DUQUESNE LIGHT COMPANY

Beaver Valley Power Station

Unit 1

INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

Issue 2 **Revision 13**

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SECTION I: PUMP TESTING REQUIREMENTS

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", including supplement 1 (NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"). 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_i	√(1)	
Differential pressure ΔP	√	
Flow rate Q	√	
Vibration amplitude V	√	
Proper lubricant level or pressure		√
Bearing temperature T_b	√	

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

Table 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 test quantity. If these ranges cannot be met, reduced range limits that allow the pump to fulfill its function will be used as permitted by IWP-3210 and in accordance with IWP-3112, 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_i	[Note (2)]	[Note (2)]	[Note (2)]	[Note (2)]	[Note (2)]
ΔP	0.93-1.02ΔP_r	0.90-0.93ΔP_r	1.02-1.03ΔP_r	$<0.90\Delta P_r$	$>1.03\Delta P_r$
Q	0.94-1.02Q_r	0.90-0.94Q_r	1.02-1.03Q_r	$<0.90Q_r$	$>1.03Q_r$
V when $0 \leq V_r \leq 0.5$ mils	0-1 mil	None	1-1.5 mils	None	>1.5 mils
V when 0.5 mils $< V_r \leq 2.0$ mils	0-2V_r mils	None	2V_r-3V_r mils	None	>3V_r mils
V when 2.0 mils $< V_r \leq 5.0$ mils	0-(2 + V_r) mils	None	(2 + V_r)-(4 + V_r) mils	None	>(4 + V_r) mils
V when V_r > 5.0 mils	0-1.4V_r mils	None	1.4V_r-1.3V_r mils	None	>1.8V_r mils
T_b	[Note (3)]	[Note (3)]	[Note (3)]	[Note (3)]	[Note (3)]

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

The limits for vibration readings are taken from ANSI/ASME OM-6 as permitted by RR1. These limits may not be reduced because OM-6 does not contain a paragraph similar to IWP-3210.

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.
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 inoperable pump is specifically identified in the technical specifications, then the applicable technical specification action statements shall be followed.
    b. If the inoperable pump is in a system covered by a technical specification, an assessment of its condition shall be made to determine if it makes the system inoperable. If the condition of the pump renders the system inoperable, then the applicable system technical specification action statements shall 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 inoperable.
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).

Utilization of a pump curve in the BVPS-1 IST Program for performing testing and establishing acceptance criteria requires specific relief approved by the NRC prior to usage. The following guidance provided by the NRC relating to the use of a pump curve shall be followed:

1. A pump curve shall be developed, or manufacturer's pump curve validated, when the pump is known to be operating acceptably.
2. The reference points used to develop or validate a pump curve shall be measured using instruments at least as accurate (accuracy and range) as required by the ASME XI Code.
3. A pump curve shall be based on an adequate number of reference points, with a minimum of five (5).
4. Sufficient reference points shall be beyond the "flat" portion (low flow rates) of the pump curve in a range which includes or is as close as practical to the design basis flow rate.
5. Acceptance criteria based on a pump curve does not conflict with technical specifications or UFSAR operability criteria (minimum operating point/curve) for flow rate and differential pressure, for the affected pump.
6. If vibration levels vary significantly over the range of pump conditions, a method of assigning appropriate vibration acceptance criteria should be developed for regions of the pump curve.
7. When the reference pump curve may have been affected by repair, replacement, or routine servicing, a new reference pump curve shall be determined or the previous pump curve revalidated by an inservice test.

Manufacturer supplied skid-mounted pumps which are integral sub-components of, and are required to support operation of a parent pump or other component, are often times not designed to be tested in accordance with the ASME XI Code, regardless of their ASME Code class. Although ASME Code class skid-mounted pumps are not included in the BVPS Unit 1 IST Program, they are tested in conjunction with the parent pump or other component for which they provide support, as documented in the IST Program Basis Document and applicable surveillance test. This ensures that the skid-mounted pumps operate acceptably commensurate with their safety functions provided satisfactory performance of the parent pump or other component is demonstrated. Because it has been recognized that the test of the parent pump or other component itself challenges the operability of the sub-components, relief from Code testing requirements and including ASME Code class manufacturer supplied skid-mounted pumps in the IST Program has been approved by the NRC.

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. (ΔP) - 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 centrifugal 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

Pump Name: 1A Charging Pump	**Pump Number:** 1CH-P-1A	**Code Class:** 2	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** C-4	**System:** 7 Chemical and Volume Control
Function: To provide normal RCS inventory and Hi Head Safety Injection		**Type:** Centrifugal	**Remarks:** 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).
ΔP	7.4 (Q)	X	ΔP 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	ΔP 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

Pump Name: 1B Charging Pump	**Pump Number:** 1CH-P-1B	**Code Class:** 2	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** D-4	**System:** 7 Chemical and Volume Control
Function: To provide normal RCS inventory and Hi Head Safety Injection		**Type:** Centrifugal	**Remarks:** 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).
ΔP	7.5 (Q)	X	ΔP 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	ΔP 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

Pump Name: 1C Charging Pump	**Pump Number:** 1CH-P-1C	**Code Class:** 2	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** E-4	**System:** 7 Chemical and Volume Control
Function: To provide normal RCS inventory and Hi Head Safety Injection	**Type:** Centrifugal	**Remarks:** 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

Pump Name: 2A Boric Acid Transfer Pump	**Pump Number:** 1CH-P-2A	**Code Class:** 3	**Dwg. OM No.:** 7-3 **Dwg. Coord.:** C-3	**System:** 7 Chemical and Volume Control
Function: Chemical Shim and Emergency Boration Supply	**Type:** Centrifugal	**Remarks:** 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.
ΔP	7.1 (Q)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1CH-110], local, and the calculated Pi, Control Room.
	7.13 (R)	X	ΔP 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)	RR3	Flow rate measurement using portable ultrasonic flow meter at refueling.
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

Pump Name: 2B Boric Acid Transfer Pump	**Pump Number:** 1CH-P-2B	**Code Class:** 3	**Dwg. OM No.:** 7-3 **Dwg. Coord.:** G-3	**System:** 7 Chemical and Volume Control
Function: Chemical Shim and Emergency Boration Supply	**Type:** Centrifugal	**Remarks:** See RR1, RR2 and RR3.		

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	7.2 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi from the level in the Boric Acid Storage Tank, [LI-1CH-108(163)], 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-108(163)], Control Room.
ΔP	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.
Q	7.2 (Q)	RR3	No installed instrumentation to measure flow rate quarterly.
	7.14 (R)	RR3	Flow rate measurement using portable ultrasonic flow meter at refuelings.
V	7.2 (Q)	RR1	Portable monitoring equipment using velocity units.
	7.14 (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	7.2 (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

Pump Name: 1A Residual Heat Removal Pump	**Pump Number:** 1RH-P-1A	**Code Class:** 2	**Dwg. OM No.:** 10-1 **Dwg. Coord.:** E-3	**System:** 10 Residual Heat Removal
Function: Long Term Decay Heat Removal	**Type:** Vertical	**Remarks:** See RR1 and RR4. Pump is tested quarterly during cold shutdowns and refueling outages.		

Parameter	1OST (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.
ΔP	10.1 (CSD,R)	X	Calculated using pump discharge pressure indicator [PI-1RH-600], local, and pump suction pressure (local) or from temporary ΔP 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)	RR1	Portable monitoring equipment using velocity units. (Pump bearings in driver)
Tb	N/A	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: 1B Residual Heat Removal Pump	**Pump Number:** 1RH-P-1B	**Code Class:** 2	**Dwg. OM No.:** 10-1 **Dwg. Coord.:** F-3	**System:** 10 Residual Heat Removal
Function: Long Term Decay Heat Removal	**Type:** Vertical	**Remarks:** See RR1 and 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.
ΔP	10.1 (CSD,R)	X	Calculated using pump discharge pressure indicator [PI-1RH-601], local, and pump suction pressure (local) or from temporary ΔP 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)	RR1	Portable monitoring equipment using velocity units. (Pump bearings in driver).
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: 1A Low Head Safety Injection Pump	**Pump Number:** 1SI-P-1A	**Code Class:** 2	**Dwg. OM No.:** 11-1 **Dwg. Coord.:** F-2	**System:** 11 Safety Injection
Function: Low Pressure - High Volume Safety Injection and Long Term Recirculation	**Type:** Vertical	**Remarks:** See RR1 and RR2. Pump is tested quarterly on recirculation flow and at full flow during refueling outages.		

Parameter	1OST (Frequency)	Req'd	Comments
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)	RR1	Portable monitoring equipment using velocity units.
	11.14 (R)	RR1	Portable monitoring equipment using velocity units.
Tb	NA	RR1	Annual pump bearing temperature measurement 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: 1B Low Head Safety Injection Pump	**Pump Number:** 1SI-P-1B	**Code Class:** 2	**Dwg. OM No.:** 11-1 **Dwg. Coord.:** F-4	**System:** 11 Safety Injection
Function: Low Fressure - High Volume Safety Injection and Long Term Recirculation		**Type:** Vertical	**Remarks:** See RR1 and RR2. Pump is tested quarterly on recirculation flow and at full flow during refueling outages.	

Parameter	1OST (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.
ΔP	11.2 (Q)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1SI-944], local, and the calculated Pi, Control Room.
	11.14 (R)	X	ΔP 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)	RR1	Portable monitoring equipment using velcoity units.
	11.14 (R)	RR1	Portable monitoring equipment using velocity units.
Tb	NA	RR1	Annual pump bearing temperature measurement 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: 1A Quench Spray Pump	**Pump Number:** 1QS-P-1A	**Code Class:** 2	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** C-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-1QS-101A], local, and the pump inlet pressure from either the installed instrument or the temporary test gauge (local).
Q	13.1 (Q)	X	Total flow rates from 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

Pump Name: 1B Quench Spray Pump	**Pump Number:** 1QS-P-1B	**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	13.2 (Q)	X	Installed instrumentation or temporary test gauge at pump suction (local).
ΔP	13.2 (Q)	X	ΔP is calculated using the pump discharge pressure indicator [PI-1QS-101B], local, and the pump inlet pressure from either the installed instrument or the temporary test gauge (local).
Q	13.2 (Q)	X	Total flow rates from 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

Pump Name: 4A Chemical Injection Pump	**Pump Number:** 1QS-P-4A	**Code Class:** 2	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-3	**System:** 13 Containment Depressurization
Function: Chemical Injection during Containment Depressurization.		**Type:** Positive Displacement	**Remarks:** See RR1 and RR5.	

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	13.10A (Q)	RR5	Positive displacement pump. No suction pressure indication provided.
ΔP	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: 4B Chemical Injection Pump	**Pump Number:** 1QS-P-4B	**Code Class:** 2	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-5	**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	RR4	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: 4C Chemical Injection Pump	**Pump Number:** 1QS-P-4C	**Code Class:** 2	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-3	**System:** 13 Containment Depressurization
Function: Chemical Injection during Containment Depressurization.		**Type:** Positive Displacement	**Remarks:** See RR1 and RR5.	

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	13.10A (Q)	RR5	Positive displacement pump. No suction pressure indication provided.
ΔP	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-5	**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

Pump Name: 1A Inside Recirculation Spray Pump	**Pump Number:** 1RS-P-1A	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-2	**System:** 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization.	**Type:** Vertical	**Remarks:** 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.
ΔP	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	ΔP 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

Pump Name: 1B Inside Recirculation Spray Pump	**Pump Number:** 1RS-P-1B	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-4	**System:** 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization.	**Type:** Vertical	**Remarks:** 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.
ΔP	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	ΔP 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	NA	No lubricant level or pressure to observe. Lubrication is by the fluid being pumped.

BVPS-1 IST

PUMP TESTING OUTLINE

Pump Name: 2A Outside Recirculation Spray Pump	**Pump Number:** 1RS-P-2A	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-7	**System:** 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization.	**Type:** Vertical		**Remarks:** 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).
ΔP	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	ΔP is calculated using the installed Discharge Pressure Indicator [PI-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

Pump Name: 2B Outside Recirculation Spray Pump	**Pump Number:** 1RS-P-2B	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-9	**System:** 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization.	**Type:** Vertical	**Remarks:** See RR1 and RR7. 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	13.6 (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).
ΔP	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	ΔP is calculated using the installed Discharge Pressure Indicator [PI-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

Pump Name: 1A Component Cooling Water Pump	**Pump Number:** 1CC-P-1A	**Code Class:** 3	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** E-6	**System:** 15 Reactor Plant Component Cooling Water
Function: To provide cooling water to RX Plant Components.	**Type:** Centrifugal	**Remarks:** See RR1, RR11 (Pump Curve).		

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].
ΔP	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 [PDI-1CC-117], [PDI-1CC-118] and [PDI-1CC-119], local gages or control room indicators, [FI-1CC-117], [FI-1CC-118] and [FI-1CC-19].
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

Pump Name: 1B Component Cooling Water Pump	**Pump Number:** 1CC-P-1B	**Code Class:** 3	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** E-7	**System:** 15 Reactor Plant Component Cooling Water
Function: To provide cooling water to RX Plant Components.	**Type:** Centrifugal	**Remarks:** See RR1, RR11 (Pump Curve).		

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	15.2 (Q)	X	Local suction pressure indicator [PI-1CC-183].
ΔP	15.2 (Q)	X	Calculated using discharge pressure indicator [PI-1CC-100B] and pump suction pressure, local.
Q	15.2 (Q)	X	Summation of total flow from indicators [PDI-1CC-117], [PDI-1CC-118] and [PDI-1CC-119], local gages or control room indicators, [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119].
V	15.2 (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	15.2 (Q)	X	Bearing housing provided with sightglass at oil level reservoir indicator, local.

BVPS-1 IST

PUMP TESTING OUTLINE

Pump Name: 1C Component Cooling Water Pump	**Pump Number:** 1CC-P-1C	**Code Class:** 3	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** E-8	**System:** 15 Reactor Plant Component Cooling Water
Function: To provide cooling water to RX Plant Components.	**Type:** Centrifugal	**Remarks:** See RR1, RR11 (Pump Curve).		

