Gate	O	11-1	G-3	QST		1OST-47.3A(B)-Stroke & Time Closed (Q)(RPV)
MOV-1SI-863A	2	B	6	Gate	S	11-1	E-1	QST		1OST-47.3A(B)-Stroke & Time Open (Q)(RPV)
MOV-1SI-863B	2	B	6	Gate	S	11-1	E-5	QST		1OST-47.3A(B)-Stroke & Time Open (Q)(RPV)
MOV-1SI-864A	2	B	10	Gate	O	11-1	D-2	QST		1OST-47.3A(B)-Stroke & Time Open (Q)(RPV)
MOV-1SI-864B	2	B	10	Gate	O	11-1	D-4	QST		1OST-47.3A(B)-Stroke & Time Open (Q)(RPV)
MOV-1SI-865A	2	B/P	12	Gate	O	11-2	B-2	POS		1OM-54 Log L-5 (S) & CST-11.9 (M) 1BVT 1.11.3-(RPV)
MOV-1SI-865B	2	B/P	12	Gate	O	11-2	E-2	POS		1OM-54 Log L-5 (S) & OST-11.9 (M) 1BVT 1.11.3-(RPV)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Safety Injection								SYSTEM NUMBER: 11		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1SI-865C	2	B/P	12	Gate	O	11-2	G-2	POS		1OM-54 Log L-5 (S) & OST-11.9 (M) 1BVT 1.11.3 (RPV)
MOV-1SI-867A	2	B	3	Gate	S	11-1	A-2	QST	CSJ32	1OST-1.10-Stroke & Time Open (CSD)(RPV)
MOV-1SI-867B	2	B	3	Gate	S	11-1	A-2	QST	CSJ32	1OST-1.10-Stroke & Time Open (CSD)(RPV)
MOV-1SI-867C	2	A	3	Gate	S	11-1	B-6	QST	RR24	1OST-11.14-Stroke & Time Open/Closed (R)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-867D	2	A	3	Gate	S	11-1	B-6	QST	RR24	1OST-11.14-Stroke & Time Open/Closed (R)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-869A	2	A	3	Gate	S	11-1	E-6	QST	CSJ12	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-869B	2	A	3	Gate	S	11-1	E-6	QST	CSJ14	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
TV-1SI-884A	2	B	1	Globe	O	11-1	C-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1SI-884B	2	B	1	Globe	O	11-1	C-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1SI-884C	2	B	1	Globe	O	11-1	C-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
MOV-1SI-885A	2	A	2	Globe	O	11-1	F-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Safety Injection								SYSTEM NUMBER: 11		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1SI-885B	2	A	2	Globe	O	11-1	F-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-885C	2	A	2	Globe	O	11-1	F-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
MOV-1SI-885D	2	A	2	Globe	O	11-1	F-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)
TV-1SI-889	2	A	3/4	Gate	S	11-1	G-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1SI-890A	2	A/P	10	Gate	S	11-1	D-3	LT		1BVT 1.47.11-Leak Test (R)(RPV)
MOV-1SI-890B	2	A/P	10	Gate	S	11-1	D-5	LT		1BVT 1.47.11-Leak Test (R)(RPV)
MOV-1SI-890C	2	A	10	Gate	O	11-1	D-6	QST	CSJ15	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
								LT		1BVT 1.47.11-Leak Test (R)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Containment Vacuum							SYSTEM NUMBER: 12			
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CV-101A	2	A	1	Globe	O	12-1	D-6	QST		1OST-47.3A(B) Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CV-101B	2	A	1	Globe	O	12-1	D-7	QST		1OST-47.3A(B) Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CV-102	2	A	1	Globe	O	12-1	E-7	QST		1OST-47.3A(B) Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1CV-102-1	2	A	1	Globe	O	12-1	E-8	QST		1OST-47.3A(B) Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1CV-150A	2	A	2	Globe	O	12-1	F-6	QST		1OST-47.3A(B) Stroke & Time Open/Closed (Q)
								LT	RR1,RR40	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1CV-150B	2	A	2	Globe	S	12-1	F-7	QST		1OST-47.3A(B) Stroke & Time Open/Closed (Q)
								LT	RR1,RR40	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1CV-150C	2	A	2	Globe	O	12-1	E-7	QST		1OST-47.3A(B) Stroke & Time Closed (Q)
								LT	RR1,RR41	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1CV-150D	2	A	2	Globe	S	12-1	E-6	QST		1OST-47.3A(B) Stroke & Time Closed (Q)
								LT	RR1,RR41	1BVT 1.47.5-Leak Test (R)(RPV)
HCV-1CV-151	2	A/P	8	Butterfly	LS	12-1	F-8	LT	RR1	1BVT 1.47.5-Leak Test (R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Containment Vacuum

SYSTEM NUMBER: 12

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
HCV-1CV-151-1	2	A/P	8	Butterfly	LS	12-1	F-7	LT	RR1	1BVT 1.47.5-Leak Test (R)

BVPS-1 IST VALVE TESTING OUTLINE										SYSTEM NUMBER: 12	
SYSTEM NAME: Leakage Monitoring											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord.				
TV-1LM-100A1	2	A	3/8	Globe	S	12-1	B-2	QST		10ST-47.3A(B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5 Leak Test (R)	
TV-1LM-100A2	2	A	3/8	Globe	S	12-1	B-3	QST		10ST-47.3A(B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5 Leak Test (R)	



BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Containment Depressurization (Quench Spray)								SYSTEM NUMBER: 13		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1QS-3	2	A/C	10	Check		13-1	B-4	QS	CSJ16	1OST-1.10-FS,FD by Mechanical Exerciser (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1QS-4	2	A/C	10	Check		13-1	A-4	QS	CSJ16	1OST-1.10-FS,FD by Mechanical Exerciser (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1QS-100A	2	B	12	Gate	O	13-1	D-6	QST		1OST-47.3A(3B)-Stroke & Time Open (Q)(RPV)
MOV-1QS-100B	2	B	12	Gate	O	13-1	D-6	QST		1OST-47.3A(3B)-Stroke & Time Open (Q)(RPV)
RV-1QS-100A	2	C	1½ x 2½	Relief		13-1	F-10	SPT		1BVT 1.60.5 (R)
RV-1QS-100B	2	C	1½ x 2½	Relief		13-1	F-9	SPT		1BVT 1.60.5 (R)
MOV-1QS-101A	2	A	10	Gate	S	13-1	B-5	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1QS-101B	2	A	10	Gate	S	13-1	A-6	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1QS-103A	2	B	10	Gate	O	13-1	C-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
MOV-1QS-103B	2	B	10	Gate	O	13-1	C-6	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
MOV-1QS-104A	2	B	3	Diaphragm	S	13-1	E-9	QST		1OST-13.10A-Stroke & Time Open (Q)(RPV)
MOV-1QS-104B	2	B	3	Diaphragm	S	13-1	E-8	QST		1OST-13.10B-Stroke & Time Open (Q)(RPV)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Containment Depressurization (Quench Spray)								SYSTEM NUMBER: 13		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1RS-100	2	A/C	10	Check		13-1	D-4	QS	CSJ16	1OST-1.10-FS,FD by Mechanical Exerciser (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1RS-101	2	A/C	10	Check		13-1	C-4	QS	CSJ16	1OST-1.10-FS,FD by Mechanical Exerciser (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
MOV-1RS-155A	2	B	12	Gate	O	13-1	G-5	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
MOV-1RS-155B	2	B	12	Gate	O	13-1	G-7	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
MOV-1RS-156A	2	B	10	Gate	O	13-1	E-5	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
MOV-1RS-156B	2	B	10	Gate	O	13-1	E-5	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
1RS-157	2	B	6	Gate	LS	13-1	E-6	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
1RS-158	2	C	6	Check		13-1	E-6	QS	RR25	Sample Disassembly and Inspection per CMP 1/2-75-VELAN CHECK-1M (R)
1RS-159	2	B	6	Gate	LS	13-1	E-7	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
1RS-160	2	C	6	Check		13-1	E-7	QS	RR25	Sample Disassembly and Inspection per CMP 1/2-75-VELAN CHECK-1M (R)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Plant Sample								SYSTEM NUMBER: 14A		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord			
TV-1SS-100A1	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-100A2	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-102A1	2	A	3/4	Globe	O	14A-1	A-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1SS-102A2	2	A	3/4	Globe	O	14A-1	A-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1SS-103A1	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-103A2	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-104A1	2	A	3/4	Globe	O	14A-1	C-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-104A2	2	A	3/4	Globe	O	14A-1	C-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Sample								SYSTEM NUMBER: 14A		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1SS-105A1	2	A	3/4	Globe	O	14A-1	B-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1SS-105A2	2	A	3/4	Globe	O	14A-1	B-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1SS-109A1	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-109A2	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-111A1	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-111A2	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-112A1	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-112A2	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1SS-117A	2	B	3/4	Globe	O	14A-1	G-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)

BVPS-1 IST VALVE TESTING OUTLINE										SYSTEM NUMBER: 14A	
SYSTEM NAME: Reactor Plant Sample											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord.				
TV-1SS-117B	2	B	3/4	Globe	O	14A-1	F-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	
TV-1SS-117C	2	B	3/4	Globe	O	14A-1	F-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)	

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Plant Component Cooling Water							SYSTEM NUMBER: 15			
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1CCR-4	3	C	18	Check		15-1	E-6	QS		1OST-15.1-FS,FD (Q)
								QS		1OST-15.2(3)-FS,RD (Q)
1CCR-5	3	C	18	Check		15-1	E-7	QS		1OST-15.2-FS,FD (Q)
								QS		1OST-15.1(3)-FS,RD (Q)
1CCR-6	3	C	18	Check		15-1	E-8	QS		1OST-15.3-FS,FD (Q)
								QS		1OST-15.1(2)-FS,RD (Q)
TV-1CC-103A	2	A	6	Globe	O	15-5	A-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-103A1	2	A	6	Globe	O	15-5	B-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-103B	2	A	6	Globe	O	15-5	A-4	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-103B1	2	A	6	Globe	O	15-5	B-4	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-103C	2	A	6	Globe	O	15-5	A-3	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)



BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Plant Component Cooling Water								SYSTEM NUMBER: 15		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-103C1	2	A	6	Globe	O	15-5	B-3	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-105D1	2	A	6	Globe	O	15-5	F-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-105D2	2	A	6	Globe	O	15-5	G-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-105E1	2	A	4	Globe	O	15-5	F-5	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-105E2	2	A	4	Globe	O	15-5	G-5	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-107A	3	B	2	Globe	O	15-5	C-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
TV-1CC-107B	3	B	2	Globe	O	15-5	D-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
TV-1CC-107C	3	B	2	Globe	O	15-5	F-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
TV-1CC-107D1	2	A	3	Globe	O	15-5	F-4	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-107D2	2	A	3	Globe	O	15-5	G-4	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water								SYSTEM NUMBER: 15		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-107E1	2	A	2	Globe	O	15-5	F-3	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-107E2	2	A	2	Globe	O	15-5	G-3	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(R)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-109	3	C	¾ x 1	Relief		15-2	E-7	SPT		1BVT 1.60.5-(R)
RV-1CC-110	3	C	¾ x 1	Relief		15-2	E-6	SPT		1BVT 1.60.5-(R)
TV-1CC-110D	2	A	8	Globe	O	29-2	E-9	QST	CSJ19	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-110E2	2	A	8	Globe	O	29-2	A-2	QST	CSJ19	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-110E3	2	A	8	Globe	O	29-2	A-3	QST	CSJ19	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-110F1	2	A/P	8	Globe	S	29-2	E-10	LT	RR1,RR27	1BVT 1.47.5-Leak Test (R)(RPV)
TV-1CC-110F2	2	A	8	Globe	O	29-2	F-10	QST	CSJ19	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1,RR27	1BVT 1.47.5-Leak Test (R)
RV-1CC-111A	3	C	¾ x 1	Relief		15-2	B-6	SPT		1BVT 1.60.5-(R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water

SYSTEM NUMBER: 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-111A1	2	A	6	Globe	O	15-3	B-8	QST	CSJ17	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-111A2	2	A	6	Globe	O	15-3	B-8	QST	CSJ17	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-111B	3	C	¾ x 1	Relief		15-2	B-6	SPT		1BVT 1.60.5-(R)
TV-1CC-111D1	2	A	6	Globe	O	15-3	F-4	QST	CSJ17	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-111D2	2	A	6	Globe	O	15-3	G-4	QST	CSJ17	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-112A	3	C	¾ x 1	Relief		29-2	B-1	SPT		1BVT 1.60.5-(R)
RV-1CC-112A1	3	C	¾ x 1	Relief		29-2	C-1	SPT		1BVT 1.60.5-(R)
MOV-1CC-112A2	2	A	18	Butterfly	S	15-5	A-7	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-112A2	3	C	¾ x 1	Relief		29-2	E-1	SPT		1BVT 1.60.5-(R)
MOV-1CC-112A3	2	A	18	Butterfly	S	15-5	F-7	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-112B	3	C	¾ x 1	Relief		29-2	B-4	SPT		1BVT 1.60.5-(R)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Plant Component Cooling Water								SYSTEM NUMBER 15		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-112B1	3	C	¾ x 1	Relief		29-2	D-4	SPT		1BVT 1.60.5-(R)
MOV-1CC-112B2	2	A	18	Butterfly	S	15-5	A-8	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-112B2	3	C	¾ x 1	Relief		29-2	E-4	SPT		1BVT 1.60.5-(R)
MOV-1CC-112B3	2	A	18	Butterfly	S	15-5	F-8	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1CC-112C	3	C	¾ x 1	Relief		29-2	B-6	SPT		1BVT 1.60.5-(R)
RV-1CC-112C1	3	C	¾ x 1	Relief		29-2	D-6	SPT		1BVT 1.60.5-(R)
RV-1CC-112C2	3	C	¾ x 1	Relief		29-2	E-6	SPT		1BVT 1.60.5-(R)
RV-1CC-113A	3	C	¾ x 1	Relief		15-3	D-2	SPT		1BVT 1.60.5-(R)
RV-1CC-113B	3	C	¾ x 1	Relief		15-3	D-5	SPT		1BVT 1.60.5-(R)
RV-1CC-113C	3	C	¾ x 1	Relief		15-3	C-8	SPT		1BVT 1.60.5-(R)
RV-1CC-115A	3	C	¾ x 1	Relief		15-5	B-4	SPT		1BVT 1.60.5-(R)
RV-1CC-115B	3	C	¾ x 1	Relief		15-5	D-4	SPT		1BVT 1.60.5-(R)
RV-1CC-115C	3	C	¾ x 1	Relief		15-5	E-4	SPT		1BVT 1.60.5-(R)
RV-1CC-116A	3	C	¾ x 1	Relief		15-5	C-3	SPT		1BVT 1.60.5-(R)
RV-1CC-116B	3	C	¾ x 1	Relief		15-5	D-3	SPT		1BVT 1.60.5-(R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water

SYSTEM NUMBER: 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-116C	3	C	¾ x 1	Relief		15-5	E-3	SPT		1BVT 1.60.5-(R)
RV-1CC-117	3	C	¾ x 1	Relief		15-4	C-9	SPT		1BVT 1.60.5-(R)
RV-1CC-118	3	C	¾ x 1	Relief		15-4	C-9	SPT		1BVT 1.60.5-(R)
RV-1CC-119A	3	C	¾ x 1	Relief		15-5	C-7	SPT		1BVT 1.60.5-(R)
RV-1CC-119B	3	C	¾ x 1	Relief		15-5	E-8	SPT		1BVT 1.60.5-(R)
TV-1CC-121-1	3	B	2	Globe	O	15-4	B-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-121-2	3	B	2	Globe	O	15-4	F-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-125	3	B	6	Globe	O	15-2	A-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-125-1	3	B	6	Globe	O	15-1	F-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-125-2	3	B	6	Globe	O	15-1	F-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-126	3	B	8	Globe	O	15-2	A-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-126-1	3	B	8	Globe	O	15-1	G-7	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-126-2	3	B	8	Globe	O	15-1	G-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-127	3	B	8	Globe	O	15-2	B-5	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-127-1	3	B	8	Globe	O	15-1	F-9	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-127-2	3	B	8	Globe	O	15-1	E-9	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-128	3	B	8	Globe	O	15-2	B-6	QST		1OST-47.3A(3B)-Stroke & Time Open (Q)(RPV)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Reactor Plant Component Cooling Water								SYSTEM NUMBER: 15		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-129	3	B	6	Globe	O	15-2	A-10	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-129-1	3	B	6	Globe	O	15-2	B-10	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-129-2	3	B	6	Globe	O	15-2	E-10	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-130	3	B	6	Globe	O	15-2	E-6	QST	CSJ20	10ST-1.10-Stroke & Time Closed (CSD)(RPV)
TV-1CC-132	3	B	3	Globe	O	15-2	E-7	QST	CSJ20	10ST-1.10-Stroke & Time Closed (CSD)(RPV)
TV-1CC-133-2	3	B	1 ½	Globe	O	15-2	G-9	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-133-3	3	B	6	Globe	O	15-2	F-10	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-134-1	3	B	1 ½	Globe	O	15-2	A-7	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-134-2	3	B	1 ½	Globe	O	15-2	B-7	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-134-3	3	B	1 ½	Globe	O	15-2	G-8	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-136	3	B	12	Globe	O	15-2	A-5	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
RV-1CC-136A	3	C	¾ x 1	Relief		15-5	B-7	SPT		1BVT 1.60.5-(R)
RV-1CC-136B	3	C	¾ x 1	Relief		15-5	D-8	SPT		1BVT 1.60.5-(R)
TV-1CC-137	3	B	2	Globe	O	15-5	B-1	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-137A	3	B	1 ½	Globe	O	15-5	D-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-137B	3	B	1 ½	Globe	S	15-5	E-1	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
RV-1CC-139A	3	C	¾ x 1	Relief		15-4	B-6	SPT		1BVT 1.60.5-(R)



BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water								SYSTEM NUMBER: 15		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-139B	3	C	¾ x 1	Relief		15-4	B-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139C	3	C	¾ x 1	Relief		15-4	B-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139D	3	C	¾ x 1	Relief		15-4	C-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139E	3	C	¾ x 1	Relief		15-4	D-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139F	3	C	¾ x 1	Relief		15-4	E-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139G	3	C	¾ x 1	Relief		15-4	E-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139H	3	C	¾ x 1	Relief		15-4	E-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139I	3	C	¾ x 1	Relief		15-4	F-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139J	3	C	¾ x 1	Relief		15-4	F-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139K	3	C	¾ x 1	Relief		15-4	F-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139L	3	C	¾ x 1	Relief		15-4	G-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139M	3	C	¾ x 1	Relief		15-4	D-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139N	3	C	¾ x 1	Relief		15-4	D-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139P	3	C	¾ x 1	Relief		15-4	C-6	SPT		1BVT 1.60.5-(R)
RV-1CC-139R	3	C	¾ x 1	Relief		15-4	C-6	SPT		1BVT 1.60.5-(R)
RV-1CC-140A	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140B	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 1.60.5-(R)

BVPS-1 IST VALVE TESTING OUTLINE												SYSTEM NUMBER 15
SYSTEM NAME: Reactor Plant Component Cooling Water												
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments		
						OM No.	Coord.					
RV-1CC-140C	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 160.5 (R)		
RV-1CC-140D	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 160.5 (R)		
RV-1CC-140E	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 160.5 (R)		
RV-1CC-140F	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 160.5 (R)		
RV-1CC-140G	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 160.5 (R)		
RV-1CC-140H	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 160.5 (R)		
RV-1CC-140I	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 160.5 (R)		
RV-1CC-140J	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 160.5 (R)		
RV-1CC-140K	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 160.5 (R)		
RV-1CC-140L	3	C	¾ x 1	Relief		15-4	G-3	SPT		1BVT 160.5 (R)		
RV-1CC-140M	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 160.5 (R)		
RV-1CC-140N	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 160.5 (R)		
RV-1CC-140P	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 160.5 (R)		
RV-1CC-140R	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 160.5 (R)		
1CCR-247	2	A	18	Butterfly	LS	15-5	A-7	QS	CSJ18	10M-10.4 A-Stroke Only Open (CSD)		
								LT	RR1	1BVT 147.5-Leak Test (R)		

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water								SYSTEM NUMBER: 15		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1CCR-248	2	A	18	Butterfly	LS	15-5	A-8	QS	CSJ18	10M-10.4.A-Stroke Only Open (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1CCR-251	2	A	18	Butterfly	LS	15-5	G-8	QS	CSJ18	10M-10.4.A-Stroke Only Open (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1CCR-252	2	A	18	Butterfly	LS	15-5	G-8	QS	CSJ18	10M-10.4.A-Stroke Only Open (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1CCR-289	3	C	2	Check		15-5	C-3	QS	RR28	1BVT 1.60.7-FS,RD by Leak Test (R)
1CCR-290	3	C	2	Check		15-5	D-3	QS	RR28	1BVT 1.60.7-FS,RD by Leak Test (R)
1CCR-291	3	C	2	Check		15-5	F-3	QS	RR28	1BVT 1.60.7-FS,RD by Leak Test (R)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE												SYSTEM NUMBER. 20	
SYSTEM NAME: Fuel Pool Cooling and Purification													
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments			
						OM No.	Coord.						
1PC-9	2	A/P	6	Ball	LS	20-1	D-8	POS		Locked Valve Log			
								LT	RR1	1BVT 1.47.5-Leak Test (R)			
1PC-10	2	A/P	6	Ball	LS	20-1	D-7	POS		Locked Valve Log			
								LT	RR1	1BVT 1.47.5-Leak Test (R)			
1PC-37	2	A/P	6	Ball	LS	20-1	D-8	POS		Locked Valve Log			
								LT	RR1	1BVT 1.47.5-Leak Test (R)			
1PC-38	2	A/P	6	Ball	LS	20-1	D-7	POS		Locked Valve Log			
								LT	RR1	1BVT 1.47.5-Leak Test (R)			

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Main Steam								SYSTEM NUMBER: 21		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1MS-15	2	B	3	Gate	LO	21-1	B-4	QS	CSJ21	1OST-24.4-Stroke Only Closed (Q) 1OST-24.9-Stroke Only Closed (CSD)
1MS-16	2	B	3	Gate	LO	21-1	D-4	QS	CSJ21	1OST-24.4-Stroke Only Closed (Q) 1OST-24.9-Stroke Only Closed (CSD)
1MS-17	2	B	3	Gate	LS	21-1	F-3	QS	CSJ21	1OST-24.4-Stroke Only Open (Q) 1OST-24.9-Stroke Only Open (CSD)
1MS-18	2	C	3	Check		21-1	G-4	QS		1OST-24.4-PS,FD (Q)
								QS	RR29	1OST-24.9-FS,FD (CSD)
								QS	RR29	1BVT-1.60.7-FS,RD by Leak Test (R)
1MS-19	2	C	3	Check		21-1	G-4	QS		1OST-24.4-PS,FD (Q)
								QS	RR29	1OST-24.9-FS,FD (CSD)
								QS	RR29	1BVT-1.60.7-FS,RD by Leak Test (R)
1MS-20	2	C	3	Check		21-1	G-4	QS		1OST-24.4-PS,FD (Q)
								QS	RR29	1OST-24.9-FS,FD (CSD)
								QS	RR29	1BVT-1.60.7-FS,RD by Leak Test (R)
1MS-60	2	C	3	Check		21-1	C-7	QS	RR30	Sample Disassembly and Inspection per 1CMP-75-CRANE CHECK-1M(R)
1MS-81	2	C	3	Check		21-1	C-7	QS	RR30	Sample Disassembly and Inspection per 1CMP-75-CRANE CHECK-1M(R)
1MS-82	2	C	3	Check		21-1	E-7	QS	RR30	Sample Disassembly and Inspection per 1CMP-75-CRANE CHECK-1M(R)
MOV-1MS-101A	2	B	2	Globe	S	21-1	C-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
NRV-1MS-101A	2	B/C	32	Check	O	21-1	B-8	QS	CSJ27	1OST-1.10-FS,RD (CSD)(RPV)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Main Steam								SYSTEM NUMBER 21		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
PCV-1MS-101A	2	B	6	Globe	A	21-1	A-5	QST	CSJ23	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
SV-1MS-101A	2	C	6 x 10	Relief		21-1	B-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)
TV-1MS-101A	2	B/C	32	Inverse Check	O	21-1	B-8	QST	CSJ24	1OST-21.4-Stroke & Time Closed (CSD)(RPV)
MOV-1MS-101B	2	B	2	Globe	S	21-1	E-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
NRV-1MS-101B	2	B/C	32	Check	O	21-1	D-8	QS	CSJ22	1OST-1.10-FS, RD (CSD)(RPV)
PCV-1MS-101B	2	B	6	Globe	A	21-1	C-5	QST	CSJ23	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
SV-1MS-101B	2	C	6 x 10	Relief		21-1	D-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)
TV-1MS-101B	2	B/C	32	Inverse Check	O	21-1	D-8	QST	CSJ24	1OST-21.5-Stroke & Time Closed (CSD)(RPV)
MOV-1MS-101C	2	B	2	Globe	S	21-1	G-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
NRV-1MS-101C	2	B/C	32	Check	O	21-1	F-8	QS	CSJ22	1OST-1.10-FS, RD (CSD)(RPV)
PCV-1MS-101C	2	B	6	Globe	A	21-1	E-5	QST	CSJ23	1OST-1.10-Stroke & Time Open/Closed (CSD)(RPV)
SV-1MS-101C	2	C	6 x 10	Relief		21-1	E-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)
TV-1MS-101C	2	B/C	32	inverse Check	O	21-1	F-8	QST	CSJ24	1OST-21.6-Stroke & Time Closed (CSD)(RPV)
SV-1MS-102A	2	C	6 x 10	Relief		21-1	B-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)
SV-1MS-102B	2	C	6 x 10	Relief		21-1	D-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)
SV-1MS-102C	2	C	6 x 10	Relief		21-1	E-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)
SV-1MS-103A	2	C	6 x 10	Relief		21-1	B-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2 (R)



BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Main Steam							SYSTEM NUMBER: 21			
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
SV-1MS-103B	2	C	6 x 10	Relief		21-1	D-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-103C	2	C	6 x 10	Relief		21-1	E-4	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-104A	2	C	6 x 10	Relief		21-1	B-3	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-104B	2	C	6 x 10	Relief		21-1	D-3	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-104C	2	C	6 x 10	Relief		21-1	E-3	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-105A	2	C	6 x 10	Relief		21-1	B-3	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-105B	2	C	6 x 10	Relief		21-1	D-3	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
SV-1MS-105C	2	C	6 x 10	Relief		21-1	E-3	SPT		1BVT 1.21.1 or 1BVT 1.21.2-(R)
TV-1MS-105A	3	B	3	Gate	S	21-1	G-4	QST		1OST-24.4-Stroke & Time Open (Q)(RPV)
TV-1MS-105B	3	B	3	Gate	S	21-1	G-5	QST		1OST-24.4-Stroke & Time Open (Q)(RPV)
MOV-1MS-105	3	B	3	Gate	O	21-1	G-4	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
TV-1MS-111A	2	B	1 ½	Gate	O	26-4	E-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1MS-111B	2	B	1 ½	Gate	O	26-4	C-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1MS-111C	2	B	1 ½	Gate	O	26-4	A-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

SYSTEM NAME: Feedwater											BVPs-1 IST VALVE TESTING OUTLINE			SYSTEM NUMBER: 24
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments				
						OM No.	Coord							
1FW-33	3	C	6	Check		24-2	E-7	QS	CSJ25	10ST-24.9 FS,FD (CSD)				
1FW-34	3	C	4	Check		24-2	E-2	QS	CSJ25	10ST-24.8 FS,FD (CSD)				
1FW-35	3	C	4	Check		24-2	E-4	QS	CSJ25	10ST-24.8 FS,FD,RD (CSD)				
1FW-36	3	B	6	Gate	LO	24-2	D-7	QS		10ST-24.4-Stroke Only Closed (Q)				
1FW-37	3	B	4	Gate	LO	24-2	D-2	QS		10ST-24.2-Stroke Only Closed (Q)				
1FW-38	3	B	4	Gate	S	24-2	D-4	QS		10ST-24.3-Stroke Only Open (Q)				
1FW-39	3	B	6	Gate	S	24-2	D-7	QS		10ST-24.4-Stroke Only Open (Q)				
1FW-40	3	B	4	Gate	S	24-2	D-2	QS		10ST-24.2-Stroke Only Open (Q)				
1FW-41	3	B	4	Gate	LO	24-2	D-5	QS		10ST-24.3-Stroke Only Closed (Q)				
1FW-42	2	C	3	Check		24-1	B-7	QS	CSJ25	10ST-24.8 FS,FD (CSD)				
1FW-43	2	C	3	Check		24-1	E-7	QS	CSJ25	FS,RD by 10M 54 Log L3-18(Q) & 10ST-24.11(R)				
1FW-44	2	C	3	Check		24-1	G-7	QS	CSJ25	FS,RD by 10M 54 Log L3-18(Q) & 10ST-24.11(R)				
1FW-50	3	C	1	Check		24-2	E-7	QS		10ST-24.4 FS,FD (Q)				

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Feedwater								SYSTEM NUMBER: 24		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1FW-51	3	C	1	Check		24-2	E-2	QS		1OST-24.2-FS,FD (Q)
1FW-52	3	C	1	Check		24-2	E-5	QS		1OST-24.3-FS,FD (Q)
1FW-68	3	C	1	Check		24-2	E-8	QS		1OST-24.4-FS,FD (Q)
1FW-69	3	C	1	Check		24-2	E-2	QS		1OST-24.2-FS,FD (Q)
1FW-70	3	C	1	Check		24-2	E-5	QS		1OST-24.3-FS,FD (Q)
MOV-1FW-150A	3	B	20	Gate	O	24-3	C-3	QST	CSJ31	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
MOV-1FW-150B	3	B	20	Gate	O	24-3	D-3	QST	CSJ31	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
MOV-1FW-151A	2	B	3	Globe	O	24-2	C-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q)(RPV)
MOV-1FW-151B	2	B	3	Globe	O	24-2	C-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q)(RPV)
MOV-1FW-151C	2	B	3	Globe	O	24-2	B-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q)(RPV)
MOV-1FW-151D	2	B	3	Globe	O	24-2	B-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q)(RPV)
MOV-1FW-151E	2	B	3	Globe	O	24-2	A-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q)(RPV)
MOV-1FW-151F	2	B	3	Globe	O	24-2	A-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q)(RPV)
RV-1FW-155	2	C	3 x 4	Relief		24-2	F-7	SPT		1BVT 1.60.5 (R)
MOV-1FW-156A	2	B/C	16	Check	O	24-1	B-7	QST	CSJ26	1OST-1.10-Stroke & Time Closed (CSD)(RPV) 1OST-24.14A - Verify closure by Leak Test (R)
MOV-1FW-156B	2	B/C	16	Check	O	24-1	D-7	QST	CSJ26	1OST-1.10-Stroke & Time Closed (CSD)(RPV) 1OST-24.14B - Verify closure by Leak Test (R)
MOV-1FW-156C	2	B/C	16	Check	O	24-1	F-7	QST	CSJ26	1OST-1.10-Stroke & Time Closed (CSD)(RPV) 1OST-24.14C - Verify closure by Leak Test (R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Feedwater								SYSTEM NUMBER: 24		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
HCV-1FW-158A	2	B/P	3	Gate	O	24-1	B-7	POS		10ST-24.10 (M) 10ST-24.11 (RPV)
HCV-1FW-158B	2	B/P	3	Gate	O	24-1	D-7	POS		10ST-24.10 (M) 10ST-24.11 (RPV)
HCV-1FW-158C	2	B/P	3	Gate	O	24-1	G-7	POS		10ST-24.10 (M) 10ST-24.11 (RPV)
FCV-1FW-478	2	B	16	Globe	A	24-1	B-4	QST	CSJ29	10ST-1.10-Stroke & Time Closed (CSD)(RPV)
FCV-1FW-479	2	B	4	Globe	A	24-1	A-4	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
FCV-1FW-488	2	B	16	Globe	A	24-1	D-4	QST	CSJ29	10ST-1.10-Stroke & Time Closed (CSD)(RPV)
FCV-1FW-489	2	B	4	Globe	A	24-1	D-4	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
FCV-1FW-498	2	B	16	Globe	A	24-1	F-4	QST	CSJ29	10ST-1.10-Stroke & Time Closed (CSD)(RPV)
FCV-1FW-499	2	B	4	Globe	A	24-1	F-4	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
1FW-622	2	C	3	Check		24-2	C-4	QS	CSJ25	10ST-24.8-FS,FD,RD (CSD)
1FW-623	2	C	3	Check		24-2	C-4	QS	CSJ25	10ST-24.8-FS,FD,RD (CSD)
1FW-624	2	C	3	Check		24-2	B-4	QS	CSJ25	10ST-24.8-FS,FD,RD (CSD)
1FW-625	2	C	3	Check		24-2	B-4	QS	CSJ25	10ST-24.8-FS,FD,RD (CSD)
1FW-626	2	C	3	Check		24-2	A-4	QS	CSJ25	10ST-24.8-FS,FD,RD (CSD)

BVPS-1 IST VALVE TESTING OUTLINE										SYSTEM NUMBER: 24	
SYSTEM NAME: Feedwater											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord.				
1FW 627	2	C	3	Check		24-2	A-4	QS	CSJ25	10ST-24 & FS,FD,RO (CSD)	

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Steam Generator Blowdown								SYSTEM NUMBER: 25		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1BD-100A	2	B	3	Globe	O	25-1	B-4	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-100R	2	B	3	Globe	O	25-1	D-4	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-100C	2	B	3	Globe	O	25-1	F-4	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101A1	2	B	3	Gate	O	25-1	B-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101A2	2	B	3	Gate	O	25-1	B-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101B1	2	B	3	Gate	O	25-1	D-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101B2	2	B	3	Gate	O	25-1	D-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101C1	2	B	3	Gate	O	25-1	F-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101C2	2	B	3	Gate	O	25-1	F-2	QST		10ST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)



BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Auxiliary Steam								SYSTEM NUMBER: 27		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1SV-100A	2	A	6	Globe	S	26-6	D-9	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1AS-278	2	A/C	6	Check		26-6	D-10	QS		1OST-47.3A(3B)-FS,FD (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
HYV-1AS-101A	3	B	8	Gate	O	27-1	D-3	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
HYV-1AS-101B	3	B	8	Gate	O	27-1	D-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BIVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER
SYSTEM NAME: River Water											30
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coor.				
1RW-57	3	C	20	Check		30-1	A	QS	RR43	10ST-30.2 PS or FS,FD (Q)	
								QS		10ST-30.2 FS,RD (Q)	
								QS	RR43	10ST-30.12 FS,FD (R)	
1RW-58	3	C	20	Check		30-1	C-3	QS	RR43	10ST-30.3 PS or FS,FD (Q)	
								QS		10ST-30.3 FS,RD (Q)	
								QS	RR43	10ST-30.12 FS,FD (R)	
1RW-59	3	C	20	Check		30-1	D-3	QS	RR43	10ST-30.6 PS or FS,FD (Q)	
								QS		10ST-30.6 FS,RD (Q)	
								QS	RR43	10ST-30.12 FS,FD (R)	
1RW-95	3	C	3/4	Check		30-1	A-2	QS		10ST-30.2 FS,FD (Q)	
1RW-96	3	C	3/4	Check		30-1	B-2	QS		10ST-30.3 FS,FD (Q)	
1RW-97	3	C	3/4	Check		30-1	C-2	QS		10ST-30.6 FS,FD (Q)	
RV-1RW-101A	2	C	3/4 x 1	Relief		30-3	C-6	SPT		1BVT 1.60.5 (R)	
RV-1RW-101B	2	C	3/4 x 1	Relief		30-3	E-6	SPT		1BVT 1.20.5 (R)	
RV-1RW-101C	2	C	3/4 x 1	Relief		30-3	D-6	SPT		1BVT 1.60.5 (R)	
RV-1RW-101D	2	C	3/4 x 1	Relief		30-3	F-6	SPT		1BVT 1.60.5 (R)	
RV-1RW-102A	3	C	3/4 x 1	Relief		30-3	C-2	SPT		1BVT 1.60.5 (R)	

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: River Water

SYSTEM NUMBER 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1RW-102A1	3	B	20	Butterfly	S	30-1	B-4	QST		1OST-30.2-Stroke & Time Open (Q)(RPV)
MOV-1RW-102A2	3	B	20	Butterfly	O	30-1	A-4	QST		1OST-30.2-Stroke & Time Open (Q)(RPV)
RV-1RW-102B	3	C	¾ x 1	Relief		30-3	D-2	SPT		1BVT 1.60.5-(R)
MOV-1RW-102B1	3	B	20	Butterfly	S	30-1	C-4	QST		1OST-30.3-Stroke & Time Open (Q)(RPV)
MOV-1RW-102B2	3	B	20	Butterfly	S	30-1	C-4	QST		1OST-30.3-Stroke & Time Open (Q)(RPV)
RV-1RW-102C	3	C	¾ x 1	Relief		30-3	E-2	SPT		1BVT 1.60.5-(R)
MOV-1RW-102C1	3	B	20	Butterfly	S	30-1	D-4	QST		1OST-30.6-Stroke & Time Open (Q)(RPV)
MOV-1RW-102C2	3	B	20	Butterfly	S	30-1	D-4	QST		1OST-30.6-Stroke & Time Open (Q)(RPV)
MOV-1RW-103A	3	B	24	Butterfly	S	30-3	B-2	QST	RR44	1OST-30.12-Stroke & Time Open (R)(RPV) or 1OST-30.4-Stroke & Time Open (Q) if possible
MOV-1RW-103B	3	B	24	Butterfly	S	30-3	B-2	QST	RR44	1OST-30.12-Stroke & Time Open (Q)(RPV) or 1OST-30.4-Stroke & Time Open (Q) if possible
MOV-1RW-103C	3	B	24	Butterfly	S	30-3	G-2	QST	RR44	1OST-30.12-Stroke & Time Open (Q)(RPV) or 1OST-30.5-Stroke & Time Open (Q) if possible
MOV-1RW-103D	3	B	24	Butterfly	S	30-3	G-2	QST	RR44	1OST-30.12-Stroke & Time Open (Q)(RPV) or 1OST-30.5-Stroke & Time Open (Q) if possible
MOV-1RW-104	3	B	24	Butterfly	S	30-3	E-6	QST		1OST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-104A	2	B	14	Butterfly	O	30-3	C-6	QST		1OST-30.4-Stroke & Time Closed (Q)(RPV)
MOV-1RW-104B	2	B	14	Butterfly	O	30-3	F-6	QST		1OST-30.5-Stroke & Time Closed (Q)(RPV)
MOV-1RW-104C	2	B	14	Butterfly	O	30-3	D-6	QST		1OST-30.4-Stroke & Time Closed (Q)(RPV)
MOV-1RW-104D	2	B	14	Butterfly	O	30-3	G-6	QST		1OST-30.5-Stroke & Time Closed (Q)(RPV)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE												SYSTEM NUMBER: 30
SYSTEM NAME: River Water												
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments		
						OM No.	Coord					
MOV-1RW-105A	2	B	14	Butterfly	O	30-3	C-9	QST		10ST-30.4-Stroke & Time Closed (Q)(RPV)		
MOV-1RW-105B	2	B	14	Butterfly	O	30-3	E-9	QST		10ST-30.5-Stroke & Time Closed (Q)(RPV)		
MOV-1RW-105C	2	B	14	Butterfly	O	30-3	D-9	QST		10ST-30.4-Stroke & Time Closed (Q)(RPV)		
MOV-1RW-105D	2	B	14	Butterfly	O	30-3	F-9	QST		10ST-30.5-Stroke & Time Closed (Q)(RPV)		
MOV-1RW-106A	3	B	24	Butterfly	O	30-3	C-1	QST		10ST-30.4-Stroke & Time Closed (Q)(RPV)		
RV-1RW-106A	3	C	¾ x 1	Relief		30-1	E-8	SPT		1BVT 160.5-(R)		
MOV-1RW-106B	3	B	24	Butterfly	O	30-3	F-1	QST		10ST-30.5-Stroke & Time Closed (Q)(RPV)		
RV-1RW-106B	3	C	¾ x 1	Relief		30-1	E-7	SPT		1BVT 160.5-(R)		
1RW-106	3	C	24	Check		30-1	A-9	QS	RR43	10ST-30.2(6)-PS or FS,FD (Q)		
									RR43	10ST-30.12-FS,FD (R)		
								QS	RR31	10ST-30.8-FS,RD (R)		
1RW-107	3	C	24	Check		30-1	D-9	QS	RR43	10ST-30.3(6)-PS or FS,FD (Q)		
									RR43	10ST-30.12-FS,FD (R)		
								QS	RR31	10ST-30.8-FS,RD (R)		
1RW-108	3	C	24	Check		30-3	B-4	QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.2(6)-FS,FD(Q)		
								QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.3(6)-FS,FD(Q)		
1RW-109	3	C	24	Check		30-3	G-6	QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.3(6)-FS,FD(Q)		

BVP'S-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: River Water								SYSTEM NUMBER 30		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1RW-110	3	C	4	Check		30-1	F-8	QS		10ST-36.1-PS,FD (Q)
								QS	RR32	Sample Disassembly and Inspection per CMP 1/2-75-WAFER CHECK-1M (R)
1RW-111	3	C	4	Check		30-1	F-8	QS		10ST-36.1-PS,FD (Q)
								QS	RR32	Sample Disassembly and Inspection per CMP 1/2-75-WAFER CHECK-1M (R)
1RW-112	3	C	4	Check		30-1	G-8	QS		10ST-36.2-PS,FD (Q)
								QS	RR32	Sample Disassembly and Inspection per CMP 1/2-75-WAFER CHECK-1M (R)
1RW-113	3	C	4	Check		30-1	G-8	QS		10ST-36.2-PS,FD (Q)
								QS	RR32	Sample Disassembly and Inspection per CMP 1/2-75-WAFER CHECK-1M (R)
MOV-1RW-113A	3	B	4	Gate	S	30-1	F-10	QST		10ST-30.5-Stroke & Time Open (Q)(RPV)
MOV-1RW-113B	3	B	4	Gate	S	30-1	F-10	QST		10ST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-113C	3	B	4	Gate	S	30-1	G-10	QST		10ST-30.5-Stroke & Time Open (Q)(RPV)
MOV-1RW-113D1	3	B	4	Gate	S	30-1	G-8	QST		10ST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-114A	3	B	24	Butterfly	O	30-3	B-1	QST		10ST-30.4-Stroke & Time Closed (Q)(RPV)
MOV-1RW-114B	3	B	24	Butterfly	O	30-3	F-1	QST		10ST-30.5-Stroke & Time Closed (Q)(RPV)
MOV-1RW-116	3	B	8	Butterfly	S	30-3	D-1	QST		10ST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-116A	3	B	24	Butterfly	S	30-1	B-10	QST		10ST-30.1A-Stroke & Time Open (Q)(RPV)
MOV-1RW-116B	3	B	24	Butterfly	S	30-1	D-10	QST		10ST-30.1B-Stroke & Time Open (Q)(RPV)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: River Water							SYSTEM NUMBER: 30			
Valve Mark Number	Valve Class	Valve Category	Valve Size (in )	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1RW-117	3	B	8	Butterfly	S	30-3	F-1	QST		10ST-30.5-Stroke & Time Open (Q)(RPV)
1RW-158	3	C	3	Check		30-2	E-5	QS		10ST-30.14-FS,FD,RD(Q)
1RW-159	3	C	3	Check		30-2	C-5	QS		10ST-30.14-FS,FD,RD(Q)
1RW-193	2	C	14	Check		30-3	C-7	QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.2(6)-FS,FD(Q)
1RW-194	2	C	14	Check		30-3	E-7	QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.2(6)-FS,FD(Q)
1RW-195	2	C	14	Check		30-3	F-7	QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.3(6)-FS,FD(Q)
1RW-196	2	C	14	Check		30-3	G-7	QS	RR45	10ST-30.12-FS,FD(R) or 10ST-30.3(6)-FS,FD(Q)
1RW-206	3	B	6	Butterfly	LS	24-1	F-10	QS		10ST-24.10-Stroke Only Open (M)
1RW-207	3	B	6	Butterfly	S	24-1	G-9	QS		10ST-24.10-Stroke Only Open (M)
1RW-208	3	B	6	Butterfly	S	24-1	F-8	QS		10ST-24.10-Stroke Only Open (M)
1RW-209	3	B	4	Butterfly	S	24-1	G-2	QS		10ST-24.10-Stroke Only Open (M)
1RW-210	3	B	4	Butterfly	S	24-1	F-5	QS		10ST-24.10-Stroke Only Open (M)
1RW-486	3	C	3	Check		30-1	A-2	QS		10ST-30.2-FS,FD,RD (Q)
1RW-487	3	C	3	Check		30-1	C-2	QS		10ST-30.3-FS,FD,RD (Q)
1RW-488	3	C	3	Check		30-1	D-2	QS		10ST-30.6-FS,FD,RD (Q)
1RW-615	2	B	1	Ball	O	43-2	D-2	QS		10ST-47.3A(3B)-Stroke Only Closed (Q)
1RW-621	2	B	1	Ball	O	43-2	D-7	QS		10ST-47.3A(3B)-Stroke Only Closed (Q)



## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 30
SYSTEM NAME: River Water											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CS.I or Relief Requests	Comments	
						OM No.	Coord				
1RW 627	2	B	1	Ball	O	43-2	F-2	QS		10ST-47.3A(3B) Stroke Only Closed (Q)	
1RW 633	2	B	1	Ball	O	43-2	F-7	QS		10ST-47.3A(3B) Stroke Only Closed (Q)	
1RW 675	3	C	3/4	Check		30-1	A-2	QS	RR35	10ST-30.2-FS,FD (R)	
1RW 676	3	C	3/4	Check		30-1	B-2	QS	RR35	10ST-30.3-FS,FD (R)	
1RW 677	3	C	3/4	Check		30-1	D-2	QS	RR35	10ST-30.6-FS,FD (R)	

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Water Treatment							SYSTEM NUMBER 32			
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1WT-382	3	C	3	Check		32-6	C-9	QS	RR48	Sample Disassembly and Inspection per 1CMP-75-Pacific SW Check-1M (R)
1WT-383	3	C	3	Check		32-6	C-9	QS	RR48	Sample Disassembly and Inspection per 1CMP-75-Pacific SW Check-1M (R)
1WT-387	3	C	3	Check		32-6	D-9	QS	RR48	Sample Disassembly and Inspection per 1CMP-75-Pacific SW Check-1M (R)
1WT-388	3	C	3	Check		32-6	D-9	QS	RR48	Sample Disassembly and Inspection per 1CMP-75-Pacific SW Check-1M (R)

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 33
SYSTEM NAME: Fire Protection											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord.				
TV-1FP-105	2	A	4	Gate	S	33-1B	C-4	QST		1OST-47.3A(3B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
TV-1FP-106	2	A	4	Gate	S	33-1B	C-4	QST		1OST-47.3A(3B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
TV-1FP-107	2	A	4	Globe	S	33-1B	C-5	QST		1OST-47.3A(3B) Stroke & Time Closed (Q)(RPV)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
1FP-800	2	A/C	4	Check		33-1B	D-4	QS	CSJ27	1OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
1FP-804	2	A/C	4	Check		33-1B	D-4	QS	CSJ27	1OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	
1FP-827	2	A/C	4	Check		33-1B	D-5	QS	CSJ27	1OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)	
								LT	RR1	1BVT 1.47.5-Leak Test (R)	

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 34
SYSTEM NAME: Compressed Air (Station Air)											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord				
1SA-14	2	A/P	2	Gate	LS	34-1	B-10	LT	RR1	1BVT 1.47.5-Leak Test (R)	
1SA-15	2	A/C/P	2	Check		34-1	B-10	LT	RR1	1BVT 1.47.5-Leak Test (R)	

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Compressed Air (Instrument Air)

SYSTEM NUMBER: 34

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
11A-90	2	A/P	2	Gate	LS	34-2	E-2	LT	RR1	1BVT 1.47.5-Leak Test (R)
11A-91	2	A/C/P	1	Check		34-2	E-3	LT	RR1	1BVT 1.47.5-Leak Test (R)
11A-116	3	A/C	3/4	Check		11-2	F-7	QS	RR47	1BVT 2.34.4-FS,RD by Leak Test (R)
								LT		1BVT 2.34.4-Leak Test (R)
11A-117	3	A/C	3/4	Check		11-2	G-7	QS	RR47	1BVT 2.34.4-FS,RD by Leak Test (R)
								LT		1BVT 2.34.4-Leak Test (R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: 4KV Station Service (Diesel Air Start)								SYSTEM NUMBER: 36		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1DA-100	3	C	3/4	Check		36-1	A-2	QS		1OST-36.1-FS,RD (Q)
1DA-101	3	C	3/4	Check		36-1	A-4	QS		1OST-36.1-FS,RD (Q)
1DA-104	3	B/P	1 1/2	Ball	LS	36-1	B-3	POS		Locked or sealed valve log
1DA-130	3	C	3/4	Check		36-1	A-7	QS		1OST-36.2-FS,RD (Q)
1DA-131	3	C	3/4	Check		36-1	A-9	QS		1OST-36.2-FS,RD (Q)
1DA-134	3	B/P	1 1/2	Ball	LS	36-1	B-8	POS		Locked or sealed valve log
SOV-1EE-101	3	B	3/8	Solenoid	S	36-1	F-2	QST	RR36	1OST-36.1-Stroke & Time Open (Bi-Monthly)
SOV-1EE-102	3	B	3/8	Solenoid	S	36-1	F-4	QST	RR36	1OST-36.1-Stroke & Time Open (Bi-Monthly)
SOV-1EE-103	3	B	3/8	Solenoid	S	36-1	F-7	QST	RR36	1OST-36.2-Stroke & Time Open (Bi-Monthly)
SOV-1EE-104	3	B	3/8	Solenoid	S	36-1	F-9	QST	RR36	1OST-36.2-Stroke & Time Open (Bi-Monthly)
RV-1EE-201A	3	C	1/2	Relief		36-1	C-1	SPT		1BVT 1.60.5-(R)
RV-1EE-201B	3	C	1/2	Relief		36-1	D-1	SPT		1BVT 1.60.5-(R)
RV-1EE-201C	3	C	1/2	Relief		36-1	D-1	SPT		1BVT 1.60.5-(R)
RV-1EE-202A	3	C	1/2	Relief		36-1	C-5	SPT		1BVT 1.60.5-(R)
RV-1EE-202B	3	C	1/2	Relief		36-1	D-5	SPT		1BVT 1.60.5-(R)
RV-1EE-202C	3	C	1/2	Relief		36-1	D-5	SPT		1BVT 1.60.5-(R)
RV-1EE-203A	3	C	1/2	Relief		36-1	C-6	SPT		1BVT 1.60.5-(R)



BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: 4KV Station Service (Diesel Air Start)