Parameter	1OST (Frequency)	Req'd	Comments
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 [PDI-1CC-117], [PDI-1CC-118] and [PDI-1CC-119], local gages or control room indicators, [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119].
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

Pump Name: Steam Driven Auxiliary Feed Pump	**Pump Number:** 1FW-P-2	**Code Class:** 3	**Dwg. OM No.:** 24-2 **Dwg. Coord.:** F-7	**System:** 24 Auxiliary Feedwater
Function: Provide emergency make-up during any loss of normal feedwater	**Type:** Centrifugal	**Remarks:** 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	10ST (Frequency)	Req'd	Comments
N	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.
PI	24.4 (Q)	X	Local suction pressure indicator [PI-1FW-156].
	24.9 (CSD,R)	X	Local suction pressure indicator [PI-1FW-156].
ΔP	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.
Q	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.
V	24.4 (Q)	RR1	Portable monitoring equipment using velocity units.
	24.9 (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	24.4 (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

Pump Name: 3A Motor Driven Auxiliary Feed Pump	**Pump Number:** 1FW-P-3A	**Code Class:** 3	**Dwg. OM No.:** 24-2 **Dwg. Coord.:** F-2	**System:** 24 Auxiliary Feedwater
Function: Provide emergency make-up during any loss of normal feedwater	**Type:** Centrifugal	**Remarks:** 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	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	24.2 (Q)	X	Local suction pressure indicator [PI-1FW-156A].
	24.8 (CSD,R)	X	Local suction pressure indicator [PI-1FW-156A].
ΔP	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.
Q	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.
V	24.2 (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	24.2 (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

Pump Name: 3B Motor Driven Auxiliary Feed Pump	**Pump Number:** 1FW-P-3B	**Code Class:** 3	**Dwg. OM No.:** 24-2 **Dwg. Coord.:** F-5	**System:** 24 Auxiliary Feedwater
Function: Provide emergency make-up during any loss of normal feedwater	**Type:** Centrifugal	**Remarks:** 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	1OST (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].
ΔP	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

Pump Name: 1A River Water Pump	**Pump Number:** 1WR-P-1A	**Code Class:** 3	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** B-1	**System:** 30 River Water
Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.	**Type:** Vertical	**Remarks:** See RR1 and RR2.		

Parameter	1OST (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.
ΔP	30.2 (Q)	X	ΔP 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 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: 1B River Water Pump	**Pump Number:** 1WR-P-1B	**Code Class:** 3	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** C-1	**System:** 30 River Water
Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.	**Type:** Vertical	**Remarks:** See RR1 and RR2.		

Parameter	1OST (Frequency)	Req'd	Comments
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.
ΔP	30.3 (Q)	X	ΔP 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

Pump Name: 1C River Water Pump	**Pump Number:** 1WR-P-1C	**Code Class:** 3	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** D-1	**System:** 30 River Water
Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.	**Type:** Vertical	**Remarks:** See RR1 and RR2.		

Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	30.6 (Q)	RR2	No installed instrumentation to measure suction pressure. Calculate Pi using the Ohio river level recorder [LR-1CW-101], local.
ΔP	30.6 (Q)	X	ΔP 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

Pump Name: 1A DG #1 Fuel Transfer Pump	**Pump Number:** 1EE-P-1A	**Code Class:** 3	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** B-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	36.1 (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).
ΔP	36.1 (Q)	RR9	ΔP 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: 1B DG #1 Fuel Transfer Pump	**Pump Number:** 1EE-P-1B	**Code Class:** 3	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** A-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	36.1 (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).
ΔP	36.1 (Q)	RR9	ΔP 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	1OST (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

Pump Name: 1D DG #2 Fuel Transfer Pump	**Pump Number:** 1EE-P-1D	**Code Class:** 3	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** E-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.

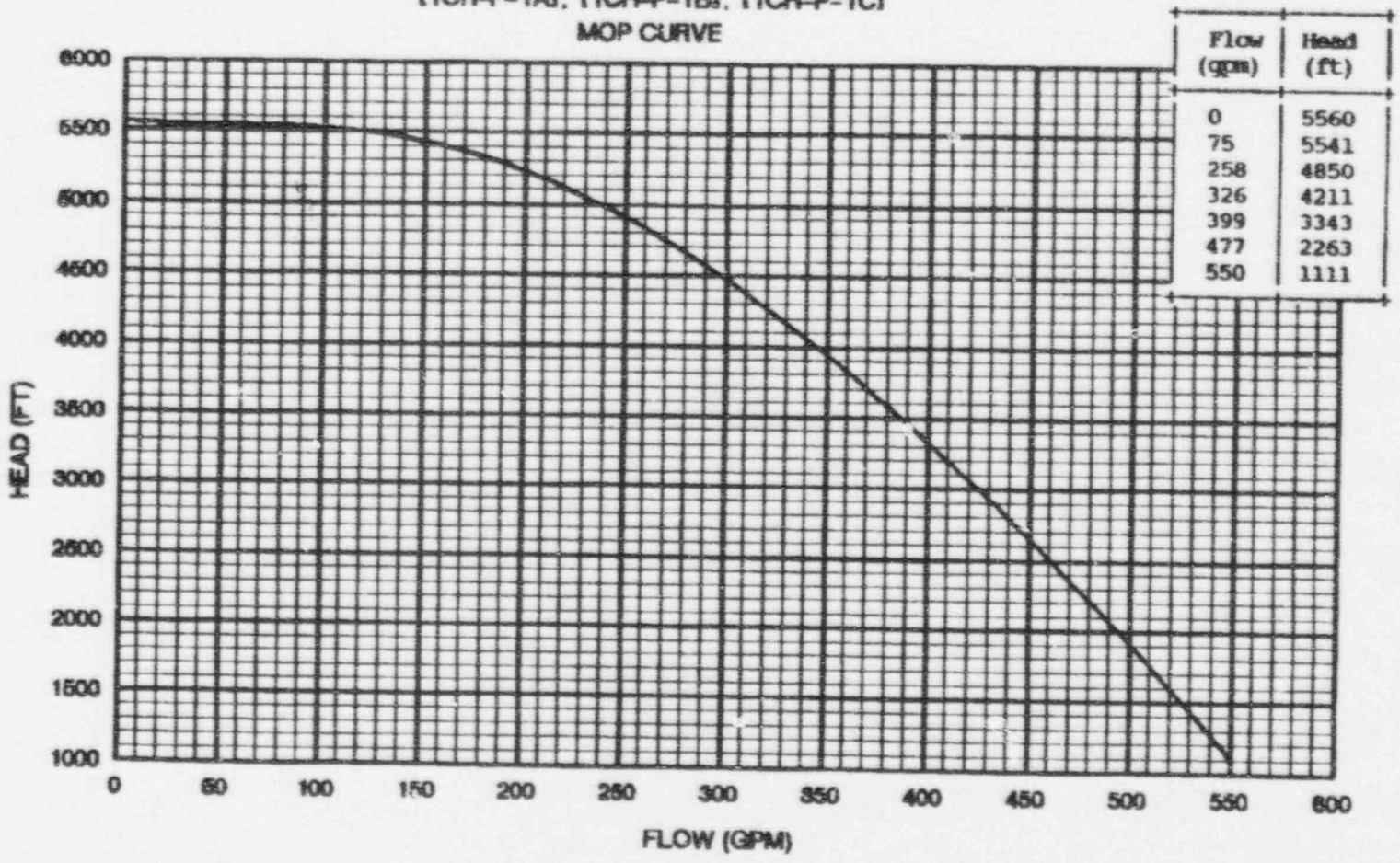
SECTION III: PUMP MINIMUM OPERATING POINT (MOP) CURVES

Pump Name: Charging/High Head Safety Injection Pumps Pump Number: [1CH-P-1A]
[1CH-P-1B]
[1CH-P-1C]

HHSI PUMPS

[1CH-P-1A], [1CH-P-1B], [1CH-P-1C]

MOP CURVE



Flow (gpm)	Head (ft)
0	5560
75	5541
258	4850
326	4211
399	3343
477	2263
550	1111

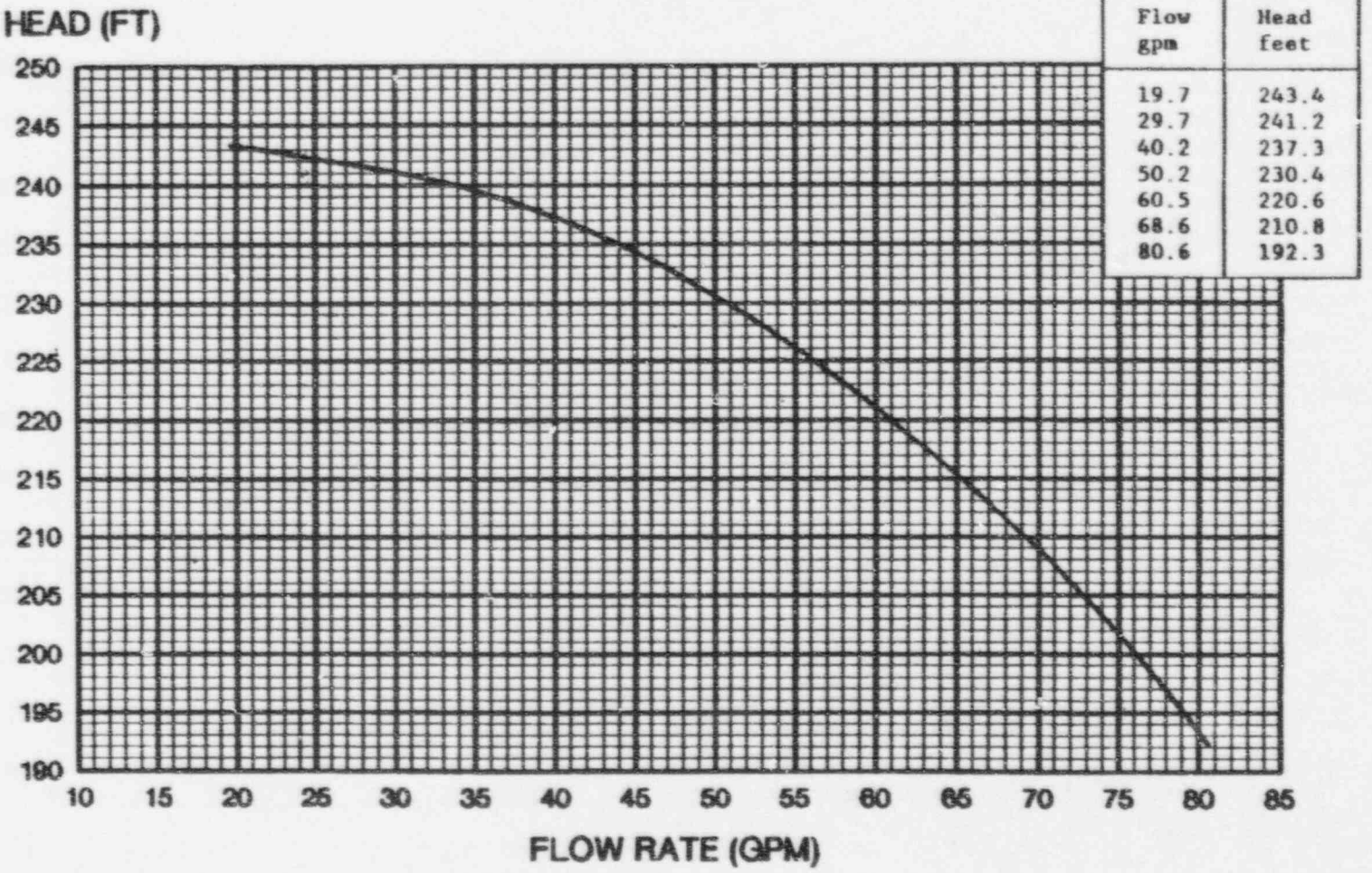
MOP CURVE DEVELOPED FROM EM 100489.

NOVEMBER 13, 1992

Pump Name: 2A Boric Acid Transfer Pump Pump Number: [1CH-P-2A]

[CH-P-2A]

MOP CURVE



Flow gpm	Head feet
19.7	243.4
29.7	241.2
40.2	237.3
50.2	230.4
60.5	220.6
68.6	210.8
80.6	192.3

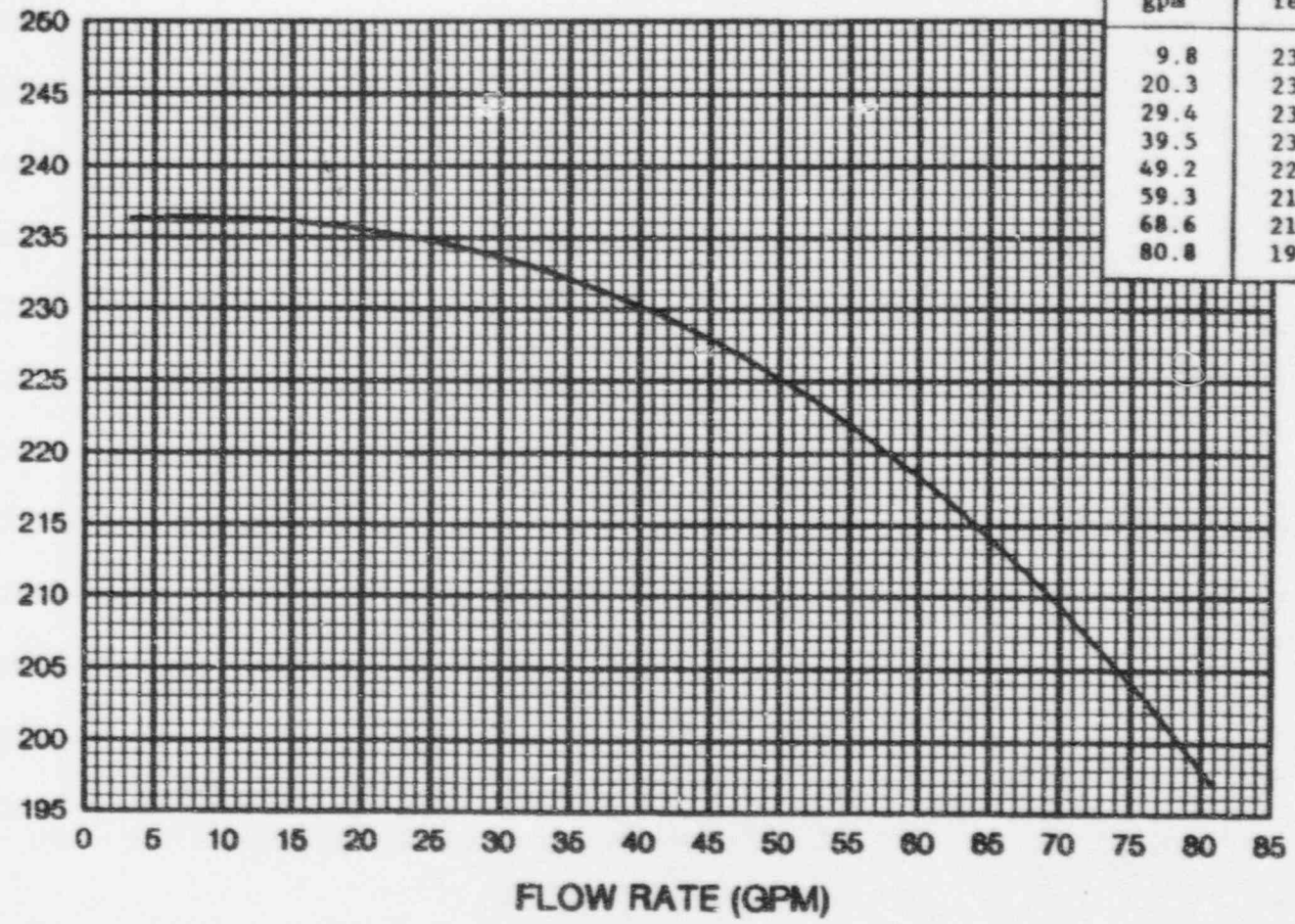
MOP IS 210.8 FT AT 68.6 GPM. EM 101558.

JULY 11, 1995

Pump Name: 2B Boric Acid Transfer Pump Pump Number: [1CH-P-2B]

[CH-P-2B]

MOP CURVE



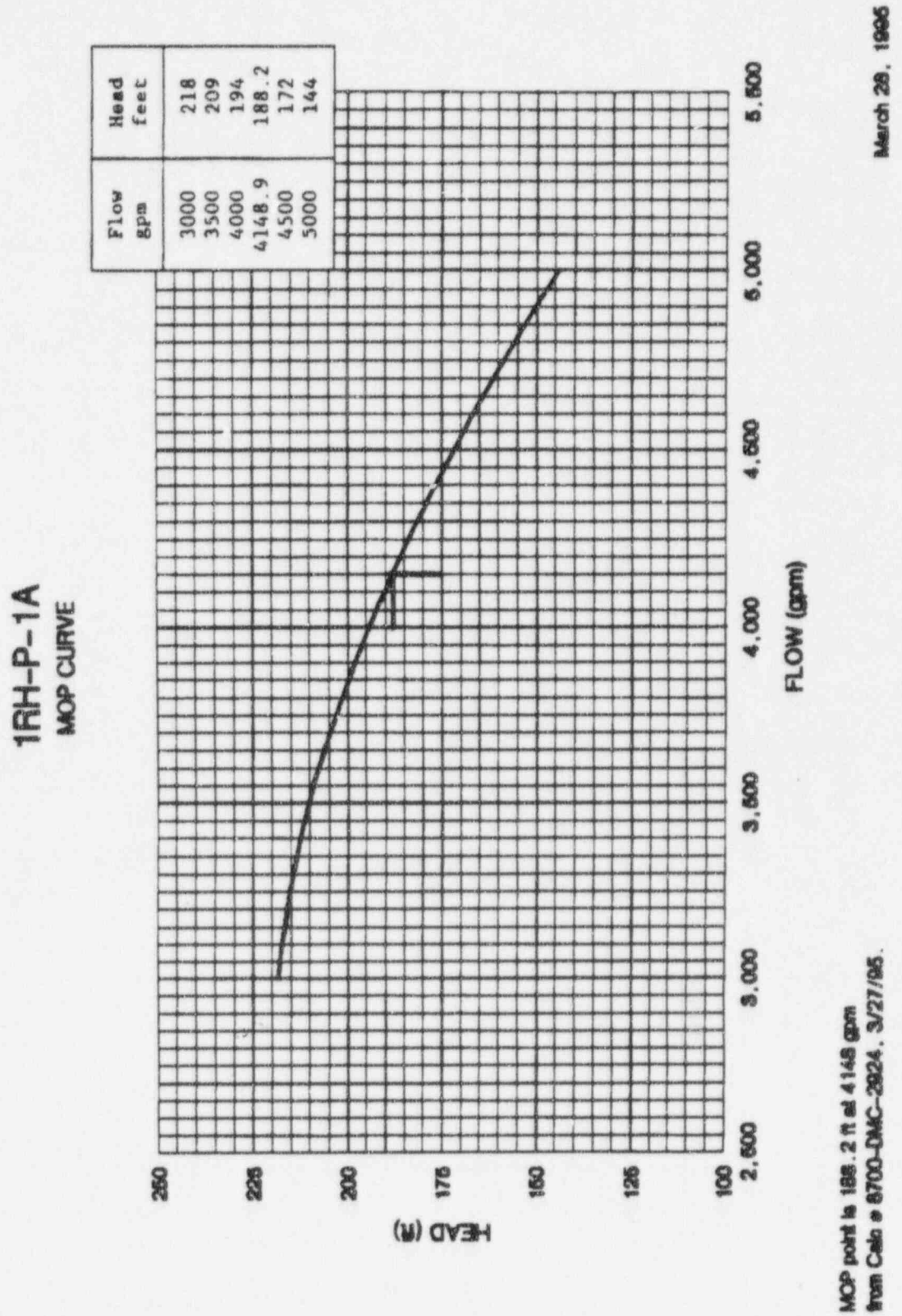
Flow gpm	Head feet
9.8	236.5
20.3	235
29.4	233.8
39.5	231.1
49.2	225.5
59.3	218.3
68.6	210.8
80.8	197.2

MOP IS 210.8 FT AT 68.6 GPM, EM 101558.

JULY 11, 1995

Pump Name: 1A Residual Heat Removal Pump

Pump Number: [1RH-P-1A]

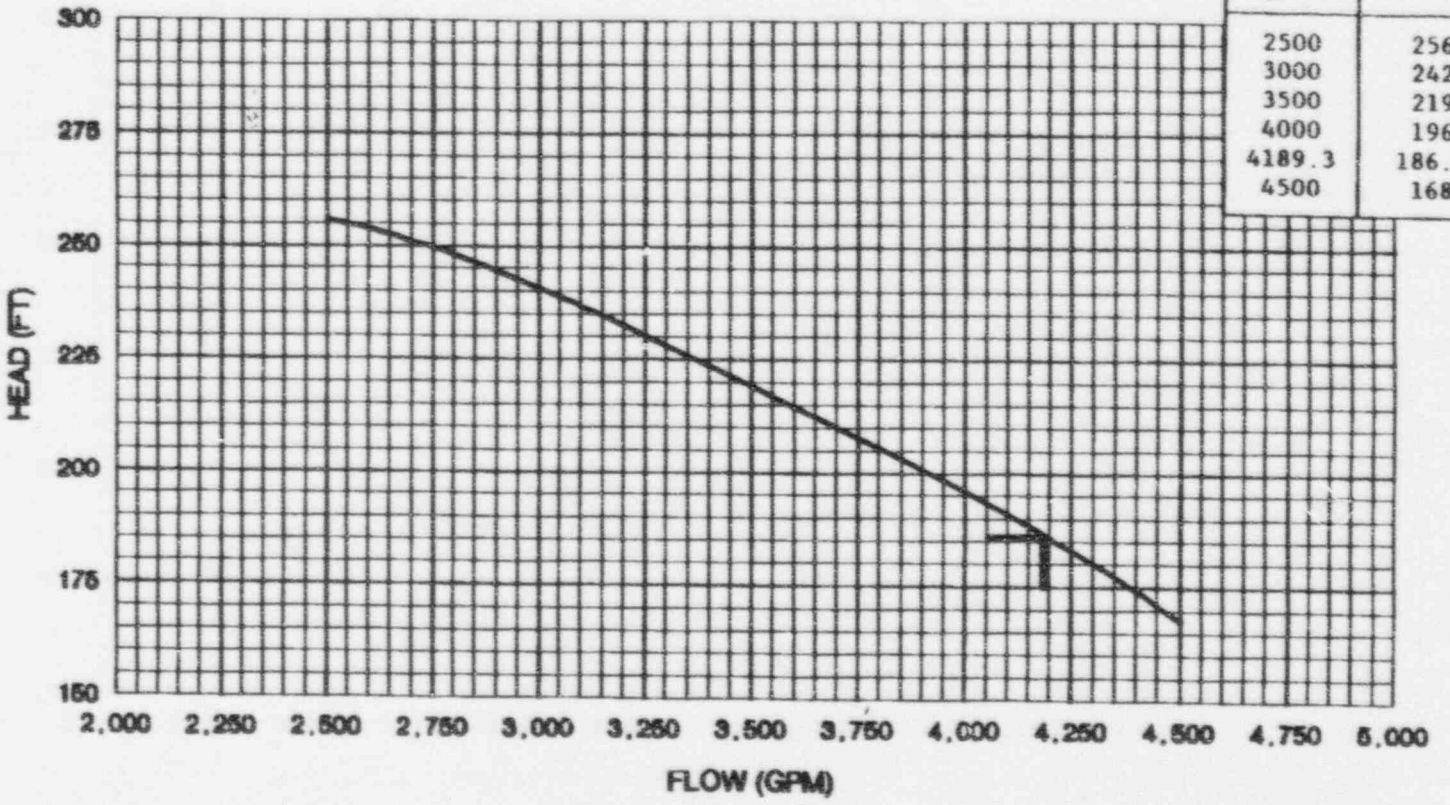


Pump Name: 1B Residual Heat Removal Pump Pump Number: [1RH-P-1B]

RH-P-1B

MOP CURVE

Flow gpm	Head feet
2500	256
3000	242
3500	219
4000	196
4189.3	186.4
4500	168

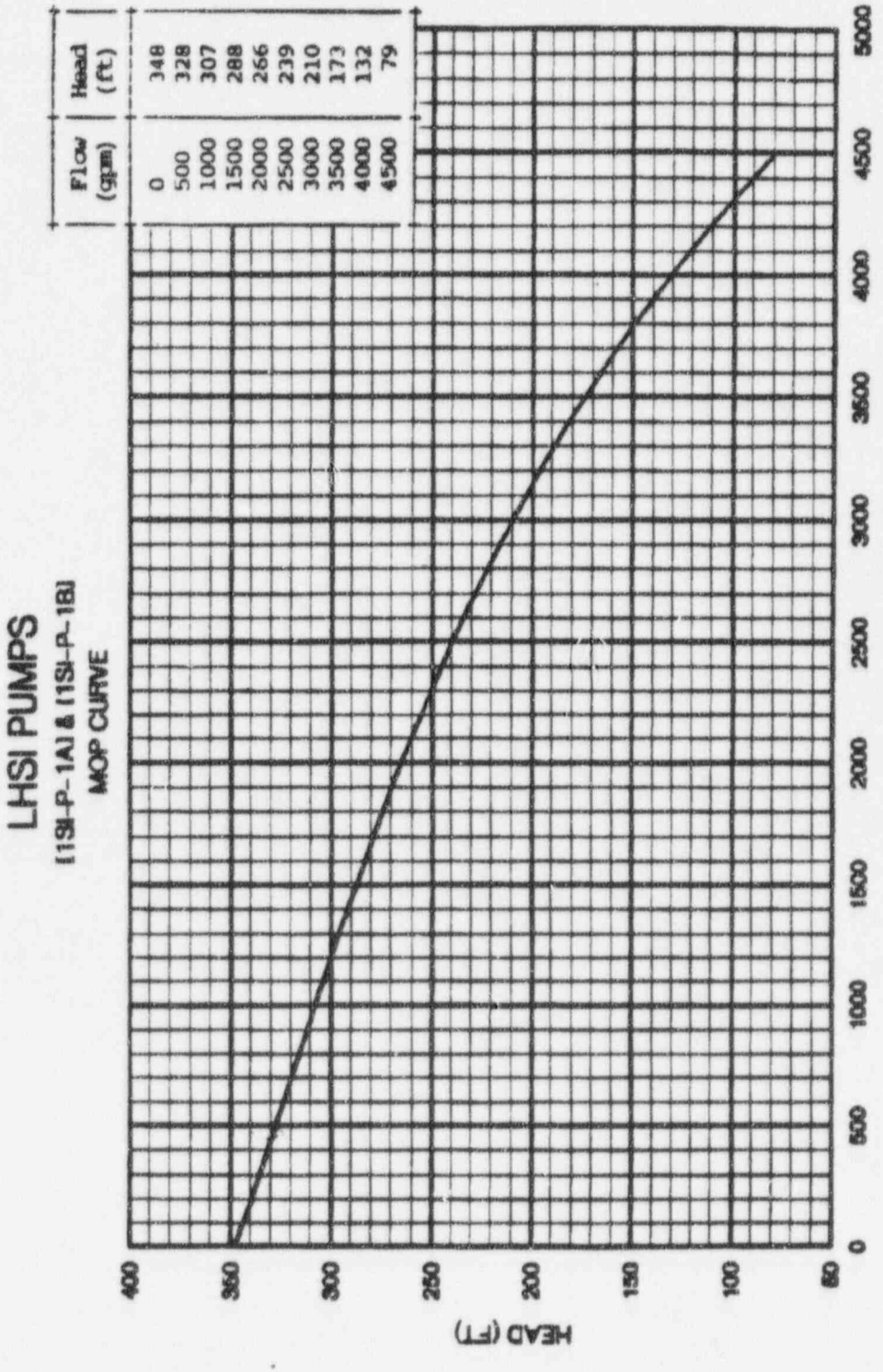


MOP point is 186.4 ft at 4189.3 gpm
from Calc # 8700-DMC-2924, 3/27/95.

March 28, 1995

Pump Name: Low Head Safety Injection Pumps

Pump Number: [1SI-P-1A]
[1SI-P-1B]



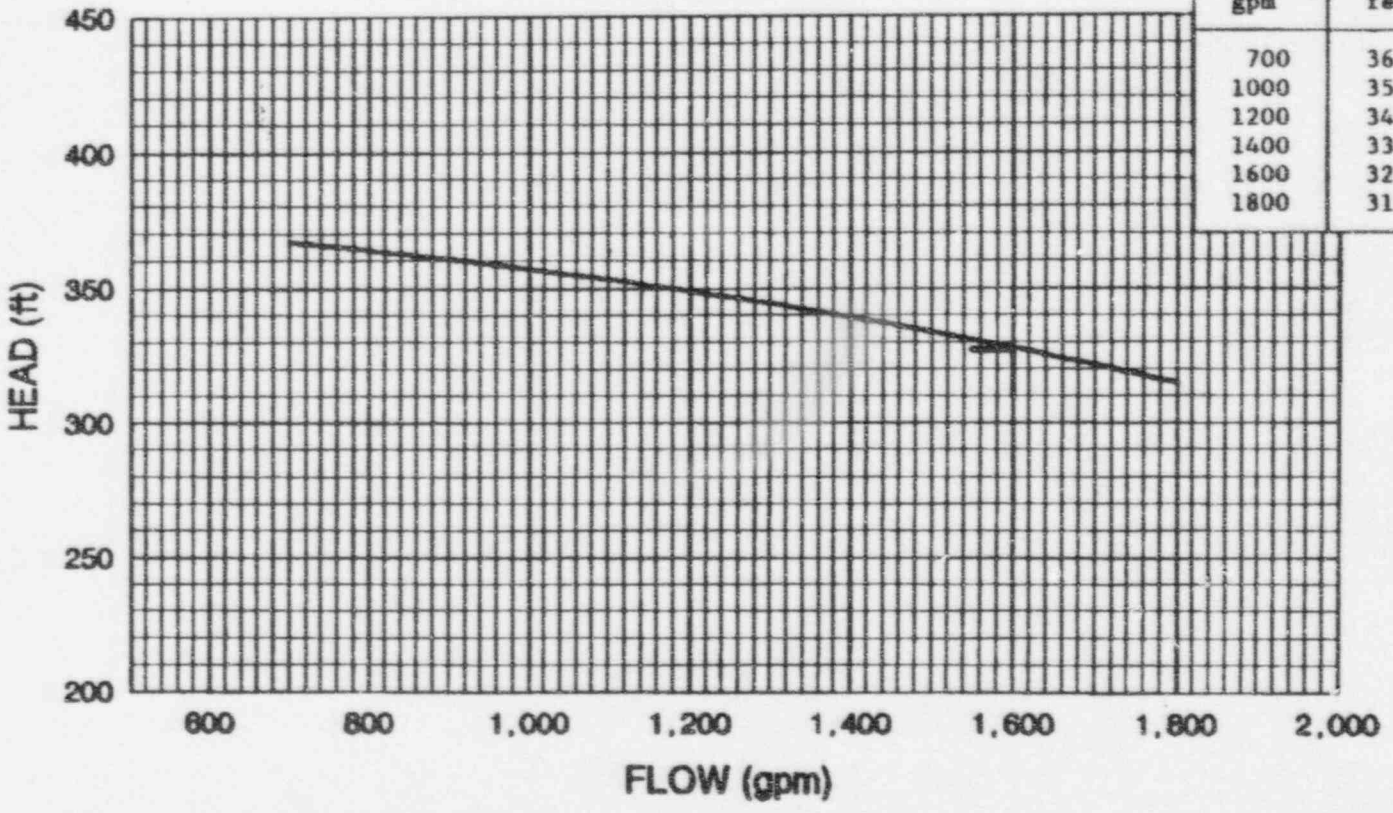
THE MOP CURVE WAS PROVIDED BY NED IN RESPONSE TO EM 103441 ON 3/1/93.