SYSTEM NUMBER: 36

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1EE-203B	3	C	1/2	Relief		36-1	D-6	SPT		1BVT 1.60.5 (R)
RV-1EE-203C	3	C	1/2	Relief		36-1	D-6	SPT		1BVT 1.60.5 (R)
RV-1EE-204A	3	C	1/2	Relief		36-1	C-10	SPT		1BVT 1.60.5 (R)
RV-1EE-204B	3	C	1/2	Relief		36-1	D-10	SPT		1BVT 1.60.5 (R)
RV-1EE-204C	3	C	1/2	Relief		36-1	D-10	SPT		1BVT 1.60.5 (R)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 36
SYSTEM NAME: 4KV Station Service (Diesel Fuel Oil)	Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
							OM No.	Coord.			
1FO-7	3	C	3/4	Check			36-2	B-5	QS		1OST-36.1-FS,FD,RD (M)
1FO-8	3	C	3/4	Check			36-2	A-5	QS		1OST-36.1-FS,FD,RD (M)
1FO-9	3	C	3/4	Check			36-2	E-5	QS		1OST-36.2-FS,FD,RD (M)
1FO-10	3	C	3/4	Check			36-2	E-5	QS		1OST-36.2-FS,FD,RD (M)
1FO-116	3	B	2	Gate		LS	36-2	B-1	QS		1OST-47.3A-Stroke Only Open (Q)
1FO-117	3	B	2	Gate		LS	36-2	F-1	QS		1OST-47.3A-Stroke Only Open (Q)
1FO-35	3	C	2	Check			36-2	B-3	QS		1OST-36.1-FS,FD (M)
1FO-36	3	C	2	Check			36-2	E-3	QS		1OST-36.2-FS,FD (M)
RV-1EE-101A	3	C	3/4 x 1	Relief			36-2	B-4	SPT		1BVT 160.5 (R)
RV-1EE-101B	3	C	3/4 x 1	Relief			36-2	A-4	SPT		1BVT 160.5 (R)
RV-1EE-101C	3	C	3/4 x 1	Relief			36-2	E-4	SPT		1BVT 160.5 (R)
RV-1EE-101D	3	C	3/4 x 1	Relief			36-2	E-4	SPT		1BVT 160.5 (R)

BVPS-1 IST  
VALVE TESTING OUTLINE

SYSTEM NAME: Control Area Ventilation						SYSTEM NUMBER 44A				
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord			
RV-1VS-101A	3	C	½ x 1	Relief		44A-1	F-2	SPT		1BVT 1.60.5-(R)
TV-1VS-101A	3	B	1	Gate	S	44A-1	G-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
RV-1VS-101B	3	C	½ x 1	Relief		44A-1	F-2	SPT		1BVT 1.60.5-(R)
TV-1VS-101B	3	B	1	Gate	S	44A-1	F-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
RV-1VS-101C	3	C	½ x 1	Relief		44A-1	E-2	SPT		1BVT 1.60.5-(R)
TV-1VS-101C	3	B	1	Gate	S	44A-1	E-3	QST		1/2 OST-44A.12-Stroke & Time Open (Q)
RV-1VS-101D	3	C	½ x 1	Relief		44A-1	D-2	SPT		1BVT 1.60.5-(R)
TV-1VS-101D	3	B	1	Gate	S	44A-1	D-3	QST		1/2 OST-44A.12-Stroke & Time Open (Q)
RV-1VS-101E	3	C	½ x 1	Relief		44A-1	C-2	SPT		1BVT 1.60.5-(R)
TV-1VS-101E	3	B	1	Gate	S	44A-1	C-3	QST		1/2 OST-44A.12-Stroke & Time Open (Q)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Containment Area Ventilation								SYSTEM NUMBER 44C		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
1VS-D-5-3A	2	A	42	Butterfly	LS	44C-15	None	QST	CSJ28	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1,RR38	1BVT 1.47.5-Leak Test (R)
1VS-D-5-3B	2	A	42	Butterfly	LS	44C-15	None	QST	CSJ28	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1,RR38	1BVT 1.47.5-Leak Test (R)
1VS-D-5-5A	2	A	42	Butterfly	LS	44C-15	None	QST	CSJ28	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1,RR39	1BVT 1.47.5-Leak Test (R)
1VS-D-5-5B	2	A	42	Butterfly	LS	44C-15	None	QST	CSJ28	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1,RR39	1BVT 1.47.5-Leak Test (R)
1VS-D-5-6	2	A/P	8	Ball	S	44C-15	None	LT	RR1,RR39	1BVT 1.47.5-Leak Test (R)
1VS-D-40-1A	3	B	48	Butterfly	O	44A-4	C-2	QST		1/2 OST-44A.12-Stroke & Time Closed (Q)(RPV)
1VS-D-40-1B	3	B	48	Butterfly	O	44A-4	C-3	QST		1/2 OST-44A.12-Stroke & Time Closed (Q)(RPV)
1VS-D-40-1C	3	B	48	Butterfly	O	44A-4	B-5	QST		1/2 OST-44A.12-Stroke & Time Closed (Q)(RPV)
1VS-D-40-1D	3	B	48	Butterfly	O	44A-4	B-5	QST		1/2 OST-44A.12-Stroke & Time Closed (Q)(RPV)
1VS-544	3	C	1/4	Check		44A-2	F-7	QS		1/2 OST-44A.12-FS,FD (Q)
1VS-545	3	C	1/4	Check		44A-2	G-7	QS		1/2 OST-44A.12-FS,FD (Q)
1VS-546	3	C	1/4	Check		44A-2	E-7	QS		1/2 OST-44A.12-FS,FD (Q)
1VS-547	3	C	1/4	Check		44A-2	F-7	QS		1/2 OST-44A.12-FS,FD (Q)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE										SYSTEM NUMBER: 46	
SYSTEM NAME: Post DBA Hydrogen Control	Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
	1HY-101	2	A	2	Ball	LS	46-1	A-3	QS		1OST-47-3A(3B) Stroke Only Open (Q)
									LT	RR1,RR40	1BVT 1.47-5-Leak Test (R)
	1HY-102	2	A	2	Ball	LS	46-1	E-3	QS		1OST-47-3A(3B) Stroke Only Open (Q)
									LT	RR1,RR41	1BVT 1.47-5-Leak Test (R)
	MOV-1HY-102A	2	B	2	Ball	S	46-1	B-5	QST		1OST-47-3A(3B) Stroke & Time Open (Q)(RPV)
	SOV-1HY-102A1	2	A	3/8	Globe	S	46-2	A-3	QST		1OST-47-3A(3B) Stroke & Time Open/Closed (Q)
									LT	RR1	1BVT 1.47-5-Leak Test (R)(RFV)
	SOV-1HY-102A2	2	A	3/8	Globe	S	46-2	B-4	QST		1OST-47-3A(3B) Stroke & Time Open/Closed (Q)
									LT	RR1	1BVT 1.47-5-Leak Test (R)(RPV)
	MOV-1HY-102B	2	B	2	Ball	S	46-1	E-5	QST		1OST-47-3A(3B) Stroke & Time Open (Q)(RPV)
	SOV-1HY-102B1	2	A	3/8	Globe	S	46-2	E-3	QST		1OST-47-3A(3B) Stroke & Time Open/Closed (Q)
									LT	RR1	1BVT 1.47-5-Leak Test (R)(RPV)
	SOV-1HY-102B2	2	A	3/8	Globe	S	46-2	E-4	QST		1OST-47-3A(3B) Stroke & Time Open/Closed (Q)
									LT	RR1	1BVT 1.47-5-Leak Test (R)(RPV)
	1HY-103	2	A	2	Ball	LS	46-1	A-3	QS		1OST-47-3A(3B) Stroke Only Open (Q)
									LT	RR1,RR40	1BVT 1.47-5-Leak Test (R)

BVPS-1 IST VALVE TESTING OUTLINE										
SYSTEM NAME: Post DBA Hydrogen Control								SYSTEM NUMBER: 46		
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord			
SOV-1HY-103A1	2	A	3/8	Globe	S	46-2	B-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
SOV-1HY-103A2	2	A	3/8	Gate	S	46-2	B-4	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
SOV-1HY-103B1	2	A	3/8	Gate	S	46-2	F-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
SOV-1HY-103B2	2	A	3/8	Gate	S	46-2	F-4	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
1HY-104	2	A	2	Ball	LS	46-1	E-3	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
								LT	RR1,RR41	1BVT 1.47.5-Leak Test (R)
SOV-1HY-104A1	2	A	3/8	Gate	S	46-2	C-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
SOV-1HY-104A2	2	A	3/8	Gate	S	46-2	C-4	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
SOV-1HY-104B1	2	A	3/8	Gate	S	46-2	G-3	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)



## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE										SYSTEM NUMBER
SYSTEM NAME: Post DBA Hydrogen Control										46
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
SOV-1HY-104B2	2	A	3/8	Gate	S	46-2	F-4	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
1HY-110	2	A	2	Ball	LS	46-1	C-2	QS	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
1HY-111	2	A	2	Ball	LS	46-1	G-2	QS	RR1	1OST-47.3A(3B)-Stroke Only Open (Q)
1HY-196	2	A	2	Ball	LS	46-1	C-3	QS	RR1	1BVT 1.47.5-Leak Test (R)
1HY-197	2	A	2	Ball	LS	46-1	G-3	QS	RR1	1OST-47.3A(3B)-Stroke Only Open (Q)
								LT		1BVT 1.47.5-Leak Test (R)

## INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

BVPS-1 IST VALVE TESTING OUTLINE											SYSTEM NUMBER: 47
SYSTEM NAME: Containment											
Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments	
						OM No.	Coord.				
1VS-167	2	A/P	1 1/2	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)	
1VS-168	2	A/P	1 1/2	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)	
1VS-169	2	A/P	1 1/2	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)	
1VS-170	2	A/P	1 1/2	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)	
1VS-176	3	B/P	1 1/2	Gate	S	47-5	None	NA		NA	
1VS-177	3	B/P	1 1/2	Gate	S	47-5	None	NA		NA	
1VS-178	3	B/P	1 1/2	Gate	S	47-5	None	NA		NA	
1VS-179	3	B/P	1 1/2	Gate	S	47-5	None	NA		NA	
1VS-183	2	A/P	2	Ball	S	47-7	None	LT	RR42	1BVT 1.47.10-Type B Leak Test (SA)	
1VS-184	2	A/P	2	Ball	S	47-7	None	LT	RR42	1BVT 1.47.10-Type B Leak Test (SA)	

**SECTION VII:**

**VALVE TESTING COLD SHUTDOWN JUSTIFICATIONS**

**COLD SHUTDOWN JUSTIFICATION** 1**Valve No.:**

SOV-1RC-102A  
SOV-1RC-102B  
SOV-1RC-103A  
SOV-1RC-103B  
SOV-1RC-104  
SOV-1RC-105

**Category** B**Class** 1**Function:**

Reactor coolant system high points vents.

**Test Requirement:**

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 noncondensable 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 open at cold shutdowns per 1OST-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 Plant Requirements".

**COLD SHUTDOWN JUSTIFICATION** 2**Valve No.:**

PCV-1RC-455C

PCV-1RC-455D

PCV-1RC-456

**Category** 1**Class** B**Function:**

PORVs

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

The PORVs are not needed for overpressure protection during power operation since the pressurizer code safety valves fulfill 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-1RC-456]) does not have a low pressure set point to the logic controlling it.

**Alternate Test:**

Full-stroke exercise and timing open will be performed each cold shutdown per 10ST-6.8 for the two valves used for overpressure protection. The third valve will be full-stroke exercised and timed open at the normal cold shutdown frequency per 10ST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 3**Valve No.:**

1CH-75

1CH-76

**Category** C**Class** 3**Function:**

Discharge check valves for the boric acid transfer pumps.

**Test Requirement:**

Quarterly full 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 open during cold shutdown per 1OST-1.10. Valves are part-stroke exercised open quarterly when the boric acid transfer pumps are tested through their recirculation flow paths per 1OST-7.1 & 7.2.



**COLD SHUTDOWN JUSTIFICATION** 4**Valve No.:**

MOV-1CH-115C

MOV-1CH-115E

**Category** B**Class** 2**Function:**

Volume Control Tank outlet isolation valves.

**Test Requirement:**

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 Coolant System makeup and reactor coolant pump seal injection water causing possible pump and system degradation.

**Alternate Test:**

Full-stroke exercise and time closed at cold shutdown per 1OST-1.10.

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**COLD SHUTDOWN JUSTIFICATION** 5**Valve No.:**

1CH-141

**Category** C**Class** 2**Function:**

Emergency boration line check valve.

**Test Requirement:**

Quarterly full 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 exercised open during cold shutdown per 1OST-1.10.

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**COLD SHUTDOWN JUSTIFICATION** 6**Valve No.:**

MOV-1CH-289

TV-1CH-204

**Category** A**Class** 2**Function:**

Reactor coolant makeup and letdown outside containment isolation valves.

**Test Requirement:**

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 closed at cold shutdown per 1OST-1.10.

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**COLD SHUTDOWN JUSTIFICATION** 7**Valve No.:**

MOV-1CH-310

LCV-1CH-460A

LCV-1CH-460B

**Category** B**Class** 1**Function:**

Reactor coolant makeup and letdown isolation valves.

**Test Requirement:**

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 closed at cold shutdown per 1OST-1.10.

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**COLD SHUTDOWN JUSTIFICATION** 8**Valve No.:**

MOV-1CH-373

**Category** B**Class** 2**Function:**

HHSI pump to VCT miniflow isolation valve.

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

Quarterly full 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 closed at cold shutdown per 1OST-1.10.

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**COLD SHUTDOWN JUSTIFICATION** 9**Valve No.:**

1CH-84

1CH-136

**Category** C**Class** 3**Function:**

Alternate Emergency Boration Flow Path Check Valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for CSJ:**

These valves must open to fulfill their safety function to provide an alternate emergency boration flow path from the boric acid tanks to the reactor coolant system. They 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 lead to a forced plant shutdown.

**Alternate Test:**

Full-stroke exercised open during cold shutdowns per 1OST-1.10.

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**COLD SHUTDOWN JUSTIFICATION** 10**Valve No.:**

1RH-3

1RH-4

**Category** C**Class** 2**Function:**

Residual Heat Removal Pumps Discharge Check Valves.

**Test Requirement:**

Quarterly full 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 1OST-10.1 during cold shutdown.

**COLD SHUTDOWN JUSTIFICATION** 11**Valve No.:**

MOV-1RH-700

MOV-1RH-701

MOV-1RH-720A

MOV-1RH-720B

**Category** A**Class** 1**Function:**

Residual Heat Removal System Inlet and Outlet isolation valves.

**Test Requirement:**

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 open each plant cooldown or heatup from cold shutdown per 1OST-10.4.

**COLD SHUTDOWN JUSTIFICATION** 12**Valve No.:**

MOV-1SI-836  
MOV-1SI-869A

**Category** A**Class** 2**Function:**

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

**Test Requirement:**

Quarterly full 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 open and closed at cold shutdown per 1OST-1.10.

---

**COLD SHUTDOWN JUSTIFICATION** 13**Valve No.:**

MOV-1SI-860A  
MOV-1SI-860B

**Category** A**Class** 2**Function:**

Low Head Safety Injection pump containment sump suction valves.

**Test Requirement:**

Quarterly full 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 exercise and time open and closed at cold shutdown per 1OST-1.10.

---

**COLD SHUTDOWN JUSTIFICATION** 14**Valve No.:**

MOV-1SI-869B

**Category** A**Class** 2**Function:**

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

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

This valve is shut during 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.

**Alternate Test:**

Full-stroke exercise and time open and closed at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 15**Valve No.:**

MOV-1SI-890C

**Category** A**Class** 2**Function:**

Low Head Safety Injection outside containment isolation to RCS cold legs.

**Test Requirement:**

Quarterly full 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. Failure of this valve to reopen after exercising would render LHSI cold leg injection from both trains inoperable.

**Alternate Test:**

Full-stroke exercise and time open and closed at cold shutdown per 1OST-1.10.



**COLD SHUTDOWN JUSTIFICATION** 16**Valve No.:**

1QS-3  
1QS-4  
1RS-100  
1RS-101

**Category** A/C**Class** 2**Function:**

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

**Test Requirement:**

Quarterly full stroke.

**Basis for CSJ:**

These valves are all physically located in the subatmospheric 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 exercised open by mechanical exerciser utilizing their weighted swing arms at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 17**Valve No.:**

TV-1CC-111A1  
TV-1CC-111A2  
TV-1CC-111D1  
TV-1CC-111D2

**Category** A**Class** 2**Function:**

Containment isolation valve for CRDM shroud cooler cooling water supply.

**Test Requirement:**

Quarterly full 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. Full or part-stroke testing of 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 closed at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 18**Valve No.:**

1CCR-247  
1CCR-248  
1CCR-251  
1CCR-252

**Category** A**Class** 2**Function:**

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

**Test Requirement:**

Quarterly full 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 open during cold shutdowns per Operating Manual Chapter 10.4.A, "Startup of the RHR System".

---

**COLD SHUTDOWN JUSTIFICATION** 19**Valve No.:**

TV-1CC-110E2  
TV-1CC-110E3  
TV-1CC-110D  
TV-1CC-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 Requirement:**

Quarterly full 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 closed at cold shutdown per 1OST-1.10.