Pump Name: 1A Quench Spray Pump Pump Number: [1QS-P-1A]

[1QS-P-1A]

MOP CURVE

Flow gpm	Head feet
700	367
1000	357
1200	349
1400	339
1600	328
1800	315

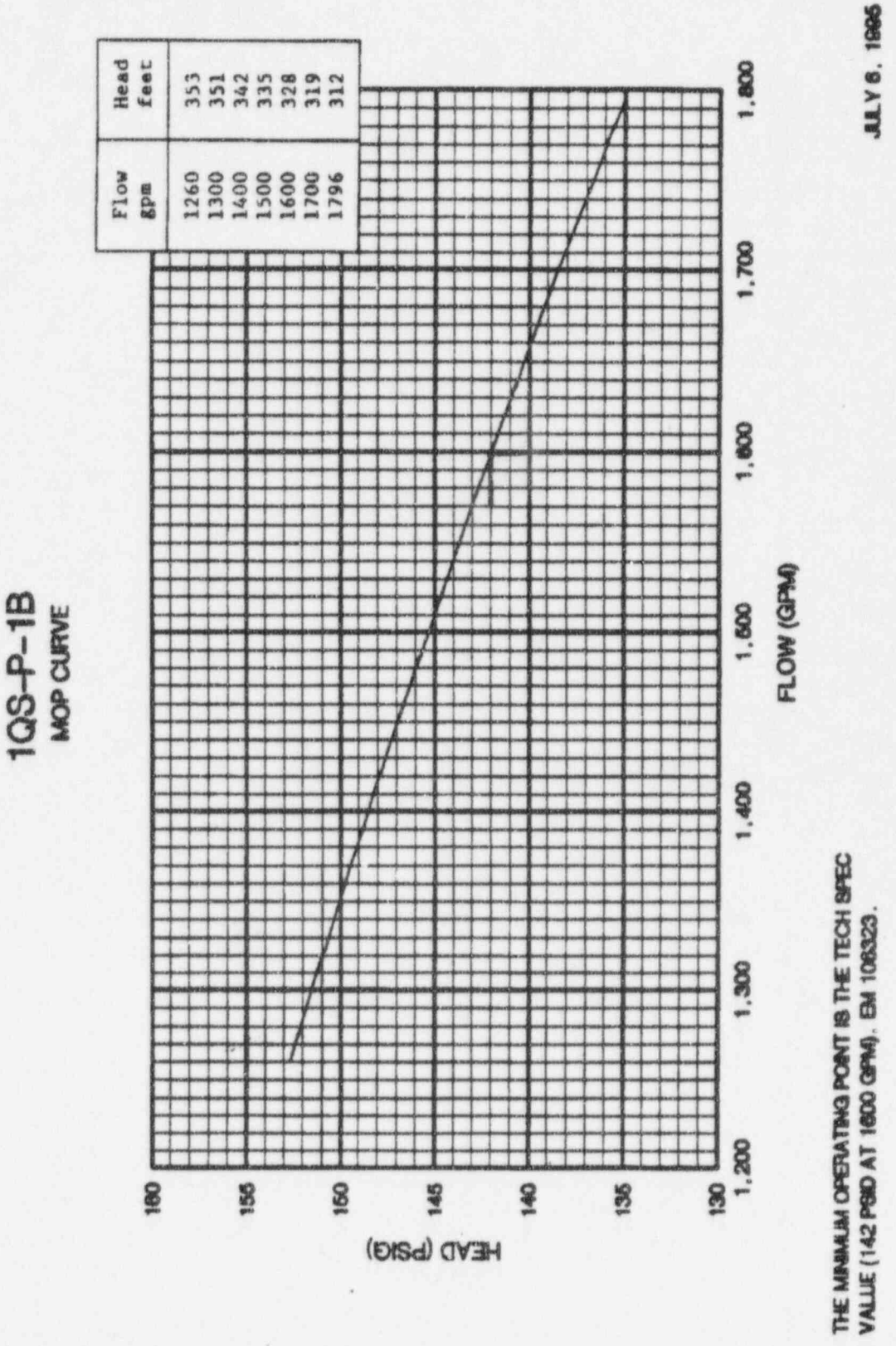


MOP CURVE BASED ON TECH SPEC VALUE OF
142 FT AT 1600 GPM, EM 106323.

JULY 6, 1995

Pump Name: 1B Quench Spray Pump

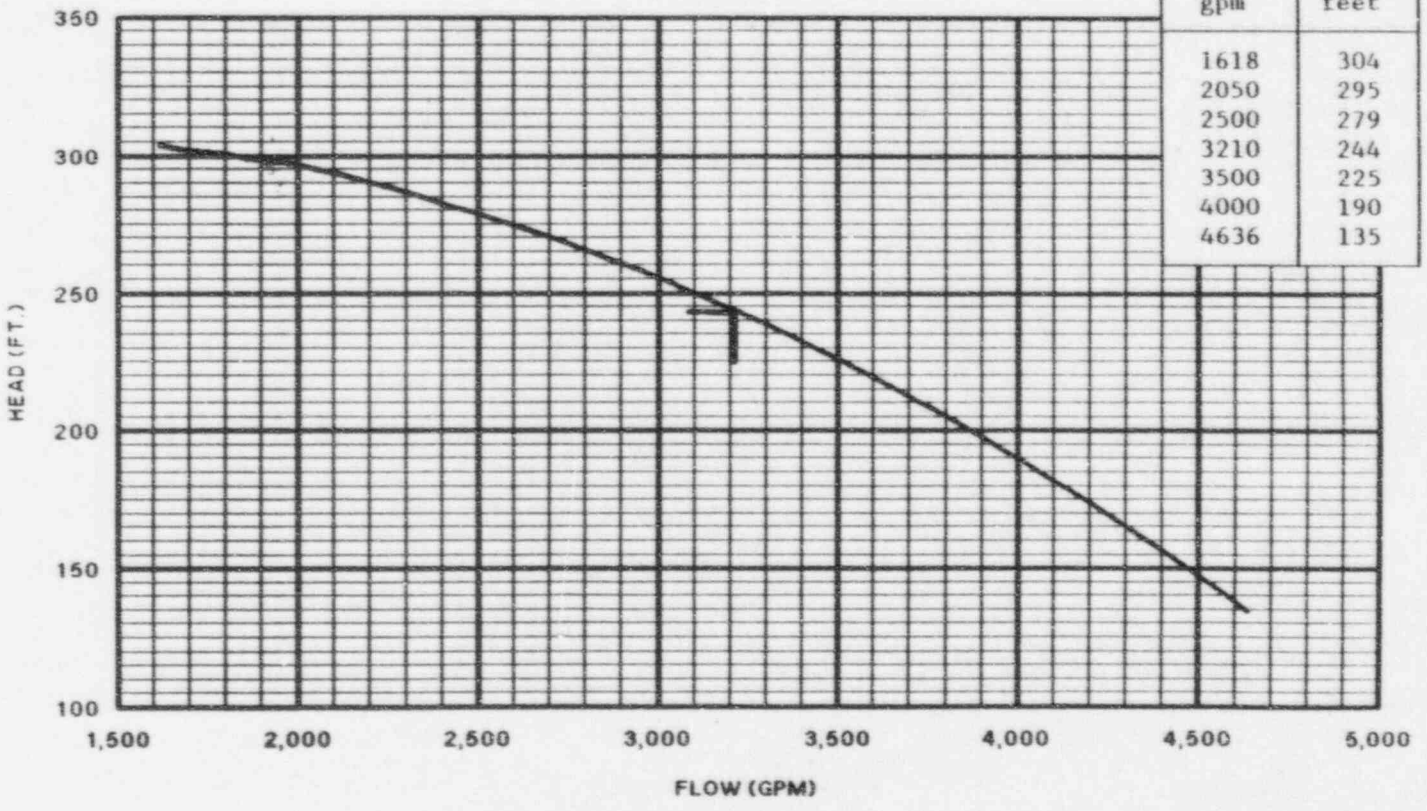
Pump Number: [1QS-P-1B]



Pump Name: 1A Inside Recirculation Spray Pump Pump Number: [1RS-P-1A]

[1RS-P-1A]
MOP CURVE

Flow gpm	Head feet
1618	304
2050	295
2500	279
3210	244
3500	225
4000	190
4636	135



THE MOP VALUE IS 244 FT AT 3210 GPM,
EM 106323

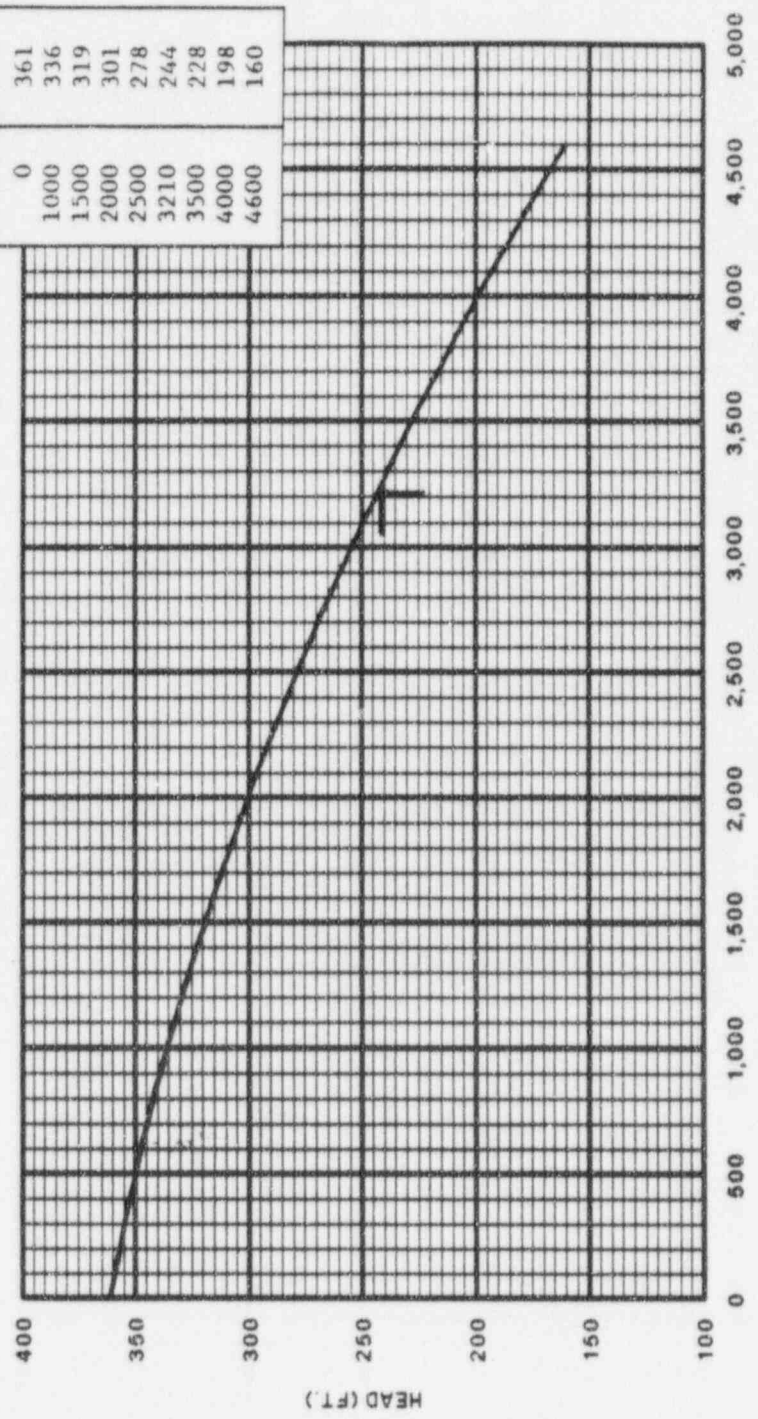
JULY 21, 1995

Pump Name: 1B Inside Recirculation Spray Pump

Pump Number: [1RS-P-1B]

[1RS-P-1B]
MOP CURVE

Flow gpm	Head feet
0	361
1000	336
1500	319
2000	301
2500	278
3210	244
3500	228
4000	198
4600	160



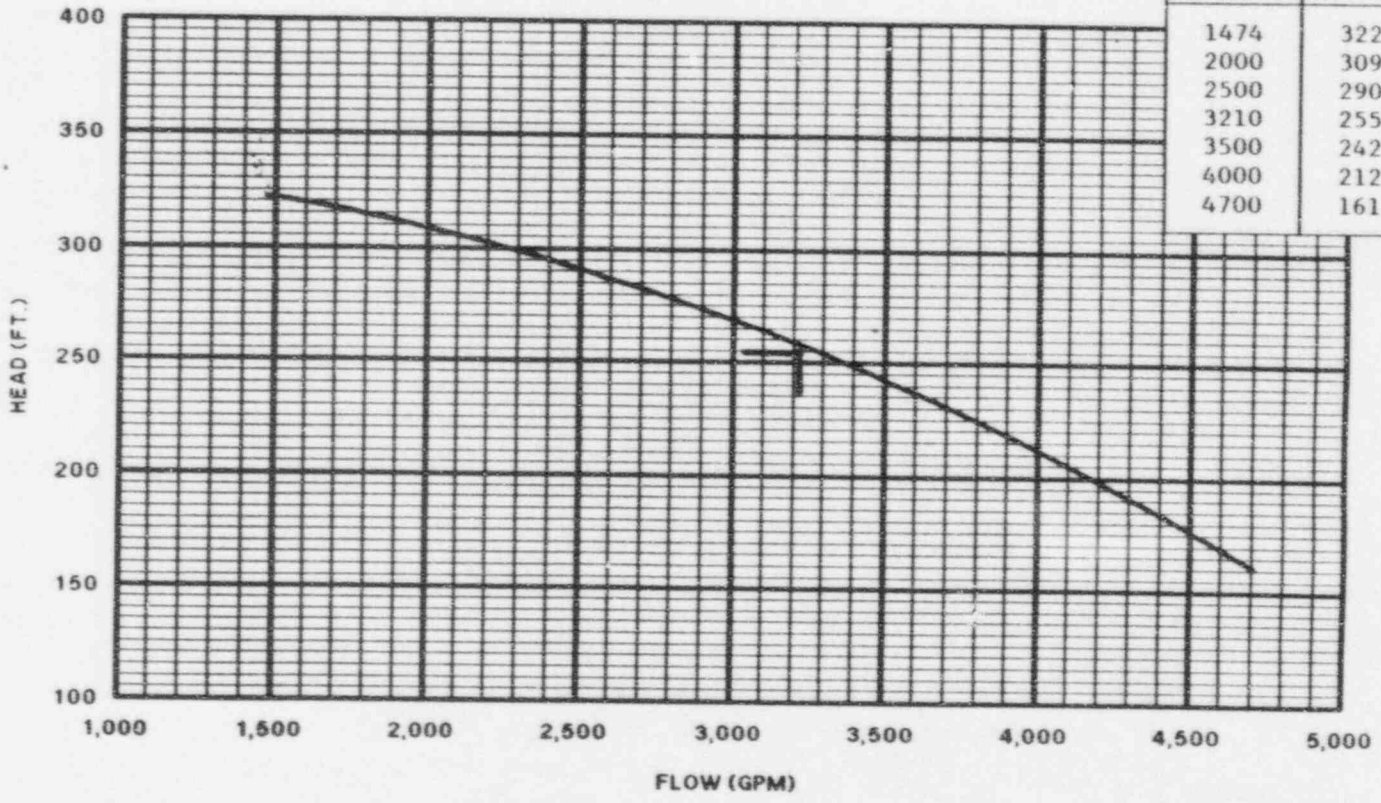
JULY 21, 1995

THE MOP VALUE IS 244 FT AT 3210 GPM.
EM 106323

Pump Name: 2A Outside Recirculation Spray Pump Pump Number: [1RS-P-2A]