---

**COLD SHUTDOWN JUSTIFICATION** 20**Valve No.:**

TV-1CC-130

TV-1CC-132

**Category** B**Class** 3**Function:**

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

**Test Requirement:**

Quarterly full 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 closed at cold shutdowns per 1OST-1.10.

---

**COLD SHUTDOWN JUSTIFICATION** 21**Valve No.:**

1MS-15

1MS-16

1MS-17

**Category** B**Class** 2**Function:**

S/G Supply to 1FW-P-2 manual isolation.

**Test Requirement:**

Quarterly full stroke.

**Basis for CSJ:**

These valves will be stroked quarterly except in the event of a steam generator tube leak. In this case, the valve from the affected steam generator must remain closed to prevent the spread of radioactivity into the auxiliary feed system.

**Alternate Test:**

Full-stroke exercise [1MS-15, 16] closed and [1MS-17] open quarterly per 1OST-24.4 or during cold shutdowns per 1OST-24.9.

---

**COLD SHUTDOWN JUSTIFICATION** 22**Valve No.:**

NRV-1MS-101A

NRV-1MS-101B

NRV-1MS-101C

**Category** B/C**Class** 2**Function:**

Main steam non-return check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for CSJ:**

Full- or part-stroke testing these valves at power is not possible because these valves must be open in order to remain at power.

**Alternate Test:**

Full-stroke exercise closed at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 23**Valve No.:**

PCV-1MS-101A

PCV-1MS-101B

PCV-1MS-101C

**Category** B**Class** 2**Function:**

Atmospheric steam dump pressure control valves.

**Test Requirement:**

Quarterly full 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  $\Delta p$ . Also, full or partial stroking the PCV valves at power could cause Reactor power transients.

**Alternate Test:**

Full-stroke exercise and time open and closed at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 24**Valve No.:**

TV-1MS-101A

TV-1MS-101B

TV-1MS-101C

**Category** B/C**Class** 2**Function:**

Main steam line isolation valves (pneumatically opened).

**Test Requirement:**

Quarterly full-stroke and time.

**Basis for CSJ:**

These valves are normally open at power but must close in the event of a high energy line break. Stroking these valves fully closed during full power operation would cause a reactor trip with the possibility of a safety injection. A review of plant history also indicates that several forced plant shutdowns have resulted from part-stroke testing these valves at power due to their inadvertent closure for reasons not related to valve operability. For these reasons, full- and part-stroke testing is not considered practical and will not be performed. This change is consistent with Technical Specification Amendment No. 162.

**Alternate Test:**

Full-stroke exercise and time closed in hot standby with  $T_{avg} \geq 515^{\circ}\text{F}$  per 10ST-21.4, 5 and 6.

**COLD SHUTDOWN JUSTIFICATION** 25**Valve No.:**

1FW-33	1FW-42	1FW-622	1FW-625
1FW-34	1FW-43	1FW-623	1FW-626
1FW-35	1FW-44	1FW-624	1FW-627

**Category** C**Class** 3**Function:**

Auxiliary feedwater pumps discharge and loop check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for CSJ:**

The safety position for these check valves is open for auxiliary feed system injection and closed to provide header separation in the event of a linebreak. These valves cannot be stroked at power due to the thermal shock at the auxiliary and main feedwater interface caused by the sudden injection of cold water into the steam generators. Also, feeding the steam generators with cold water would result in large level transients.

**Alternate Test:**

All valves are full-stroke exercised in the forward direction at cold shutdowns per either 1OST-24.8 or 9. Valves [1FW-33 thru 35] and [1FW-622 thru 627] are full-stroke exercised in the reverse direction at cold shutdowns per 1OST-24.8. Reverse direction testing of [1FW-42 thru 44] will be by monitoring upstream pipe temperatures at least quarterly and by leak test per 1OST-24.11 at refuelings.



**COLD SHUTDOWN JUSTIFICATION** 26**Valve No.:**

MOV-1FW-156A

MOV-1FW-156B

MOV-1FW-156C

**Category** B/C**Class** 2**Function:**

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

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

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 will only operate with a very small or no differential pressure across the valve. It is not for use at power.

**Alternate Test:**

Full-stroke exercise and time closed at cold shutdown per 1OST-1.10, and as an additional test of the check valve verify closure by a leak test per 1OST-24.14A, B, and C at refuelings.

**COLD SHUTDOWN JUSTIFICATION** 27**Valve No.:**

1FP-800

1FP-804

1FP-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 Requirement:**

Quarterly full 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 open and closed by mechanical exerciser utilizing their weighted swing arms at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 28**Valve No.:**

1VS-D-5-3A

1VS-D-5-3B

1VS-D-5-5A

1VS-D-5-5B

**Category** A**Class** 2**Function:**

Containment isolation valves for refueling purge and exhaust lines.

**Test Requirement:**

Quarterly full 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 exercise and time closed at cold shutdown per 1OST-1.10.

**COLD SHUTDOWN JUSTIFICATION** 29**Valve No.:**

FCV-1FW-478

FCV-1FW-488

FCV-1FW-498

**Category** B**Class** 2**Function:**

Steam Generator main feedwater regulating valves.

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

Valves are normally open during power operation. Their safety position is closed for feedwater isolation. Full stroke and time testing cannot be performed at power since this would isolate feedwater flow to the steam generators resulting in a plant trip and shutdown.

**Alternate Test:**

Full-stroke exercise and time closed at cold shutdown per 1OST-1.10.

---

**COLD SHUTDOWN JUSTIFICATION** 30

DELETED

**COLD SHUTDOWN JUSTIFICATION** 31**Valve No.:**

MOV-1FW-150A

MOV-1FW-150B

**Category** B**Class** 3**Function:**

Main feedwater pump discharge isolation and backup feedwater isolation.

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

During plant operation, these valves are open to supply feedwater flow to the steam generators. Their safety function is to close for backup feedwater isolation. Full-stroke and time testing cannot be performed at power since this would isolate feedwater resulting in a plant trip and shutdown.

**Alternate Test:**

Full-stroke exercise and time closed at cold shutdown per 10ST-1.10.

---

**COLD SHUTDOWN JUSTIFICATION** 32**Valve No.:**

MOV-1SI-867A

MOV-1SI-867B

**Category** B**Class** 2**Function:**

Boron Injection Tank (BIT) Inlet isolation valves.

**Test Requirement:**

Quarterly full stroke and time.

**Basis for CSJ:**

These valves are shut at power but are required to open to fulfill their safety function in the event of a safety injection. Stroking these valves fully or partially at power has historically caused leakage past the BIT manway flange and the other valves in the system. In addition, stroking these valves would dilute the boron concentration of the BIT, potentially causing entry into a technical specification action statement.

**Alternate Test:**

Full-stroke exercise and time open during cold shutdown per 10ST-1.10.

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## **SECTION VIII: VALVE TESTING RELIEF REQUESTS**

**RELIEF REQUEST** 1

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

**Category** A or A/C

**Class** 2

**Function:**

Containment Isolation

**Test Requirement:**

Leak tested per IWV-3420 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 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, IWV-3426, and IWV-3427(a) per 1BVT 1.47.5. The additional requirements of IWV-3427(b) for valves six inches or larger will not be followed. The usefulness of IWV-3427(b) does not justify the burden of complying with this requirement. Unnecessary repair or replacement of a valve or additional leak testing, if attempted at cold shutdown, could delay plant startup. Per 10CFR50.55a(a)(3)(ii) compliance with the specified requirements of IWV-3427(b) would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety. For the valves listed on the next page of this relief request, an asterisk to the left of the valve mark number indicates its size as six inches or larger. As a special test, after maintenance has been performed on any Type C relief valve, 1BVT 2.47.2 may also be performed to leak test the valve in lieu of 1BVT 1.47.5.



RELIEF REQUEST 1Containment Isolation Valves

*MOV-1CC-112A2	TV-1CC-107E1	TV-1SS-109A2	1HY-101
*1CCR-247	TV-1CC-107E2	TV-1LM-100A1	TV-1CV-150A
*MOV-1CC-112B3	TV-1CC-105E1	TV-1LM-100A2	1HY-103
*1CCR-252	TV-1CC-105E2	TV-1SS-111A1	*HCV-1CV-151
*MOV-1CC-112A3	TV-1CH-200A	TV-1SS-111A2	*HCV-1CV-151-1
*1CCR-251	TV-1CH-200B	TV-1SS-100A1	SOV-1HY-102B1
*MOV-1CC-112B2	TV-1CH-200C	TV-1SS-100A2	SOV-1HY-102B2
*1CCR-248	RV-1CH-203	TV-1SS-102A1	SOV-1HY-103B1
TV-1CC-107D1	MOV-1CH-142	TV-1SS-102A2	SOV-1HY-103B2
TV-1CC-107D2	TV-1CH-204	TV-1SS-105A1	SOV-1HY-104B1
*TV-1CC-111D1	TV-1DG-108A	TV-1SS-105A2	SOV-1HY-104B2
*TV-1CC-111D2	TV-1DG-108B	*TV-1CC-103A1	TV-1SS-104A1
*TV-1CC-110D	1FP-804	*TV-1CC-103A	TV-1SS-104A2
*TV-1CC-110F1	TV-1FP-105	*1QS-4	TV-1SS-103A1
*TV-1CC-110F2	1FP-800	*MOV-1QS-101B	TV-1SS-103A2
1FP-827	TV-1FP-106	*1QS-3	*1PC-38
TV-1FP-107	TV-1DA-100A	*MOV-1QS-101A	*1PC-37
*TV-1CC-110E3	TV-1DA-100B	*1RS-101	*1PC-9
*TV-1CC-110E2	1SA-15	*1RS-100	*1PC-10
*TV-1CC-111A2	1SA-14	1HY-196	TV-1SS-112A1
*TV-1CC-111A1	TV-1CV-102-1	1HY-111	TV-1SS-112A2
*TV-1CC-103B1	TV-1CV-102	1HY-197	MOV-1SI-842
*TV-1CC-103B	TV-1CV-101A	1HY-110	TV-1SI-889
*TV-1CC-103C1	TV-1CV-101B	*AS-278	SOV-1HY-102A1
*TV-1CC-103C	1RC-72	*TV-1SV-100A	SOV-1HY-102A2
MOV-1CH-378	TV-1RC-519	*VS-D-5-3B	SOV-1HY-103A1
1CH-369	1IA-91	*VS-D-5-3A	SOV-1HY-103A2
MOV-1CH-381	1IA-90	*VS-D-5-5B	SOV-1HY-104A1
1SI-42	TV-1DG-109A2	*VS-D-5-5A	SOV-1HY-104A2
1SI-41	TV-1DG-109A1	*VS-D-5-6	1RC-277
*1RH-14	1RC-68	TV-1CV-150C	1RC-278
1RH-16	TV-1RC-101	1HY-102	1VS-169
*1RH-15	TV-1SI-101-2	TV-1CH-150D	1VS-170
*TV-1CC-105D1	TV-1SI-101-1	1HY-104	1VS-167
*TV-1CC-105D2	TV-1SS-109A1	TV-1CV-150B	1VS-168

\* Indicates valve size six inches or larger.

**RELIEF REQUEST** 2**Valve No.:**

1RC-68

**Category** A/C**Class** 2**Function:**Inside containment isolation on the N<sub>2</sub> makeup line to the Pressurizer Relief Tank.**Test Requirement:**

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:**

Valve closure is verified by a leak test during refueling outages per 1BVT 1.47.5.

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**RELIEF REQUEST** 3**Valve No.:**

1RC-72

**Category** A/C**Class** 2**Function:**

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

**Test Requirement:**

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:**

Valve closure is verified by a leak test during refueling outages per 1BVT 1.47.5.

---

**RELIEF REQUEST** 4**Valve No.:**

1CH-22

1CH-23

1CH-24

**Category** C**Class** 2**Function:**

Normal pump discharge check valves for the charging pumps.

**Test Requirement:**

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 full-stroke exercising because full flow testing could result in a low temperature overpressurization of the RCS.

**Alternate Test:**

Part-stroke exercised open and full-stroke exercised closed quarterly per 1OST 7.4, 5 and 6. Full-stroke exercise open during refueling outages per 1OST-11.14.

**RELIEF REQUEST** 5**Valve No.:**

1CH-31

**Category** A/C**Class** 2**Function:**

Charging header inside containment isolation check valve.

**Test Requirement:**

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:**

Valve closure is verified by a leak test during refueling outages per 1BVT 1.47.11.

**RELIEF REQUEST** 6**Valve No.:**

1CH-181

1CH-182

1CH-183

**Category** A/C**Class** 2**Function:**

Reactor coolant seal injection inside containment isolation check valves.

**Test Requirement:**

Quarterly full 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, or 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:**

Valve closure is verified by a leak test during refueling outages per 1BVT 1.47.11.

**RELIEF REQUEST** 7**Valve No.:**

TV-1CH-200A

TV-1CH-200B

TV-1CH-200C

**Category** A**Class** 2**Function:**

Reactor coolant letdown orifice inside containment isolation valves.

**Test Requirement:**

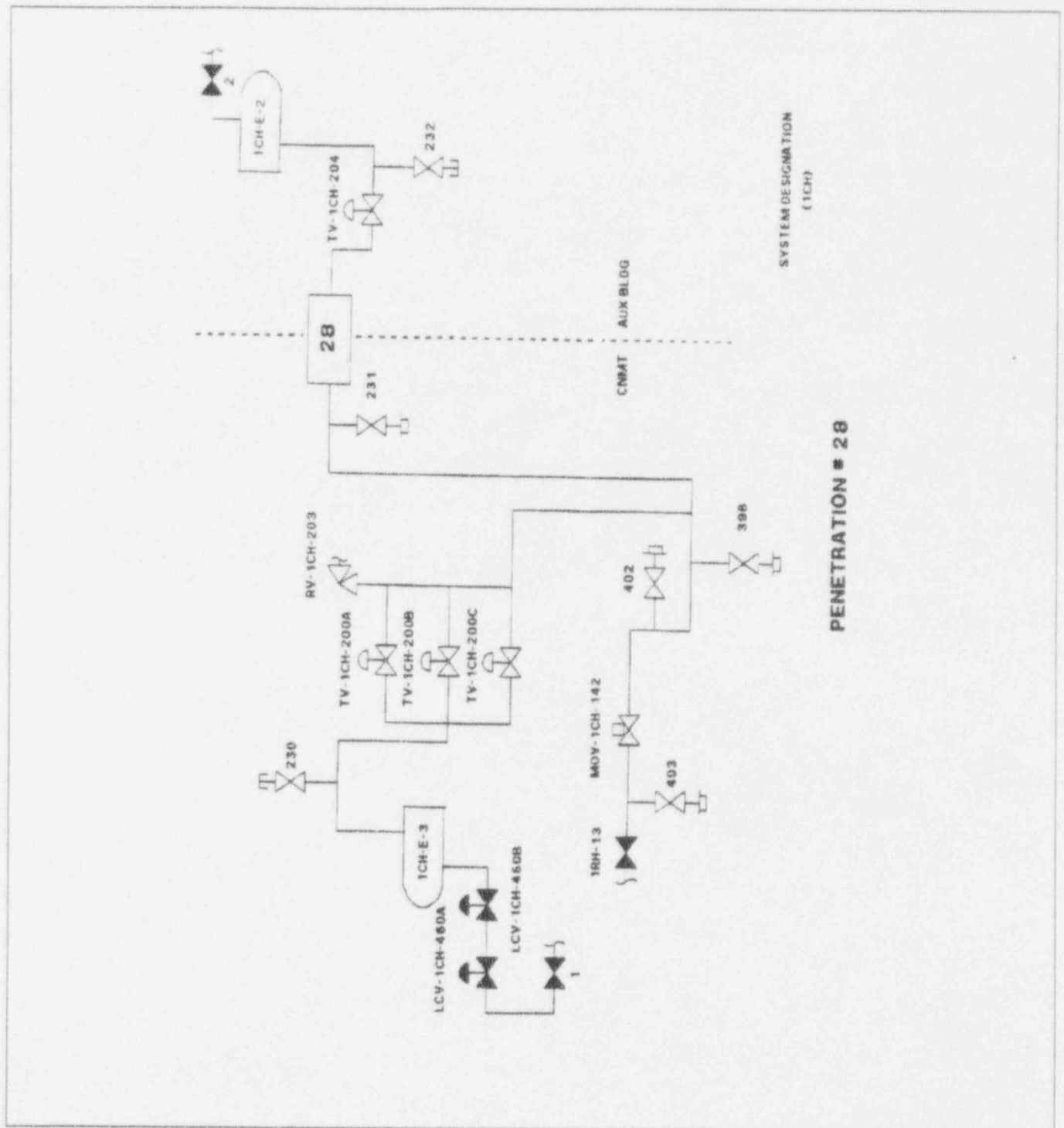
IWV-3426 and 3427(a) require Owner specified maximum permissible leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

**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 permissible leakage rates for each valve would not be practical.

**Alternate Test:**

Assign a maximum permissible leakage rate for the entire barrier to then be used as the criteria for initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 7

**RELIEF REQUEST** 8**Valve No.:**

1CH-369

**Category** A/C**Class** 2**Function:**

Penetration 19 pressure relief check around [MOV-1CH-378]

**Test Requirement:**

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:**

Valve closure is verified by a leak test during refueling outages per 1BVT 1.47.5.