[1RS-P-2A]
MOP CURVE

Flow gpm	Head feet
1474	322
2000	309
2500	290
3210	255
3500	242
4000	212
4700	161



THE MOP VALUE IS 255 FT AT 3210 GPM.
EM 106323

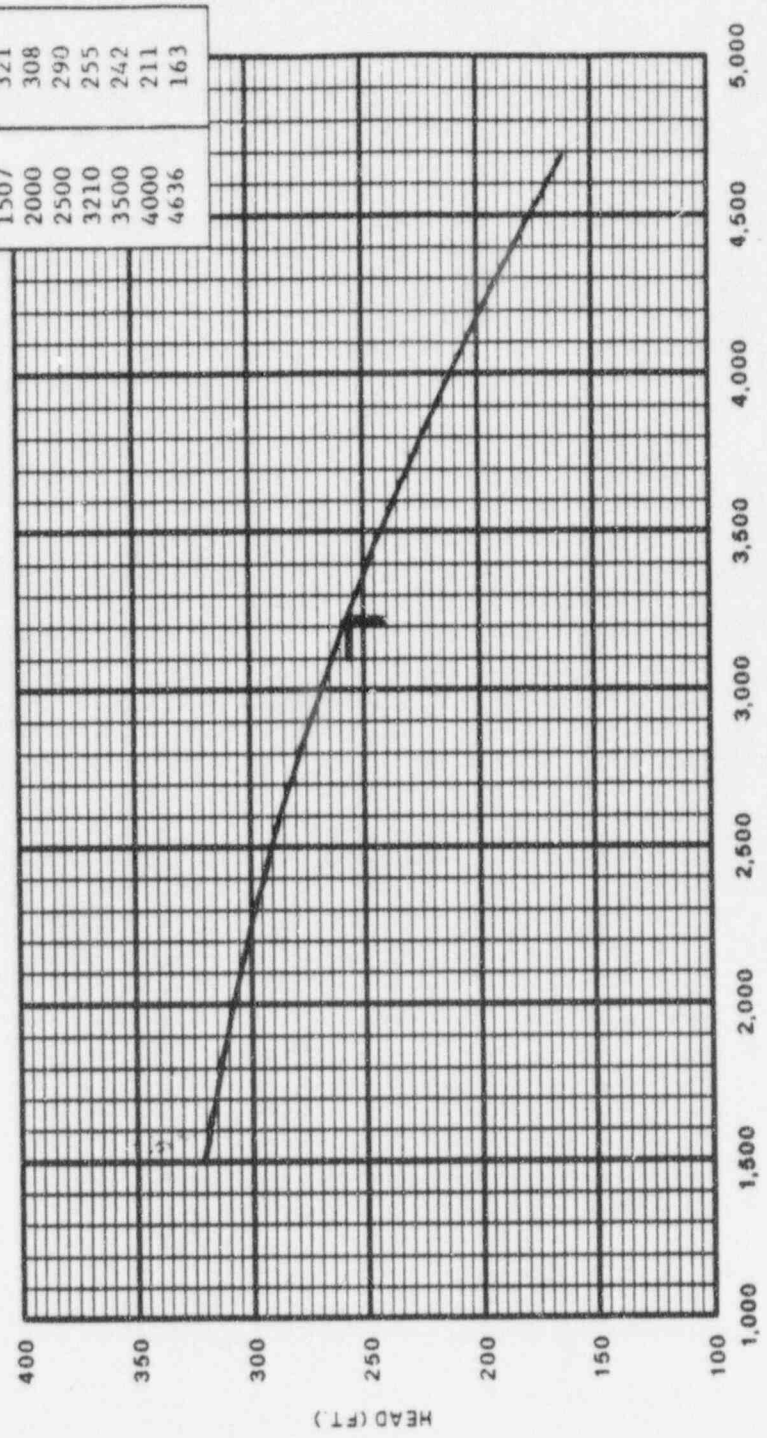
JULY 21, 1995

Pump Name: 2B Outside Recirculation Spray Pump

Pump Number: [1RS-P-2B]

[1RS-P-2B]
MOP CURVE

Flow gpm	Head feet
1507	321
2000	308
2500	290
3210	255
3500	242
4000	211
4636	163



JULY 21, 1995

THE MOP IS 255 FT AT 3210 GPM,
PER EM 106323.

Pump Name: 1A Component Cooling Water Pump Pump Number: [1CC-P-1A]

(IN DEVELOPMENT)

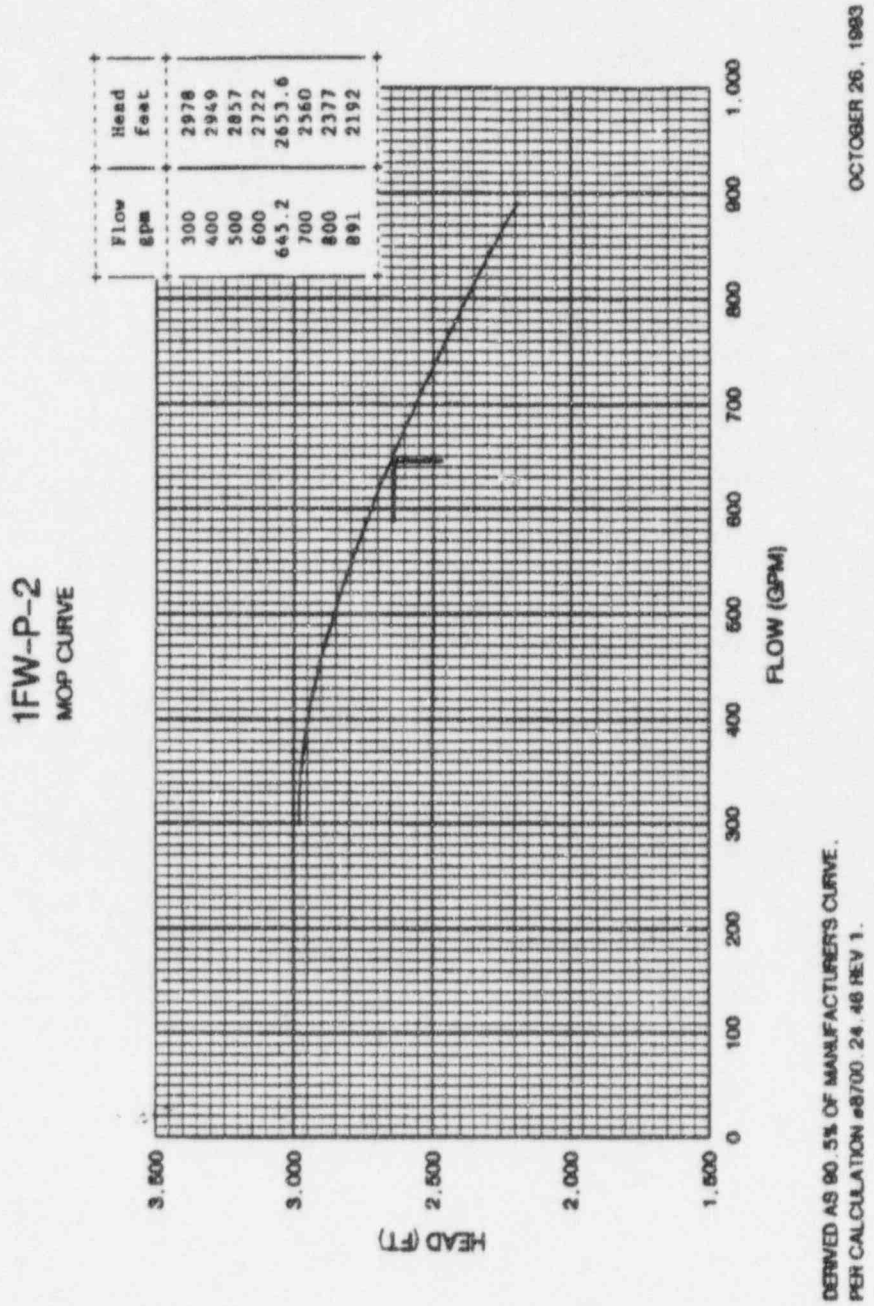
Pump Name: 1B Component Cooling Water Pump Pump Number: [1CC-P-1B]

(IN DEVELOPMENT)

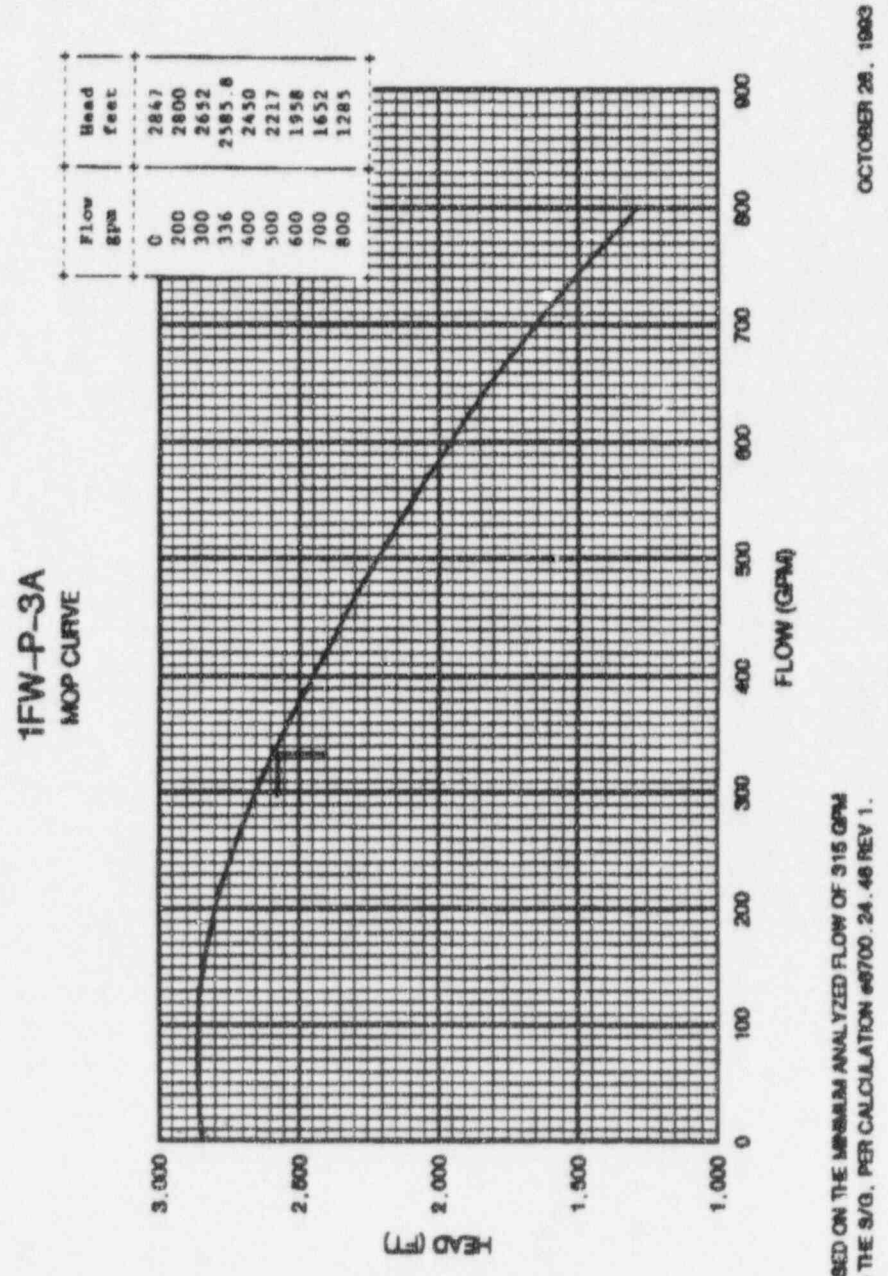
Pump Name: 1C Component Cooling Water Pump Pump Number: [1CC-P-1C]

(IN DEVELOPMENT)