**RELIEF REQUEST** 9**Valve No.:**

MOV-1CH-378

1CH-369

**Category** A; A/C**Class** 2**Function:**

RCP seal water return line inside containment isolation valves.

**Test Requirement:**

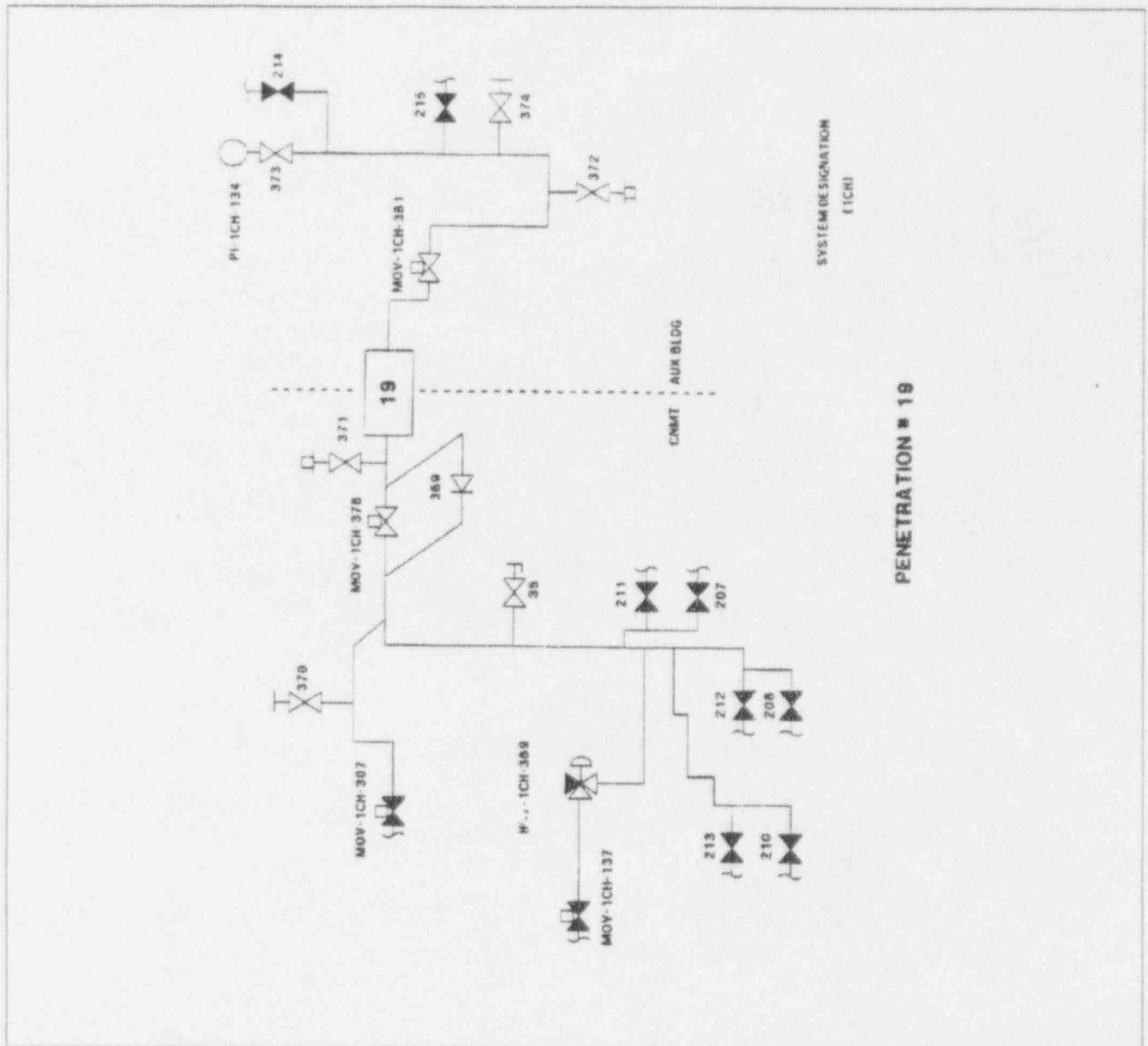
IWV-3426 and 3427(a) require Owner specified maximum permissible leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

**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 permissible leakage rates for each valve would not be practical.

**Alternate Test:**

Assign a maximum permissible leakage rate for the entire barrier to then be used as the criteria for initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 9

**RELIEF REQUEST** 10**Valve No.:**

MOV-1CH-308A

MOV-1CH-308B

MOV-1CH-308C

**Category** A**Class** 2**Function:**

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

**Test Requirement:**

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 closed during cold shutdowns when RCS pressure has been reduced to below 100 psig, and at refueling outages per 1OST-1.10.

---

**RELIEF REQUEST** 11**Valve No.:**

MOV-1CH-370

**Category** B**Class** 2**Function:**

Charging supply isolation to Reactor Coolant Pump Seal Injection.

**Test Requirement:**

Quarterly 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 closed during cold shutdowns when RCS pressure has been reduced to below 100 psig, and at refueling outages per 1OST-1.10.

---

**RELIEF REQUEST** 12**Valve No.:**

MOV-1CH-378

MOV-1CH-381

**Category** A**Class** 2**Function:**

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

**Test Requirement:**

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. 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 time closed during cold shutdowns when RCS pressure has been reduced to below 100 psig, and at refueling outages per 1OST-1.10.

**RELIEF REQUEST** 13**Valve No.:**

1SI-1

1SI-2

**Category** C**Class** 2**Function:**

LHSI pump suction check valves from the containment sump.

**Test Requirement:**

Quarterly full 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. Full or part-stroke exercising these valves would involve simulating an actual safety injection long-term cooling event by taking suction from the containment sump and delivering contaminated/dirty water to the RWST or RCS. This is impractical, therefore, relief from all full- or part-stroke exercising is requested.

**Alternate Test:**

Maintenance is to disassemble and inspect one valve per refueling outage per 1CMP-75-ALOYCO CHECK-1M.

**RELIEF REQUEST** 14**Valve No.:**

1SI-5

**Category** C**Class** 2**Function:**

LHSI pump suction check valve from the RWST.

**Test Requirement:**

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 exercised quarterly in the open direction per 1OST-11.1 and 2. Full-stroked exercised open at refueling outages per 1OST-11.14.

**RELIEF REQUEST** 15**Valve No.:**

1SI-6

1SI-7

**Category** C**Class** 2**Function:**

LHSI pump discharge check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

These valves close when the opposite LHSI pump is operating to prevent damaging the non-running pump seals and pump suction piping, but must be fully open during an accident. Relief from stroking to the full or partial open position 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:**

Full-stroke exercised closed quarterly per 1OST-11.1 and 2. Full-stroke exercised open at refueling outages per 1OST-11.14.

**RELIEF REQUEST** 16**Valve No.:**

1SI-10

1SI-11

1SI-12

**Category** A/C**Class** 1**Function:**

LHSI cold leg branch line check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

These check valves are normally shut to prevent reverse flow from the higher pressure RCS and HHSI system to the LHSI low pressure system 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 volume to receive the additional inventory.

**Alternate Test:**

Full-stroke exercised open per 1OST-11.14. One or both LHSI pumps will be aligned to the cold legs. Portable Ultrasonic flow meters will be mounted on the lines. Flows through each of the three branch lines will be measured. If design accident flow is achieved through each line, the check valves will have met Position 1 of GL 89-04.

If sufficient flow is not recorded, a method similar to the Ft. Calhoun Nuclear Station method of testing the Accumulator discharge check valves would be used. The flows through each line would be measured, and the differential pressure between the SI pumps discharge to cold leg loops pressure indicator, [PI-1SI-900], and the RCS pressure, determined from pressurizer level, would be calculated for each line. The line resistance  $K'$  would then be calculated for each line and compared to acceptance criteria.

If this acceptance criteria is not met, the check valves in the suspect line would be disassembled and inspected, and then partial-stroke exercised open per Position 2 of GL 89-04.

Reverse flow exercised closed by leak test per 1OST-11.16 during refueling outages.



**RELIEF REQUEST** 17**Valve No.:**

1SI-20  
1SI-21  
1SI-22  
1SI-100  
1SI-101  
1SI-102

**Category** C**Class** 1**Function:**

SI hot and cold leg branch line check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The safety function for these valves is to open in the event of a safety injection. These check valves cannot be full or part-stroked open at power at any frequency due to the potential for a premature failure of the injection nozzles caused by the thermal shock from a cold water injection. Relief from stroke testing at cold shutdowns is also requested since this could result in a low temperature overpressurization of the RCS.

**Alternate Test:**

Full-stroke exercised open per 1OST-11.14 during refueling outages.

**RELIEF REQUEST** 18**Valve No.:**

1SI-23

1SI-24

1SI-25

**Category** A/C**Class** 1**Function:**

SI cold leg branch line check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

These check valves are normally shut during power operation to prevent reverse flow from the higher pressure RCS to the lower pressure LHSI system 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 volume to receive the additional inventory.

**Alternate Test:**

Full-stroke exercised open per 1OST-11.14. One or both LHSI pumps will be mounted on the lines. Flows through each of the three branch lines will be measured. If design accident flow is achieved through each line, the check valves will have met Position 1 of GL 89-04. If sufficient flow is not recorded, a method similar to the Ft. Calhoun Nuclear Station method of testing the Accumulator discharge check valves would be used. The flows through each line would be measured, and the differential pressure between the SI pumps discharge to cold leg loops pressure indicator, [PI-1SI-900], and the RCS pressure, determined from pressurizer level, would be calculated for each line. The line resistance  $K'$  would then be calculated for each line and compared to acceptance criteria. If this acceptance criteria is not met, the check valves in the suspect line would be disassembled and inspected, and then partial-stroke exercised open per Position 2 of GL 89-04. Reverse flow exercised closed by leak test per 1OST-11.16 during refueling outages.

RELIEF REQUEST 19

Valve No.:

1SI-27

Category A/CClass 2

Function:

High head safety injection pump suction from RWST check valve.

Test Requirement:

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. Therefore, relief from quarterly full-stroke exercising is requested during normal operation.

Alternate Test:

Part-stroke exercised open quarterly if the RWST is supplying the charging pumps per 1OST-7.4, 5 and 6 or during cold shutdowns per 1OST-11.20. Full-stroked exercised open during refueling outages per 1OST-11.14.

**RELIEF REQUEST** 20**Valve No.:**

1SI-48

1SI-49

1SI-50

1SI-51

1SI-52

1SI-53

**Category** A/C**Class** 1**Function:**

Safety injection accumulator series discharge check valve.

**Test Requirement:**

Quarterly full stroke.

**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 open during refueling outages per 1BVT 1.11.3. The SI accumulator discharge check valves will be tested using a method similar to the test used at the Ft. Calhoun Nuclear Station. The test method will measure a flow coefficient value ( $C_v$ ) during a blowdown at reduced accumulator pressure in conjunction with a non-intrusive test. As a special test, after maintenance has been performed on any of these valves, 1OST-11.15 may be performed to partial-stroke exercise the applicable valve.

**RELIEF REQUEST** 21**Valve No.:**

1SI-83

1SI-84

1SI-95

**Category** A/C**Class** 1, 2**Function:**

HHSI hot leg branch line and SI fill header line inside containment isolation check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

These valves are normally shut during power operation but are required to open to fulfill their safety function in the event of a safety injection. They cannot be full or part-stroked open at power due to the potential for thermal shock of the injection nozzles 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:**

Part-stroke exercised during cold shutdowns per 1OST-11.20. Full-stroke exercised open during refueling outages per 1OST-11.14.

**RELIEF REQUEST** 22**Valve No.:**

1SI-94

**Category** A/C**Class** 2**Function:**

BIT injection line inside containment isolation check valve.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

This valve is normally shut during power operation but is required to open to fulfill its safety function in the event of a safety injection. This check valve cannot be full or part-stroked at power at any frequency due to the potential for thermal shock of the injection nozzles from a cold water injection. Relief from full-stroke testing at cold shutdowns is also required since this could result in a low temperature overpressurization of the RCS. In addition, part-stroke testing during CSD is not possible because the only flow path available is through the BIT. Stroking the BIT outlet isolation valves could result in borated, oxygenated water from the BIT entering the downstream piping. With no means to flush these lines, stagnant conditions develop upon valve closure. The ability to flush out the downstream piping to minimize the probability of Intergranular Stress Corrosion Cracking (IGSCC) formation is only possible during refueling outages in conjunction with the SI full flow test, 1OST-11.14.

**Alternate Test:**

Full-stroke exercised open during refueling outages per 1OST-11.14.

**RELIEF REQUEST** 23

DELETED

**RELIEF REQUEST** 24**Valve No.:**

MOV-1SI-867C

MOV-1SI-867D

**Category** A**Class** 2**Function:**

Boron Injection Tank (BIT) outlet isolation and outside containment isolation valves.

**Test Requirement:**

Quarterly full stroke and time.

**Basis for Relief:**

These valves are shut at power but are required to open to fulfill their safety function in the event of a safety injection. Quarterly stroking of these valves to their open safety position could result in some borated, oxygenated water from the BIT entering the piping downstream of these valves. With no means to flush out these lines, valve closure would then cause a stagnant condition to develop. IE Bulletin 79-17 has identified the combination of these three factors as one which promotes Intergranular Stress Corrosion Cracking (IGSCC). The ability to flush out the downstream piping to minimize the probability of IGSCC formation is only possible during refueling outages in conjunction with the SI full flow test, 1OST-11.14. Therefore, relief is requested from quarterly stroke testing.

**Alternate Test:**

Full-stroke exercised and timed open and closed during refueling outages per 1OST-11.14.



**RELIEF REQUEST** 25**Valve No.:**

1RS-158

1RS-160

**Category** C**Class** 2**Function:**

LHSI pump and Outside RS pump cross connection check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

These valves are normally closed during power operation but must open to fulfill their safety function in the unlikely event that the LHSI pumps are unable to supply the HHSI pumps. No practical method of testing these valves exists. The volume of water used to test the outside RS pumps is insufficient to stroke the check valves even if it could be directed to the suction of the HHSI pumps. Therefore, relief from quarterly and cold shutdown full-stroke exercising is requested. Part-stroke exercising of the valves is also impractical. A part-stroke test would introduce PG water with entrained air, a potential chemistry problem, into the charging/RCS.

**Alternate Test:**

Maintenance is to disassemble and inspect one valve per refueling outage per CMP 1/2-75-VELAN CHECK-1M.

**RELIEF REQUEST** 26**Valve No.:**

TV-1CC-103A	TV-1CC-103C1	TV-1CC-105E2	TV-1CC-107D1
TV-1CC-103A1	TV-1CC-105D1	TV-1CC-107A	TV-1CC-107D2
TV-1CC-103B	TV-1CC-105D2	TV-1CC-107B	TV-1CC-107E1
TV-1CC-103B1	TV-1CC-105E1	TV-1CC-107C	TV-1CC-107E2
TV-1CC-103C			

**Category** A,B**Class** 2, 3**Function:**

Component cooling to reactor coolant pump, stator, bearing and thermal barrier isolation valves.

**Test Requirement:**

Quarterly full 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 exercised and timed closed during cold shutdowns when the reactor coolant pumps are secured, and during refueling outages per 1OST-1.10.

**RELIEF REQUEST** 27**Valve No.:**

TV-1CC-110F1

TV-1CC-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 Requirement:**

IWV-3426 and 3427(a) require Owner specified maximum permissible 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:**

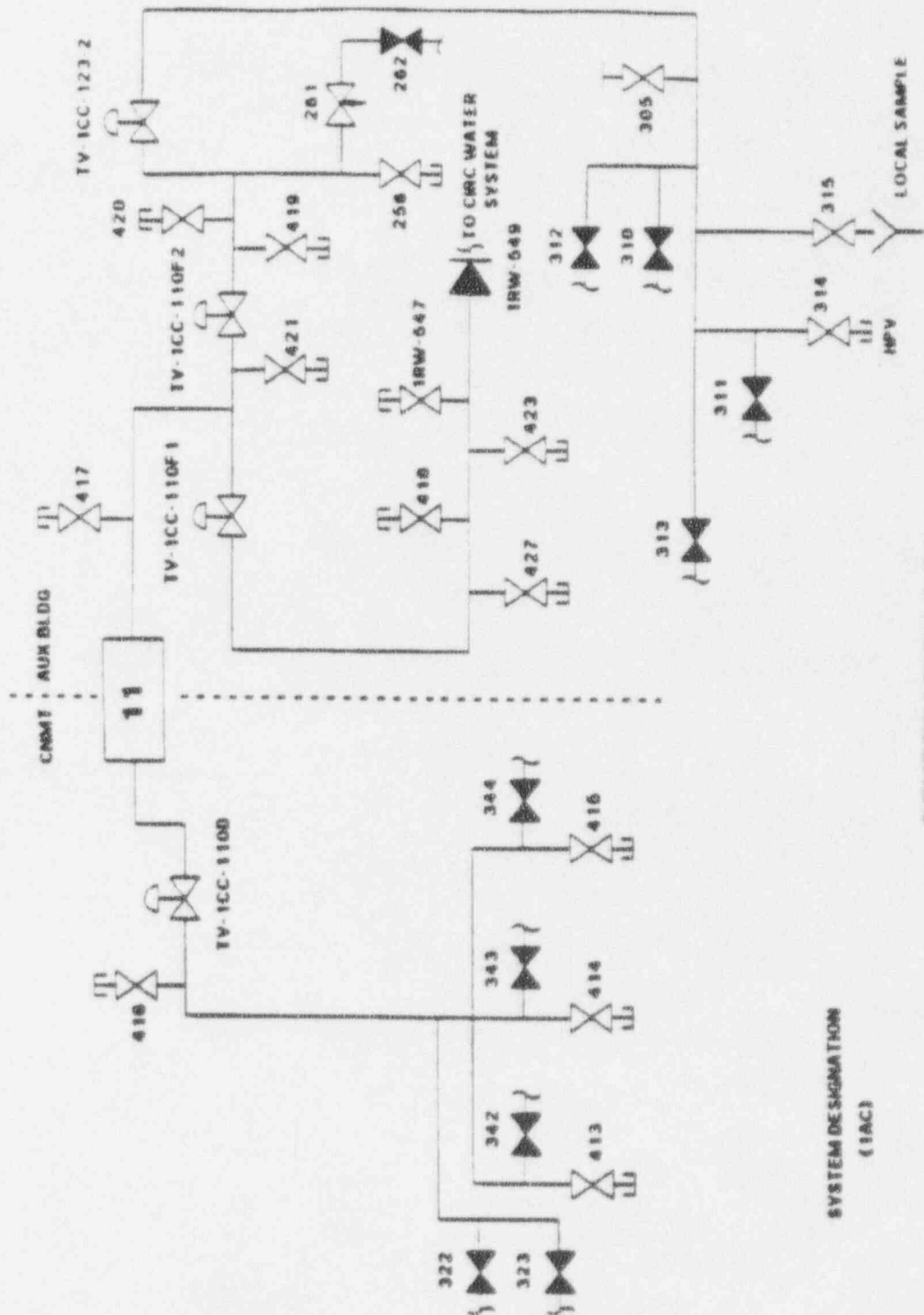
As shown on the attached figure for Penetration #11, the configuration of this containment penetration (i.e., two outside containment isolation valves in parallel) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. The boundary valve downstream from [TV-1CC-110F1] is a potentially open check valve leading to the Circulating Water System. The River Water System downstream of [TV-1CC-110F1], therefore, cannot be isolated to provide an accurate leakage rate for [TV-1CC-110F2].

In this case, assigning individual leakage rates is not practical. Therefore, a maximum permissible leakage rate will be assigned to the entire penetration. The maximum rate assigned to the penetration, however, will be conservatively set at the value normally assigned to just one 8-inch isolation valve.

**Alternate Test:**

Assign a maximum permissible leakage rate for the entire barrier to then be used as the criteria for initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 27



PENETRATION # 11

SYSTEM DESIGNATION  
(1AC)

**RELIEF REQUEST** 28**Valve No.:**

1CCR-289

1CCR-290

1CCR-291

**Category** C**Class** 3**Function:**

Reactor coolant pump thermal barrier supply check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The safety function of these valves is to close to prevent reverse flow to the low pressure CCR system in the event a thermal barrier leaks. The only way to test for closure is to perform a leak test on the valves or by valve disassembly and inspection. Therefore, relief is requested from quarterly and cold shutdown stroke tests.

**Alternate Test:**

Valve closure is verified by a leak test at refueling outages per 1BVT 1.60.7.

**RELIEF REQUEST** 29**Valve No.:**

1MS-18

1MS-19

1MS-20

**Category** C**Class** 2**Function:**

Main steam to auxiliary feed pump check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The function of these valves is to open to allow steam flow to run the turbine-driven auxiliary feedwater pump and to close to prevent steam generator cross connection in the event of a high energy line break. A full-stroke to the opened position can only be verified by a full-flow test of the turbine-driven auxiliary feedwater pump performed during startup from cold shutdown. The quarterly pump test runs the pump on recirculation only and does not require full steam flow. A full-stroke to the closed position 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-stroke exercised open during the quarterly pump test per 1OST-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-stroke exercised open each startup from cold shutdown when the turbine-driven auxiliary feed water pump is full flow tested per 1OST-24.9.

The valves will be full-stroke exercised closed during refueling outages by leak test per 1BVT 1.60.7.

**RELIEF REQUEST** 30**Valve No.:**

1MS-80

1MS-81

1MS-82

**Category** C**Class** 2**Function:**

The A, B and C loop residual heat release reverse flow check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The safety function of these valves is to close to prevent steam generator cross connection in the event of a high energy line break. Relief is requested from at power and cold shutdown testing in the reverse direction because there is no installed instrumentation to check for reverse flow and no way to isolate the normally cross connected and pressurized headers. No way exists to isolate and systematically check operation of these valves.

**Alternate Test:**

Maintenance is to disassemble and inspect one valve per refueling outage per 1CMP-75-CRANE CHECK-1M. Part-stroke open testing will be performed after valve reassembly per 1OM-50.4.C.

**RELIEF REQUEST** 31**Valve No.:**

1RW-106

1RW-107

**Category** C**Class** 3**Function:**

River water supply header check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The safety function of these valves is to open to permit river water to safety-related components during an accident 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-stroke exercised closed during refueling outages in conjunction with 1OST-30.8.



**RELIEF REQUEST** 32**Valve No.:**

1RW-110

1RW-111

1RW-112

1RW-113

**Category** C**Class** 3**Function:**

Diesel generator heat exchanger river water inlet check valves.

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The safety 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:**

Part-stroke exercised open quarterly per 1OST-36.1 & 2. Full-stroke exercised in both the open and closed directions through a sample valve disassembly and inspection program per CMP 1/2-75-WAFER CHECK-1M. One to two check valves will be disassembled and inspected every refueling outage not to exceed a 5 year frequency per IE Bulletin 83-03.

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**RELIEF REQUEST** 33

DELETED

**RELIEF REQUEST** 34

DELETED

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**RELIEF REQUEST** 35**Valve No.:**

1RW-675

1RW-676

1RW-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 check valves.

**Test Requirement:**

Quarterly full 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 to reduce maintenance, relief is requested from quarterly and cold shutdown stroke testing.

**Alternate Test:**

Full-stroke exercised open during refueling outages per 1OST-30.2, 3 and 6.

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**RELIEF REQUEST** 36**Valve No.:**

SOV-1EE-101

SOV-1EE-102

SOV-1EE-103

SOV-1EE-104

**Category** B**Class** 3**Function:**

Diesel Generator Air Start SOVs

**Test Requirement:**

Quarterly full stroke and time.

**Basis for Relief:**

These valves are quick acting and do not have position indication. The operation of these valves will be monitored by each individual diesel generator's start failure alarm circuit. Malfunctions which will cause the annunciator panel START FAILURE light to come on and the alarm bell to ring are:

1. Engine fails to crank above 40 RPM within 3 seconds after a start signal is received or
2. Engine cranks above 40 RPM within 3 seconds, but fails to exceed 2000 RPM within 4 seconds after a start signal is received.

Individual valves will be tested monthly on an alternating frequency by using a different set of air starting motors each month to crank the engine. This will ensure each bank is capable of starting the diesel generator in the required time and that the air start SOVs are not degrading.

**Alternate Test:**

Stroked and indirectly timed by the START FAILURE annunciator on an alternating frequency in conjunction with monthly diesel generator 1OSTs 36.1 & 2 to ensure compliance with the ASME XI requirement for stroke testing on a quarterly frequency.

RELIEF REQUEST 37

DELETED

RELIEF REQUEST 38

Valve No.:

1VS-D-5-3A

1VS-D-5-3B

Category AClass 2

Function:

Containment purge exhaust fan containment isolation dampers.

Test Requirement:

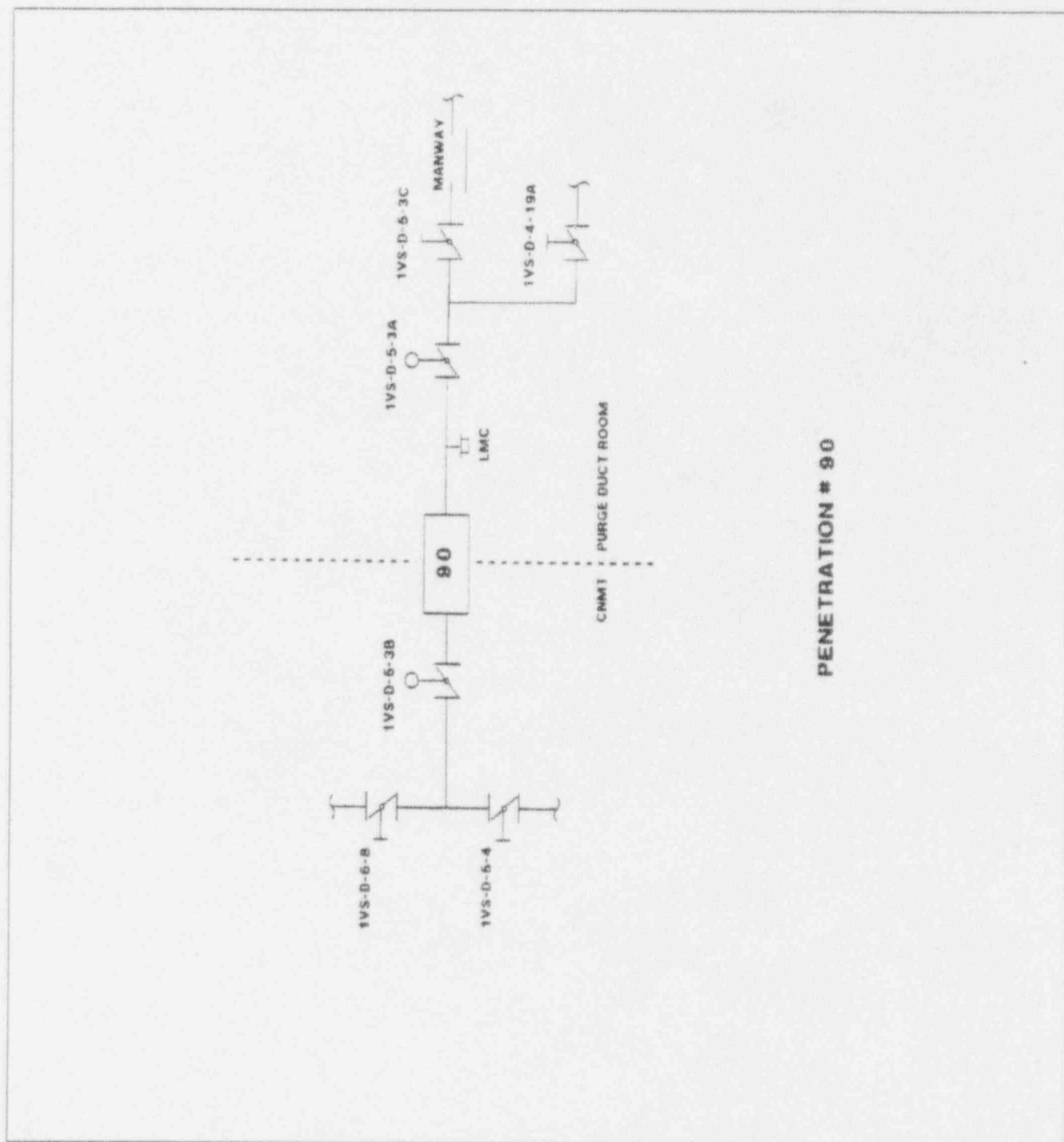
IWV-3426 and 3427(a) require Owner specified maximum permissible leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

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 permissible leakage rates for each damper would not be practical.

Alternate Test:

Assign a maximum permissible leakage rate for the entire penetration to then be used as the criteria for initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 38

**RELIEF REQUEST** 39**Valve No.:**

1VS-D-5-5A

1VS-D-5-5B

1VS-D-5-6

**Category** A**Class** 2**Function:**

Containment purge supply fan containment isolation dampers.

**Test Requirement:**

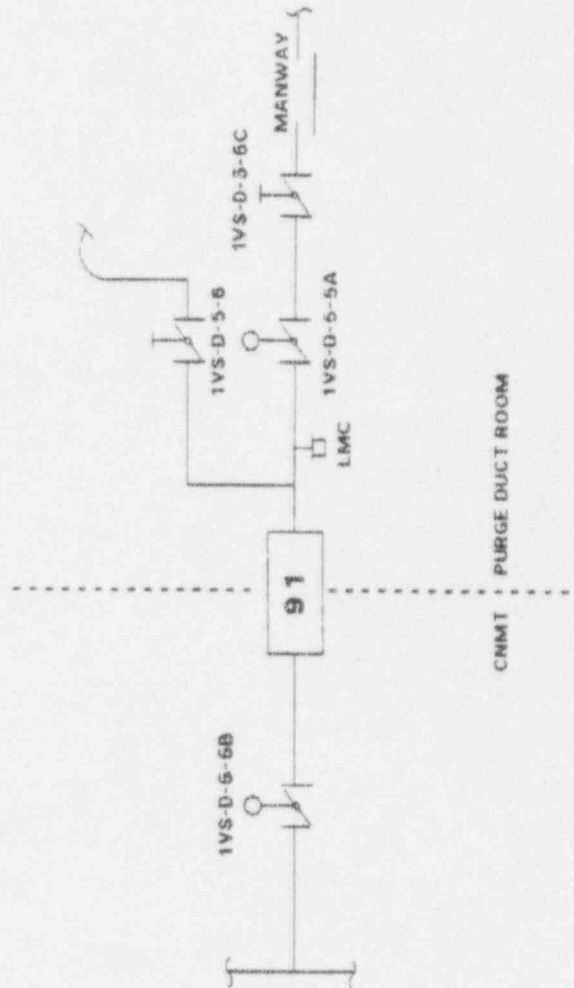
IWV-3426 and 3427(a) require Owner specified maximum permissible leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

**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 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 permissible leakage rates for each damper would not be practical.

**Alternate Test:**

Assign a maximum permissible leakage rate for the entire penetration to then be used as the criteria for initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 39**PENETRATION # 91**



**RELIEF REQUEST** 40**Valve No.:**

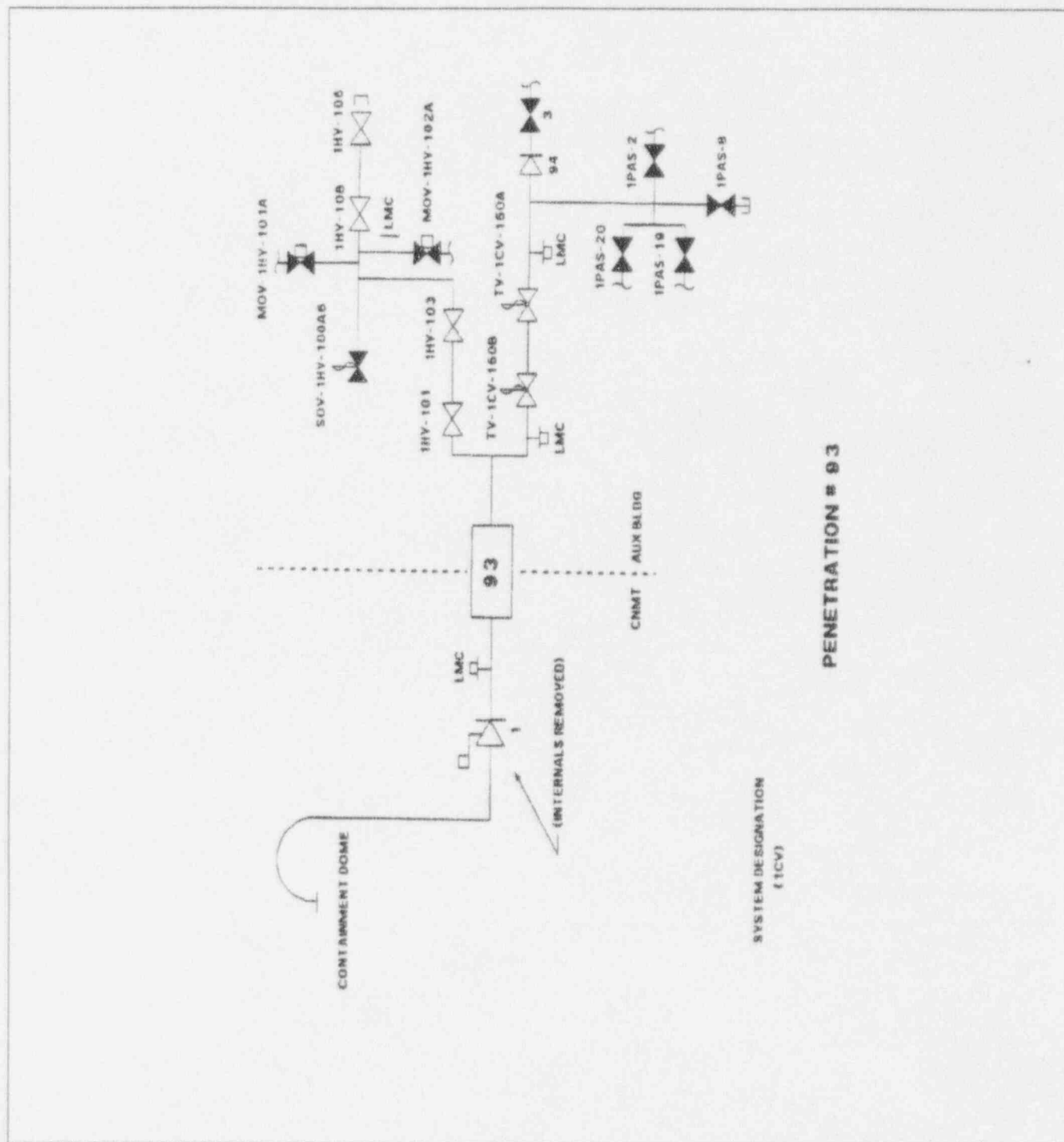
TV-1CV-150A

TV-1CV-150B

1HY-101

1HY-103

**Category** A**Class** 2**Function:**Containment Vacuum Pump 1A and Hydrogen Recombiner  
1A suction containment isolation valves.**Test Requirement:**IWV-3426 and 3427(a) require Owner specified maximum  
permissible 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 damper  
cannot be determined using the test method of 10CFR50,  
Appendix J. In this case, assigning maximum permissible  
leakage rates for each damper would not be practical.**Alternate Test:**Assign a maximum permissible leakage rate for the two  
valve combinations of [TV-1CV-150B & 1HY-101] and  
[TV-1CV-150A & 1HY-103] to then be used as the criteria for  
initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 40