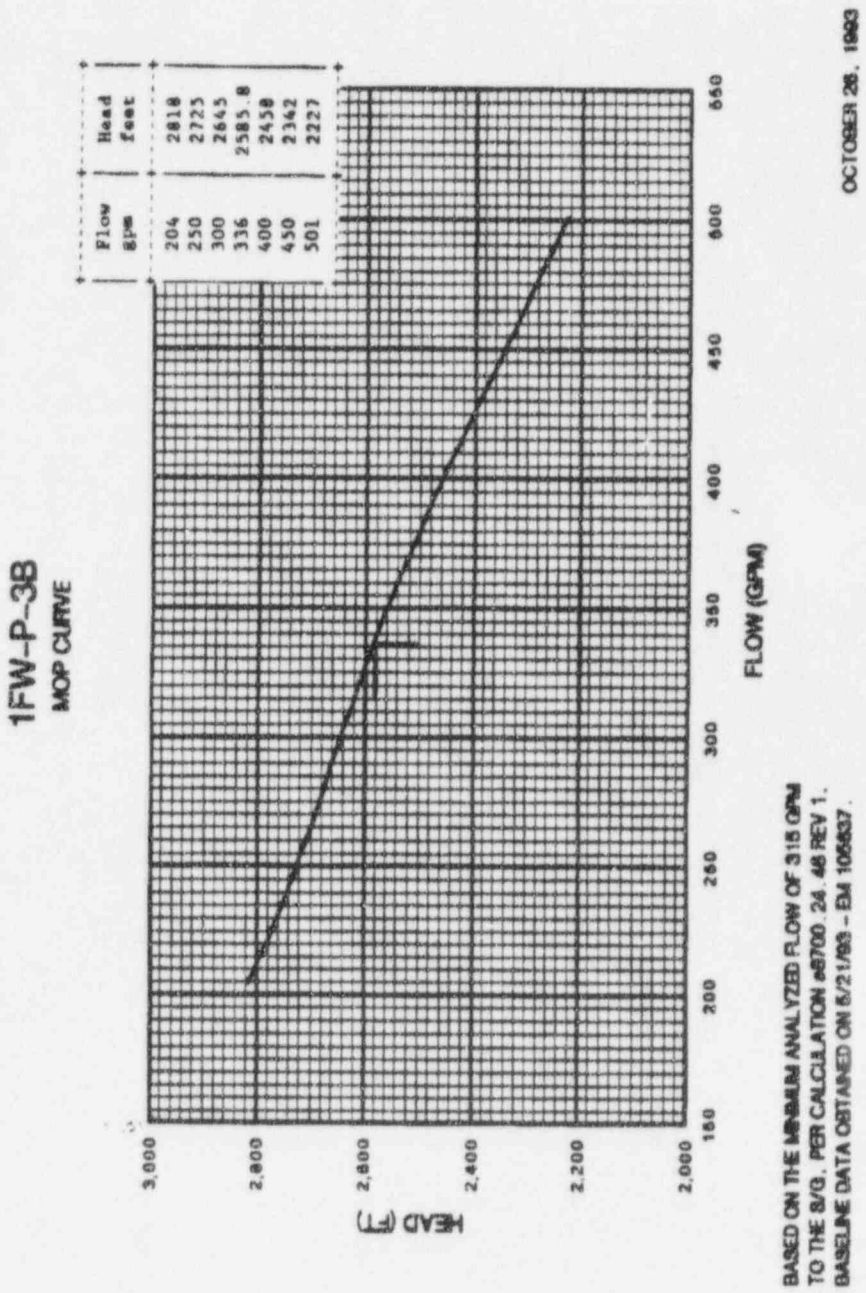
Pump Name: Turbine Driven Auxiliary Feed Pump **Pump Number:** 1FW-P-2



Pump Name: Motor Driven Auxiliary Feed Pump Pump Number: 1FW-P-3A



Pump Name: Motor Driven Auxiliary Feed Pump **Pump Number:** 1FW-P-3B

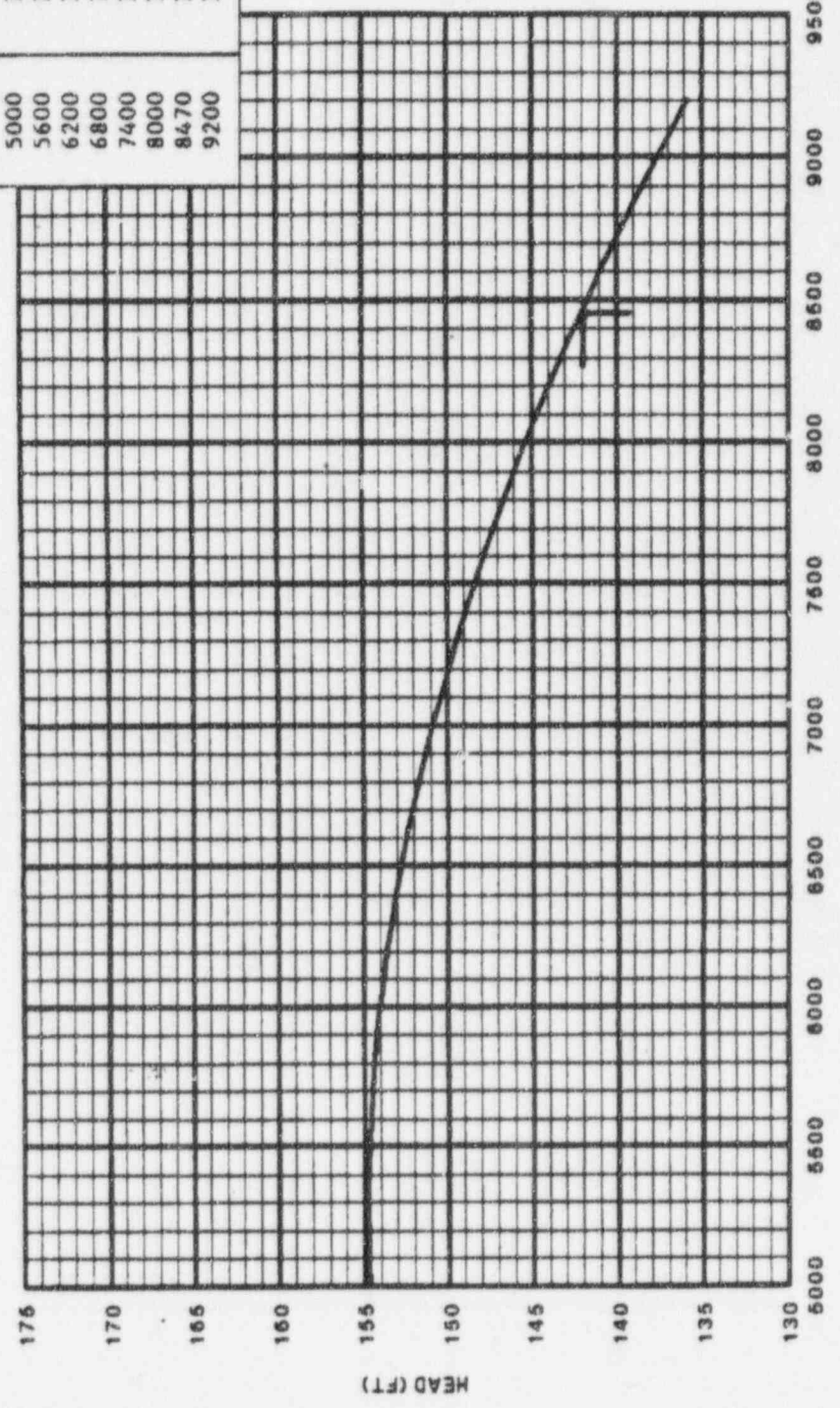


Pump Name: 1A Reactor Plant River Water Pump

Pump Number: [1WR-P-1A]

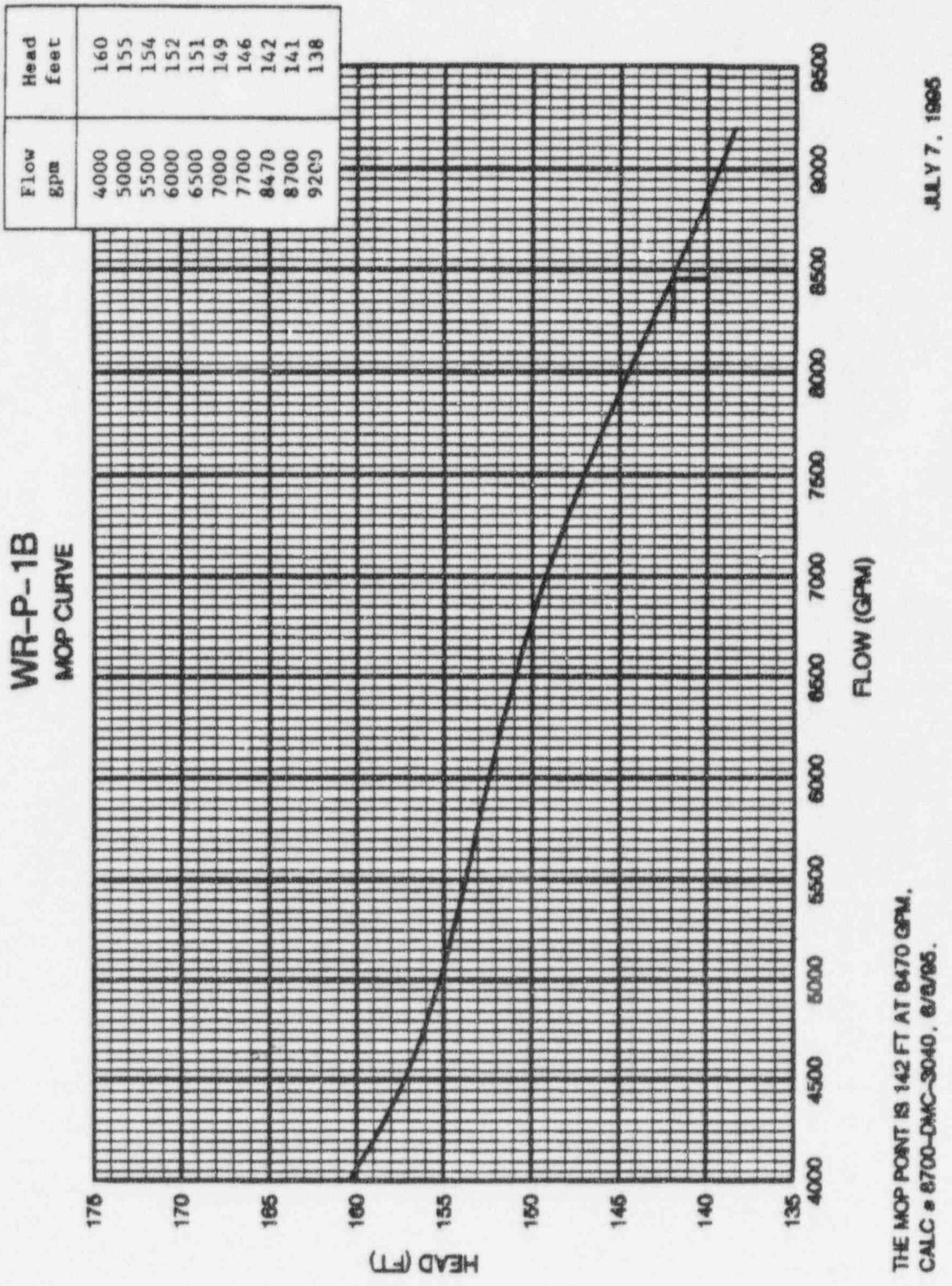
[1WR-P-1A]
MOP CURVE

Flow gpm	Head feet
5000	155
5600	155
6200	154
6800	152
7400	149
8000	145
8470	142
9200	136



Pump Name: 1B Reactor Plant River Water Pump

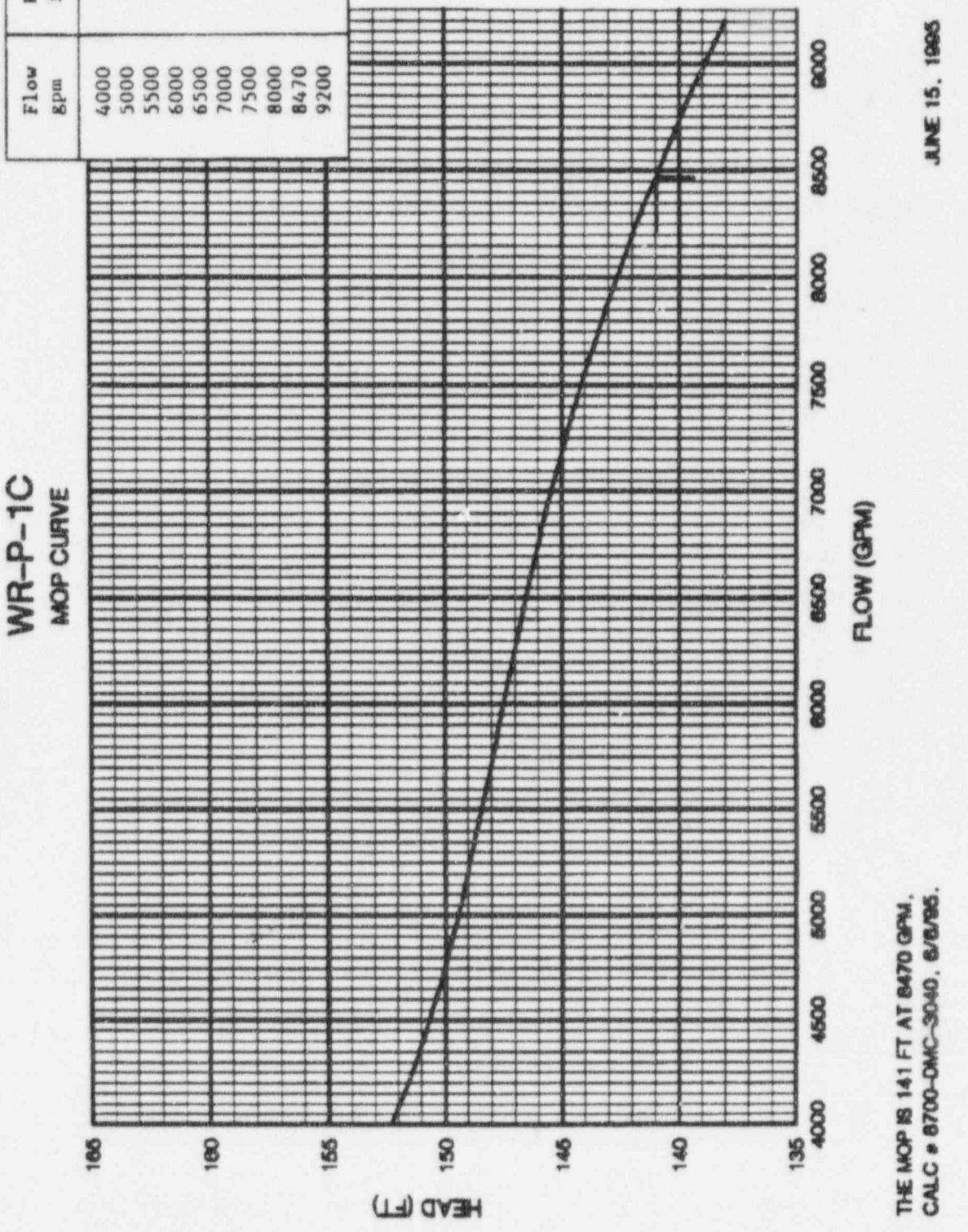
Pump Number: [1WR-P-1B]



Pump Name: 1C Reactor Plant River Water Pump

Pump Number: [1WR-P-1C]

Flow gpm	Head feet
4000	152
5000	149
5500	149
6000	147
6500	146
7000	146
7500	144
8000	143
8470	141
9200	138



SECTION IV: PUMP TESTING RELIEF REQUESTS

RELIEF REQUEST 1

Pump Mark No(s).: All of the pumps in the IST Program

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)

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

Notes:

1. Vv represents the peak vibration velocity. Vr is vibration reference value in the selected units.
2. On centrifugal pumps, measurements shall be taken in a plane approximately perpendicular to the rotating shaft in two orthogonal directions on each accessible pump bearing housing. Measurement also shall be taken in the axial direction on each accessible pump thrust bearing housing.
3. On vertical line shaft pumps, measurements shall be taken on the upper motor bearing housing in three orthogonal directions, one of which is the axial direction.
4. On reciprocating pumps, the location shall be on the bearing housing of the crankshaft, approximately perpendicular to both the crankshaft and the line of plunger travel.