**RELIEF REQUEST** 41**Valve No.:**

TV-1CV-150C

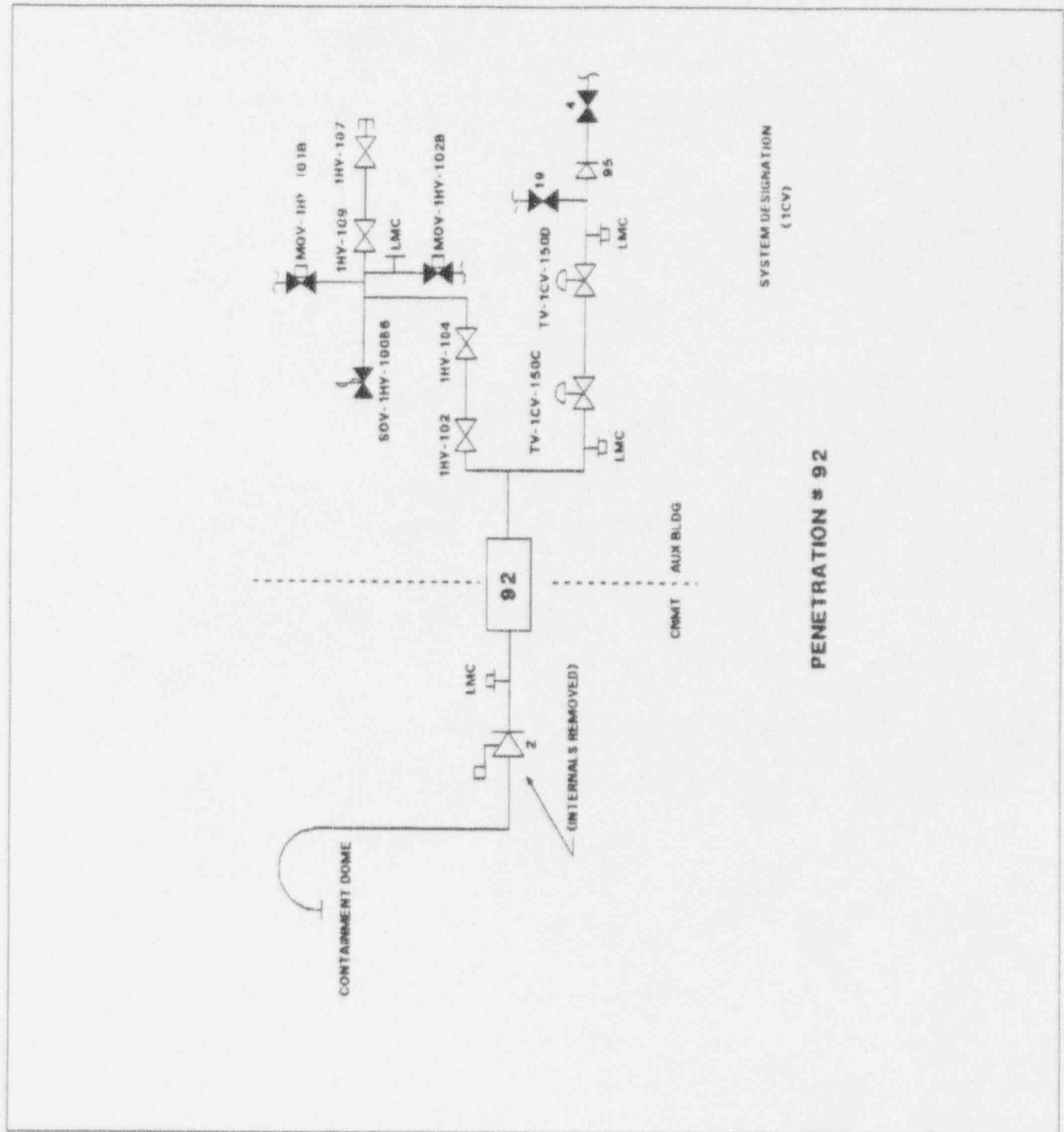
TV-1CV-150D

1HY-102

1HY-104

**Category** A**Class** 2**Function:**Containment Vacuum Pump 1B and Hydrogen Recombiner  
1B suction containment isolation valves.**Test Requirement:**IWV-3426 and 3427(a) require Owner specified maximum  
permissible 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 damper  
cannot be determined using the test method of 10CFR50,  
Appendix J. In this case, assigning maximum permissible  
leakage rates for each damper would not be practical.**Alternate Test:**Assign a maximum permissible leakage rate for the two  
valve combinations of [TV-1CV-150C & 1HY-102] and  
[TV-1CV-150D & 1HY-104] to then be used as the criteria for  
initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 41



**RELIEF REQUEST** 42**Valve No.:**

1VS-183

1VS-184

**Category** A**Class** 2**Function:**

Containment Isolation (Emergency Air Lock)

**Test Requirement:**

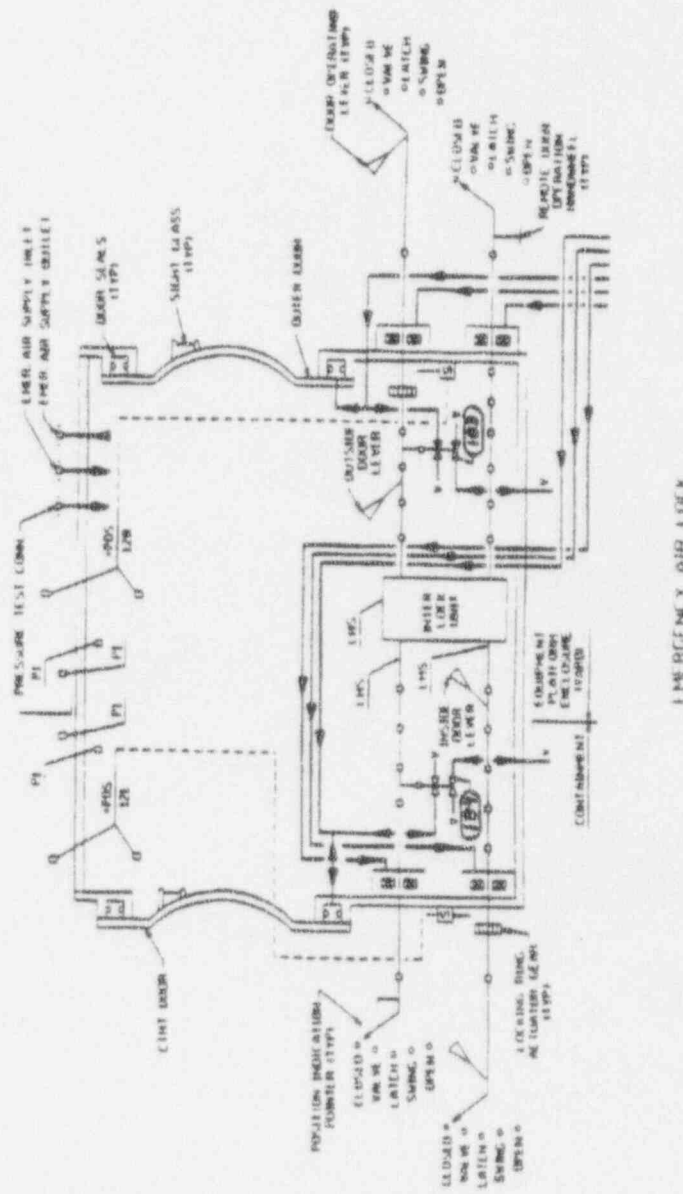
Leak tested per IWV-3420. In addition IWV-3426 and 3427(a) require Owner specified maximum permissible leakage rates for specific valves as a function of valve size and type and provide the corrective action to be followed when these limits are exceeded.

**Basis for Relief:**

These containment isolation valves are leak tested in accordance with 10CFR50, Appendix J, Type B. Since the acceptance criteria for Appendix J, Type B testing is more limiting than ASME Section XI, additional leak testing in accordance with ASME Section XI would be redundant. In addition, as shown on the attached figure for the Emergency Air Lock, the configuration of this containment penetration (i.e., a single test connection located in the emergency airlock between two airlock equalization valves) 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 permissible leakage rates for each valve would not be practical.

**Alternate Test:**

Leak test semi-annually in accordance with Technical Specification 4.6.3.1.b.1, 10CFR50, Appendix J and IWV-3426 per 1BVT 1.47.10. In addition, assign a maximum permissible leakage rate for the entire airlock to then be used as the criteria for initiating corrective action in accordance with IWV-3427(a).

RELIEF REQUEST 42

**RELIEF REQUEST** 43**Valve No.:**

1RW-57  
1RW-58  
1RW-59  
1RW-106  
1RW-107

**Category** C**Class** 3**Function:**

River Water pump discharge and downstream header check valves.

**Test Requirement:**

Quarterly full-stroke.

**Basis for Relief:**

To fulfill their safety function, these check valves must open to ensure a cooling water flow path through the Recirculation Spray (RS) heat exchangers during a DBA. Plant operating experience has shown that exercising these valves quarterly by initiating River Water (RW) flow through the RS heat exchangers unnecessarily degrades the operational readiness of the heat exchangers by depositing Asiatic clams, other marine life, river mud and silt in the heat exchangers. To alleviate this problem, the plant intends to place the RW side of the heat exchangers in a chemical wet layup. Once implemented, the heat exchangers would then be maintained in layup during normal plant operation and chemically treated on a periodic basis to maintain their operational readiness in the event of an accident. If the program of chemically treating the heat exchangers is not successful, quarterly full-stroke testing by initiating flow through the RS heat exchangers will be maintained.

**Alternate Test:**

Depending on the availability of the Component Cooling Water (CCR) heat exchangers, the check valves will be either full-stroke or part-stroke exercised open quarterly by establishing a flow path through the RW side of the CCR heat exchangers when testing the RW pumps per 1OST-30.2, 3 & 6. (The check valves will be full-stroke exercised open quarterly by establishing flow through the RW side of the RS heat exchangers per 1OST-30.2, 3 & 6 if the chemical treatment is not successful.) During refueling outages, the valves will be full-stroke exercised open by establishing a flow path through either the RW side of the RS heat exchangers or the RW side of the CCR heat exchangers and passing required accident flow through the valves per 1OST-30.12.



**RELIEF REQUEST** 44**Valve No.:**

MOV-1RW-103A  
MOV-1RW-103B  
MOV-1RW-103C  
MOV-1RW-103D

**Category** B**Class** 3**Function:**

River Water header isolation valves to the River Water side of the Recirculation Spray heat exchangers.

**Test Requirement:**

Quarterly stroke and time.

**Basis for Relief:**

These valves are normally closed during power operation. To fulfill their safety function, these valves receive a CIB open signal to ensure a cooling water flow path through the Recirculation Spray (RS) heat exchangers during a DBA. Testing these valves quarterly requires unisolating the River Water (RW) system from the RS heat exchangers. Plant operating experience has shown that this unnecessarily degrades the operational readiness of the heat exchangers by depositing Asiatic clams, other marine life, river mud and silt in the heat exchangers. To alleviate this problem, the plant intends to place the RW side of the heat exchangers in a chemical wet layup. Once implemented, the heat exchangers would then be maintained in layup during normal plant operation and chemically treated on a periodic basis to maintain their operational readiness in the event of an accident. Because these valves will be within the layup boundaries, relief from quarterly valve stroke testing is required. If the program of chemically treating the heat exchangers is not successful, quarterly full-stroke testing will be maintained.

**Alternate Test:**

Full-stroke exercised and timed open during refueling outages per 1OST-30.12. (The valves will be stroked and timed open quarterly per 1OST-30.4, 5 if the chemical treatment is not successful.)

**RELIEF REQUEST** 45**Valve No.:**

1RW-108  
1RW-109  
1RW-193  
1RW-194  
1RW-195  
1RW-196

**Category** C**Class** 2, 3**Function:**

River Water supply check valves to the Recirculation Spray heat exchangers.

**Test Requirement:**

Quarterly full-stroke.

**Basis for Relief:**

These check valves are normally closed during power operation. To fulfill their safety function, the valves must open to ensure a cooling water flow path through the Recirculation Spray (RS) heat exchangers during a DBA. To test these valve quarterly, River Water (RW) flow must be initiated through the RS heat exchangers. Plant operating experience has shown that this unnecessarily degrades the operational readiness of the heat exchangers by depositing Asiatic clams, other marine life, river mud and silt in the heat exchangers. To alleviate this problem, the plant intends to place the RW side of the heat exchangers in a chemical wet layup. Once implemented, the heat exchangers would then be maintained in layup during normal plant operation and chemically treated on a periodic basis to maintain their operational readiness in the event of an accident. Because these valves will be within the layup boundaries, relief from quarterly valve stroke testing is required. If the program of chemically treating the heat exchangers is not successful, quarterly full-stroke testing will be maintained.

**Alternate Test:**

Full-stroke exercised open during refueling outages by establishing a flow path through the RW side of the RS heat exchangers and passing required accident flow through the valves per 1OST-30.12. (The check valves will be full-stroke exercised quarterly per 1OST-30.2, 3 & 6 if chemical treatment is not successful.)

**RELIEF REQUEST** 46**Valve No.:**

SOV-1RC-455C1

SOV-1RC-455C2

SOV-1RC-455D1

SOV-1RC-455D2

SOV-1RC-456-1

SOV-1RC-456-2

**Category** B**Class** 3**Function:**

PORV Air Control SOVs

**Test Requirement:**

Quarterly stroke and time.

**Basis for Relief:**

These series SOVs are located inside the subatmospheric containment building and do not have position indication. There are no individual control switches or lights associated with the valves. Individual operation of these valves can only be monitored by locally disconnecting a lead for one of the SOVs and observing the PORV stroke. The SOV stroke cannot be timed directly, because the valves cannot be stroked without stroking the PORVs, relief is requested from quarterly full or part-stroke and time testing at power. In addition, stroking the SOVs associated with the low-temperature overpressure protection system cannot be performed while it is in service, therefore, relief from cold shutdown stroke and time testing is also requested.

**Alternate Test:**

These valves will be stroked in a refueling frequency per 10ST-6.12. The valve opening stroke time will be indirectly measured by timing the PORV stroke. An acceptable PORV stroke time will indicate an acceptable SOV opening stroke time. Valve closure will be individually verified by lifting a lead on one of the SOVs and verifying that the PORV will not stroke. Then a lead on the other SOV will be lifted. The closing time of the PORV will be measured as an indirect measure of the SOV stroke time. This time, however, will not be the individual closing stroke time of the SOVs, because they are in series.

**RELIEF REQUEST** 47**Valve No.:**

11A-116

11A-117

**Category** A/C**Class** 3**Function:**

PORV Air Supply Isolation Check

**Test Requirement:**

Quarterly full stroke.

**Basis for Relief:**

The safety function of these valves is to close on loss of instrument air to allow the back-up nitrogen accumulators to supply the control air system for the PORVs. These check valves are located inside the Reactor Containment Building and valve closure can only be checked by a leak test.

**Alternate Test:**

Valve closure is verified by 1BVT 2.34.4 during refueling outages.

RELIEF REQUEST 48

Valve No.:

1WT-382

1WT-383

1WT-387

1WT-388

Category CClass 3

Function:

To isolate the chlorine injection line from the River Water class break.

Test Requirement:

Quarterly full stroke.

Basis for Relief:

The safety function of these valves is to remain closed to prevent River Water from being diverted to the chlorine injection line during an accident. Because of the physical arrangement of these valves, a pair of series check valves without a vent or drain in between off each RW header, the valves cannot be individually verified to close by using flow or by leak test.

Alternate Test:

Maintenance is to disassemble and inspect one set of valves per refueling outage per 1CMP-75-Pacific SW Check-1M.

Part-stroke open testing will be performed after valve reassembly by initiating a chlorine injection. This alternative testing is in accordance with Position 2 of GL 89-04.