RELIEF REQUEST 2

Pump Mark No(s).:

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

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.

RELIEF REQUEST 3

Pump Mark No(s).:

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

Code Test Requirement: Measurement of flow and ΔP.

Basis for Relief: The function of the Boric Acid Transfer pumps is to supply borated water to the suction of the Charging HHSI pumps for injection into the RCS. Testing the pumps in that flow path is impractical because it could result in a reactor shutdown. The flow path available to test these pumps is shown on the attached figure. There is no installed flow instrumentation in these recirculation lines. During normal plant operations, the pumps are tested through [RO-1CH-ORBA-1(2)], the restricting orifices in the minimum flow fixed resistance recirculation lines. Therefore, the flow is assumed to be fixed and at its reference value. Delta-P is then measured and compared to the acceptance criteria. A review of past test results has shown this test method is capable of assessing pump performance and detecting degradation.

RELIEF REQUEST 3

In accordance with Position 9 of the GL 89-04, the pumps are also tested through their full-flow recirculation flow paths through [HCV-1CH-110 (105)], at a refueling frequency. For the full-flow test, the flow will be measured by a portable ultrasonic flow meter that has been "wet-flow" calibrated to within the ±2% accuracy required by ASME. In order to install the flow meters, however, the insulation must be removed from the line and the heat trace elements must be moved away from where the transducers and tracks will be installed. Moving the heat trace elements places stresses on them, which could cause them to break.

The use of the portable flow meter and full-flow recirc line was considered for the quarterly test. It was determined, however, that use of the full-flow line was impractical for quarterly testing. A design change to the plant would be required and additional flow instrumentation would have to be purchased to permanently install the ultrasonic flow meter. In addition, in order to achieve a substantial flow rate, flow must be aligned through [HCV-1CH-110 (105)]. If the pump under test was required for Emergency Boration, the HCV would have to be isolated in order to ensure enough boric acid solution would be injected into the RCS.

Performing the full-flow test quarterly would not enhance our ability to assess the operability of the pumps enough to compensate for the increased cost.

Therefore, because of the difficulty in installing the flow meter for each test and the cost of having it permanently installed, the use of the full-flow recirculation flow path will be limited to once during refueling outages.

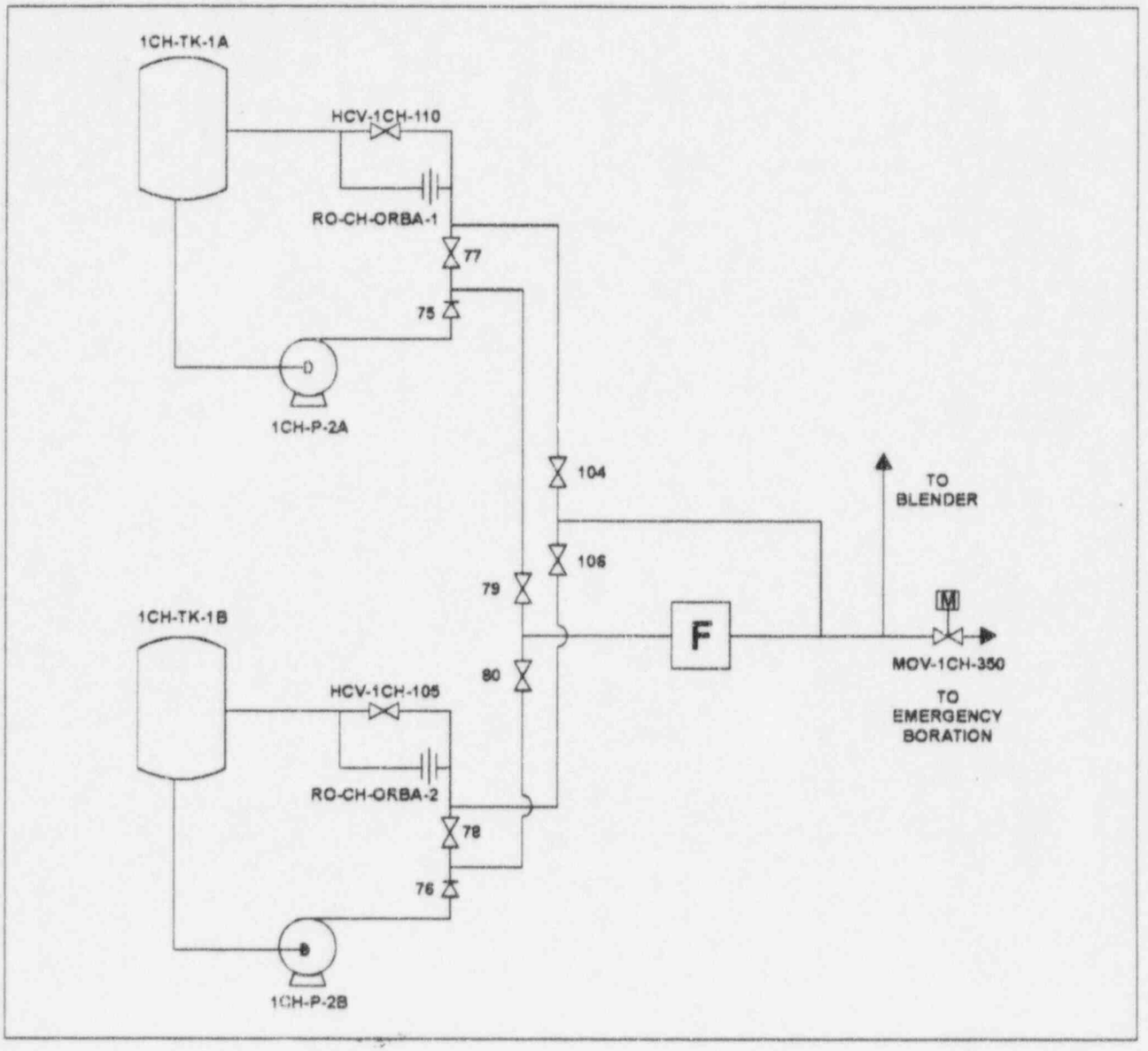
Alternate Test:

Test quarterly through a fixed-resistance minimum flow recirculation line: assuming flow to be constant and measuring delta-P in OST 1.7.1, 2.

Test at a refueling frequency at "full-flow" through a larger recirculation line, using a portable ultrasonic flow meter in OST 1.7.13, 14.

Separate vibration reference and acceptance criteria values will be used for the different test conditions of the recirc and full-flow tests.

RELIEF REQUEST 3



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.

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, ΔP 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 ΔP.

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

Alternate Test: Test quarterly through their recirculation lines while measuring pump ΔP 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 ΔP 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.

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 ΔP.

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

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

RELIEF REQUEST 10

Pump Mark No(s).:

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.

RELIEF REQUEST 11

Pump Mark No(s).:

1CC-P-1A
1CC-P-1B
1CC-P-1C

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

Basis for Relief: The amount of Reactor Plant Component Cooling Water System flow is dependent on the plant's seasonal heat load requirements and on River Water System and seasonal Ohio River water temperatures. The overall amount of flow may vary by several hundred gallons per minute between cold winter months and hot summer months.

Varying Component Cooling header flows by adding or removing heat loads from service in order to increase or decrease flowrate to a specific reference value is not practical. An exact flowrate cannot be duplicated because flow to some heat exchangers cannot be throttled and those that can be throttled are not always capable of being throttled due to system heat load requirements. The test is typically performed by either isolating or placing into service non-essential heat exchangers which results in a gross flow change. For this reason, a wider range of flow values, as on a pump curve, is needed as a reference.

In addition, to throttle flow to a reference value during hot summer months when flow demand is greatest requires the use of a manual butterfly valve at the discharge of the pumps. A butterfly valve is not designed to be used as a throttle valve so throttling may result in excessive wear and premature failure of the valve. No other valves are available to throttle header flow. Also, operating experience has shown that any throttling of the pump discharge butterfly valves results in a large reduction in cooling water flow to the Reactor Coolant Pump thermal barrier heat exchangers, bearing lube oil coolers and motor stator air coolers. Reduced header flows result in low flow alarms and heatup of the Reactor Coolant Pumps to near required manual pump trip setpoints which could ultimately result in a plant trip. Finally, the added thermal cycling of these coolers for pump testing could cause premature degradation of these heat exchangers.

IWP-3112 provides for multiple sets of reference values. A pump curve is merely a graphical representation of the fixed response of the pump to an infinite number of flow conditions which are based on some finite number of reference values verified by measurement. Relief is, therefore, required to use a pump curve, which should provide an equivalent level of quality and safety in trending pump performance and degradation. Flow will be permitted to vary as system conditions require. Delta-P will be calculated and converted to a developed head for which ASME ranges will be applied.

Alternate Test:

A pump curve (developed per the guidelines in Section I, "Pump Testing Requirements") will be used to compare flowrate with developed pump head at the flow conditions dictated by plant seasonal heat load requirements per Reactor Plant Component Cooling Water Pump Tests, 1OST-15.1, 1OST-15.2 and 1OST-15.3 each quarter. Since normal flow varies, the most limiting vibration acceptance criteria will be used over this range of flows based on baseline vibration data obtained at various flow points on the pump curve.

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", including supplement 1 (NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"). 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 (ie., 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 shall be leak rate tested at least once every two years normally, but not necessarily, at refueling outages. The Category A valves that are tested in accordance with 10CFR50, Appendix J, Type C (RR1) are leak rate tested normally at refueling outages. 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 the check valves cannot be tested mechanically or with flow, they will be disassembled and inspected per the requirements of GL 89-04. These valves will normally, but not necessarily be inspected during refueling outages.

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.

Manufacturer supplied skid-mounted valves (i.e., check valves, SOV's, TCV's, relief valves) which are integral sub-components of, and are required to support the operation of a parent pump or other component, are often times not designed to be tested in accordance with the ASME XI Code, regardless of their ASME Code class. Although ASME Code class skid-mounted valves are not included in the BVPS Unit 1 IST Program, they are either tested in conjunction with the parent pump or other component for which they provide support, as documented in the IST Program Basis Document and applicable surveillance test, or are examined separately by a preventative maintenance activity. This ensures the skid-mounted valves operate acceptably commensurate with their safety functions provided satisfactory performance of the parent pump or other component is demonstrated.

Because it has been recognized that the test of the parent pump or other component itself challenges the operability of the sub-components, relief from Code testing requirements and including ASME Code class manufacturer supplied skid-mounted valves in the IST Program has been approved by the NRC.

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

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.			
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,RR 49	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-102B	1	B	1	Globe	LS	6-2	A-1	QST	CSJ1,RR 49	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-103A	1	B	1	Globe	LS	6-2	A-2	QST	CSJ1,RR 49	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-103B	1	B	1	Globe	LS	6-2	A-2	QST	CSJ1,RR 49	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-104	1	B	1	Globe	LS	6-2	A-3	QST	CSJ1,RR 49	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-105	1	B	1	Globe	LS	6-2	B-2	QST	CSJ1,RR 49	1OST-1.10-Stroke & Time Open/Closed (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 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-22	2	C	3	Check		7-1	C-3	QS		1OST-7.4-PS, FD (Q)
								QS		1OST-7.5(6)-FS, RD (Q)
								QS	RR4	1OST-11.14-FS, FD (R)
1CH-23	2	C	3	Check		7-1	D-3	QS		1OST-7.5-PS,FD (Q)
								QS		1OST-7.4(6)-FS, RD (Q)
								QS	RR4	1OST-11.14-FS, FD (R)
1CH-24	2	C	3	Check		7-1	E-3	QS		1OST-7.6-PS, FD (Q)
								QS		1OST-7.4(5)-FS, RD (Q)
								QS	RR4	1OST-11.14-FS, FD (R)
1CH-25	2	B/P	3	Gate	LO	7-1	C-2	POS		1OST-45.4-(RPV)
1CH-26	2	B/P	3	Gate	LO	7-1	D-2	POS		1OST-45.4-(RPV)
1CH-27	2	B/P	3	Gate	LO	7-1	E-2	POS		1OST-45.4-(RPV)
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		1OST-7.1-PS, FD (Q)
								QS	CSJ3	1OST-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) 1OST-45.4-(RPV)
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	2	Globe	S	7-1	A-9	QS	CSJ36	1OST-1.10-Stroke & Time Closed (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R), (RPV)

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-152	2	C	2	Check		7-1	C-3	QS		1OST-7.4-PS, FD (Q)
								QS	CSJ34	1OST-7.4-FS, FD (CSD)
								QS		1OST-7.5(6)-FS, RD (Q)
1CH-153	2	C	2	Check		7-1	D-3	QS		1OST-7.5-PS, FD (Q)
								QS	CSJ34	1OST-7.5-FS, FD (CSD)
								QS		1OST-7.4(6)-FS, RD (Q)
1CH-154	2	C	2	Check		7-1	E-3	QS		1OST-7.6-PS, FD (Q)
								QS	CSJ34	1OST-7.6-FS, FD (CSD)
								QS		1OST-7.4(5)-FS, RD (Q)
1CH-158	2	B/P	3	Gate	LO	7-1	C-3	POS		1OST-45.4-(RPV)
1CH-159	2	B/P	3	Gate	LO	7-1	D-3	POS		1OST-45.4-(RPV)
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		1OST-45.4-(RPV)
1CH-170	1	A/C/P	2	Check		7-1	G-2	LT		1BVT 1.47.11-Leakage corrected for functional ΔP 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)

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-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)
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)

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.			
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)
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-378	2	A	3/4	Gate	O	7-4	D-8	QST	RR12	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT	RR1,RR9	1BVT 1.47.5-Leak Test (R)

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			
MOV-1CH-381	2	A	3/4	Gate	O	7-4	F-8	QST	RR12	1OST-1.10-Stroke & Time Closed (CSD)(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	¾ x 1	Relief		7-1	C-2	SPT		1BVT 1.60.5-(R)
LCV-1CH-460A	1	B	2	Globe	O	7-1	A-2	QST	CSJ7	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
LCV-1CH-460B	1	B	2	Globe	O	7-1	A-3	QST	CSJ7	1OST-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)

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	Comments
						OM No.	Coord.			
TV-1DG-108A	2	A	2	Globe	O	9-1	F-9	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1DG-108B	2	A	2	Globe	O	9-1	F-10	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1DG-109A1	2	A	1½	Globe	A	9-1	E-9	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1DG-109A2	2	A	1½	Globe	A	9-1	E-8	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: 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) 1OST-45.4-(RPV)
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)

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-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)

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-27	2	A/C	8	Check		11-1	G-1	QS	RR19	1OST-7.4,5 or 6-PS, FD(Q) if RWST is supplying charging pumps.
								QS	RR19	1OST-11.20-PS,FD (CSD)
								QS	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	QS		1OST-11.1-FS,RD (Q)
								QS		1OST-11.2-FS,FD (Q)
1SI-29	2	C	2	Check		11-1	F-2	QS		1OST-11.1-FS,FD (Q)
								QS		1OST-11.2-FS,RD (Q)
1SI-41	2	A/P	1	Globe	LS	11-2	D-6	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	QS	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	QS	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	QS	RR20	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B-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-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)

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 Request	Comments
						OM No.	Coord.			
1SI-100	1	C	2	Check		11-1	A-9	QS	RR17	1OST-11.14-FS,FD (R)
1SI-101	1	C	2	Check		11-1	A-9	QS	RR17	1OST-11.14-FS,FD (R)
TV-1SI-101-1	2	A	1	Globe	S	11-2	B-6	QST		1OST-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		1OST-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	1OST-11.14-FS,FD (R)
1SI-447	2	B/P	3/4	Globe	LO	11-1	F-3	N/A		N/A
1SI-448	2	B/P	3/4	Globe	LO	11-1	F-3	N/A		N/A
1SI-451	2	B/P	3/4	Globe	LO	11-1	D-2	N/A		N/A
1SI-452	2	B/P	3/4	Globe	LO	11-1	D-4	N/A		N/A
MOV-1SI-836	2	A	3	Gate	S	11-1	A-6	QST	CSJ12	1OST-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		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
RV-1SI-845A	2	C	¾ x 1	Relief		11-1	D-2	SPT		1BVT 1.60.5-(R)
RV-1SI-845B	2	C	¾ 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 1.60.5-(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-4	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) & 1OST-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) & 1OST-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) & 1OST-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-7	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	F-7	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-865B	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	RR49	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	RR49	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	RR49	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	RR49	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)
1CV-57	2	A/P	3/8	Globe	SS	12-1	C-4	LT	RR1	1BVT 1.47.5-Leak Test (R)
1CV-58	2	A/P	3/8	Globe	SS	12-1	B-4	LT	RR1	1BVT 1.47.5-Leak Test (R)
1CV-59	2	A/P	3/8	Globe	SS	12-1	B-4	LT	RR1	1BVT 1.47.5-Leak Test (R)
1CV-60	2	A/P	3/8	Globe	SS	12-1	B-4	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	E-9	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	E-9	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	C-4	QST		1OST-47.3A(3B)-Stroke & Time Open (Q)(RPV)
MOV-1QS-100B	2	B	12	Gate	O	13-1	D-4	QST		1OST-47.3A(3B)-Stroke & Time Open (Q)(RPV)
RV-1QS-100A	2	C	1⅛ x 2⅛	Relief		13-1	F-3	SPT		1BVT 1.60.5-(R)
RV-1QS-100B	2	C	1⅛ x 2⅛	Relief		13-1	F-5	SPT		1BVT 1.60.5-(R)
MOV-1QS-101A	2	A	10	Gate	S	13-1	E-9	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	E-9	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	E-7	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
MOV-1QS-103B	2	B	10	Gate	O	13-1	F-7	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
MOV-1QS-104A	2	B	3	Diaphragm	S	13-1	E-3	QST		1OST-13.10A-Stroke & Time Open (Q)(RPV)
MOV-1QS-104B	2	B	3	Diaphragm	S	13-1	E-3	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		13-2	C-6	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		13-2	B-8	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	13-2	F-6	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
MOV-1RS-155B	2	B	12	Gate	O	13-2	F-8	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
MOV-1RS-156A	2	B	10	Gate	O	13-2	D-6	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
MOV-1RS-156B	2	B	10	Gate	O	13-2	D-8	QST		1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)(RPV)
1RS-157	2	B	6	Gate	LS	13-2	D-7	QS		1OST-47.3A(3B)-Stroke Only Open (Q) 1OST-45.4-(RPV)
1RS-158	2	C	6	Check		13-2	D-7	QS	RR25	Sample Disassembly and Inspection per CMP 1/2-75-VELAN CHECK-1M (R)
1RS-159	2	B	6	Gate	LS	13-2	D-9	QS		1OST-47.3A(3B)-Stroke Only Open (Q) 1OST-45.4-(RPV)
1RS-160	2	C	6	Check		13-2	D-9	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	S	14A-1	A-3	QST	RR49	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	S	14A-1	A-3	QST	RR49	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	S	14A-1	B-3	QST	RR49	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	S	14A-1	B-3	QST	RR49	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 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-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)

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)(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)(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)(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)(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)(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)(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)(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)(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)(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)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-107A	3	A	2	Globe	O	15-5	C-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT		1BVT 1.60.7-Leak Test (R)
TV-1CC-107B	3	A	2	Globe	O	15-5	D-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT		1BVT 1.60.7-Leak Test (R)
TV-1CC-107C	3	A	2	Globe	O	15-5	F-6	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
								LT		1BVT 1.60.7-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-107D1	2	A	3	Globe	O	15-5	F-4	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(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)(RPV)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
TV-1CC-107E1	2	A	2	Globe	O	15-5	F-3	QST	RR26	1OST-1.10-Stroke & Time Closed (CSD)(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)(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)

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-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)
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)

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.			
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)
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)

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-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)
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)

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-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)
TV-1CC-129	3	B	6	Globe	O	15-2	A-10	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-129-1	3	B	6	Globe	O	15-2	B-10	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-129-2	3	B	6	Globe	O	15-2	E-10	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-130	3	B	6	Globe	O	15-2	E-6	QST	CSJ20	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
TV-1CC-132	3	B	3	Globe	O	15-2	E-7	QST	CSJ20	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
TV-1CC-133-2	3	B	1½	Globe	O	15-2	G-9	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-133-3	3	B	6	Globe	O	15-2	F-10	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-134-1	3	B	1½	Globe	O	15-2	A-7	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-134-2	3	B	1½	Globe	O	15-2	B-7	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-134-3	3	B	1½	Globe	O	15-2	G-8	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-136	3	B	12	Globe	O	15-2	A-5	QST		1OST-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		1OST-47.3A(3B)-Stroke & Time Closed (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-137A	3	B	1½	Globe	O	15-5	D-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1CC-137B	3	B	1½	Globe	S	15-5	E-1	QST		1OST-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)
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)

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-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)
RV-1CC-140C	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140D	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140E	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140F	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140G	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140H	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140I	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140J	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140K	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140L	3	C	¾ x 1	Relief		15-4	G-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140M	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140N	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140P	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 1.60.5-(R)
RV-1CC-140R	3	C	¾ x 1	Relief		15-4	C-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.			
1CCR-247	2	A	18	Butterfly	LS	15-5	A-7	QS	CSJ18	1OM-10.4.A-Stroke Only Open (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1CCR-248	2	A	18	Butterfly	LS	15-5	A-8	QS	CSJ18	1OM-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	1OM-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	1OM-10.4.A-Stroke Only Open (CSD)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1CCR-289	3	A/C	2	Check		15-5	C-3	QS	RR28	1BVT 1.60.7-FS,RD by Leak Test (R)
								LT		1BVT 1.60.7-Leak Test (R)
1CCR-290	3	A/C	2	Check		15-5	D-3	QS	RR28	1BVT 1.60.7-FS,RD by Leak Test (R)
								LT		1BVT 1.60.7-Leak Test (R)
1CCR-291	3	A/C	2	Check		15-5	F-3	QS	RR28	1BVT 1.60.7-FS,RD by Leak Test (R)
								LT		1BVT 1.60.7-Leak Test (R)

BVPS-1 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Fuel Pool Cooling and Purification **SYSTEM NUMBER**: 20

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	LT	RR1	1BVT 1.47.5-Leak Test (R)
1PC-10	2	A/P	6	Ball	LS	20-1	D-7	LT	RR1	1BVT 1.47.5-Leak Test (R)
1PC-37	2	A/P	6	Ball	LS	20-1	D-8	LT	RR1	1BVT 1.47.5-Leak Test (R)
1PC-38	2	A/P	6	Ball	LS	20-1	D-7	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-80	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	CSJ22	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	1⅛	Gate	O	26-4	E-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1MS-111B	2	B	1⅛	Gate	O	26-4	C-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1MS-111C	2	B	1⅛	Gate	O	26-4	A-1	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)

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-33	3	C	6	Check		24-2	E-7	QS	CSJ25	1OST-24.9-FS,FD (CSD)
								QS	CSJ25	1OST-24.8-FS,RD (CSD)
1FW-34	3	C	4	Check		24-2	E-2	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)
1FW-35	3	C	4	Check		24-2	E-4	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)
1FW-36	3	B	6	Gate	LO	24-2	D-7	QS		1OST-24.4-Stroke Only Closed (Q)
1FW-37	3	B	4	Gate	LO	24-2	D-2	QS		1OST-24.2-Stroke Only Closed (Q)
1FW-38	3	B	4	Gate	S	24-2	D-4	QS		1OST-24.3-Stroke Only Open (Q)
1FW-39	3	B	6	Gate	S	24-2	D-7	QS		1OST-24.4-Stroke Only Open (Q)
1FW-40	3	B	4	Gate	S	24-2	D-2	QS		1OST-24.2-Stroke Only Open (Q)
1FW-41	3	B	4	Gate	LO	24-2	D-5	QS		1OST-24.3-Stroke Only Closed (Q)
1FW-42	2	C	3	Check		24-1	B-7	QS	CSJ25	1OST-24.8-FS,FD (CSD)
								QS		FS,RD by 10M-54 Log L3(Q) & 1OST-24.11(R)
1FW-43	2	C	3	Check		24-1	E-7	QS	CSJ25	1OST-24.8-FS,FD (CSD)
								QS		FS,RD by 10M-54 Log L3(Q) & 1OST-24.11(R)
1FW-44	2	C	3	Check		24-1	G-7	QS	CSJ25	1OST-24.8-FS,FD (CSD)
								QS		FS,RD by 10M-54 Log L3(Q) & 1OST-24.11(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.			
1FW-50	3	C	1	Check		24-2	E-7	QS		1OST-24.4-PS,FD (Q)
								QS	CSJ35	1OST-24.9-FS,FD (CSD)
1FW-51	3	C	1	Check		24-2	E-2	QS		1OST-24.2-PS,FD (Q)
								QS	CSJ35	1OST-24.8-FS,FD (CSD)
1FW-52	3	C	1	Check		24-2	E-5	QS		1OST-24.3-PS,FD (Q)
								QS	CSJ35	1OST-24.8-FS,FD (CSD)
1FW-68	3	C	1	Check		24-2	E-8	QS		1OST-24.4-PS,FD (Q)
								QS	CSJ35	1OST-24.9-FS,FD (CSD)
1FW-69	3	C	1	Check		24-2	E-2	QS		1OST-24.2-PS,FD (Q)
								QS	CSJ35	1OST-24.8-FS,FD (CSD)
1FW-70	3	C	1	Check		24-2	E-5	QS		1OST-24.3-PS,FD (Q)
								QS	CSJ35	1OST-24.8-FS,FD (CSD)
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)

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.			
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)
HCV-1FW-158A	2	B/P	3	Gate	O	24-1	B-7	POS		1OST-24.11-(RPV)
HCV-1FW-158B	2	B/P	3	Gate	O	24-1	D-7	POS		1OST-24.11-(RPV)
HCV-1FW-158C	2	B/P	3	Gate	O	24-1	G-7	POS		1OST-24.11-(RPV)
FCV-1FW-478	2	B	16	Globe	A	24-1	B-4	QST	CSJ29	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
FCV-1FW-479	2	B	4	Globe	A	24-1	A-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
FCV-1FW-488	2	B	16	Globe	A	24-1	D-4	QST	CSJ29	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
FCV-1FW-489	2	B	4	Globe	A	24-1	D-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
FCV-1FW-498	2	B	16	Globe	A	24-1	F-4	QST	CSJ29	1OST-1.10-Stroke & Time Closed (CSD)(RPV)
FCV-1FW-499	2	B	4	Globe	A	24-1	F-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
1FW-622	2	C	3	Check		24-2	C-4	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)

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-623	2	C	3	Check		24-2	C-4	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)
1FW-624	2	C	3	Check		24-2	B-4	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)
1FW-625	2	C	3	Check		24-2	B-4	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)
1FW-626	2	C	3	Check		24-2	A-4	QS	CSJ25	1OST-24.8-FS,FD,RD (CSD)
1FW-627	2	C	3	Check		24-2	A-4	QS	CSJ25	1OST-24.8-FS,FD,RD (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		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-100B	2	B	3	Globe	O	25-1	D-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-100C	2	B	3	Globe	O	25-1	F-4	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101A1	2	B	3	Gate	O	25-1	B-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101A2	2	B	3	Gate	O	25-1	B-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101B1	2	B	3	Gate	O	25-1	D-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101B2	2	B	3	Gate	O	25-1	D-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101C1	2	B	3	Gate	O	25-1	F-2	QST		1OST-47.3A(3B)-Stroke & Time Closed (Q)(RPV)
TV-1BD-101C2	2	B	3	Gate	O	25-1	F-2	QST		1OST-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	CSJ33	1OST-47.3A(3B)-PS,FD (Q)
								QS		1OST-1.10-FS,FD - by Mechanical Exerciser (CSO)
								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)

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.			
1RW-57	3	C	20	Check		30-1	A-3	QS		1OST-30.2-FS,FD RD (Q)
1RW-58	3	C	20	Check		30-1	C-3	QS		1OST-30.3-FS,FD,RD (Q)
1RW-59	3	C	20	Check		30-1	D-3	QS		1OST-30.6-FS,FD,RD (Q)
1RW-95	3	C	3/4	Check		30-1	A-2	QS		1OST-30.2-FS,FD,RD (Q)
1RW-96	3	C	3/4	Check		30-1	B-2	QS		1OST-30.3-FS,FD,RD (Q)
1RW-97	3	C	3/4	Check		30-1	C-2	QS		1OST-30.6-FS,FD,RD (Q)
RV-1RW-101A	2	C	¾ x 1	Relief		30-3	C-8	SPT		1BVT 1.60.5-(R)
RV-1RW-101B	2	C	¾ x 1	Relief		30-3	E-8	SPT		1BVT 1.60.5-(R)
RV-1RW-101C	2	C	¾ x 1	Relief		30-3	D-8	SPT		1BVT 1.60.5-(R)
RV-1RW-101D	2	C	¾ x 1	Relief		30-3	F-8	SPT		1BVT 1.60.5-(R)
RV-1RW-102A	3	C	¾ x 1	Relief		30-3	C-2	SPT		1BVT 1.60.5-(R)
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)

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-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		1OST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-103B	3	B	24	Butterfly	S	30-3	B-2	QST		1OST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-103C	3	B	24	Butterfly	S	30-3	G-2	QST		1OST-30.5-Stroke & Time Open (Q)(RPV)
MOV-1RW-103D	3	B	24	Butterfly	S	30-3	G-2	QST		1OST-30.5-Stroke & Time Open (Q)(RPV)
MOV-1RW-104	3	B/P	24	Butterfly	S	30-3	E-6	POS		1OST-30.4 (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)
MOV-1RW-105A	2	B	14	Butterfly	O	30-3	C-9	QST		1OST-30.4-Stroke & Time Closed (Q)(RPV)
MOV-1RW-105B	2	B	14	Butterfly	O	30-3	E-9	QST		1OST-30.5-Stroke & Time Closed (Q)(RPV)
MOV-1RW-105C	2	B	14	Butterfly	O	30-3	D-9	QST		1OST-30.4-Stroke & Time Closed (Q)(RPV)
MOV-1RW-105D	2	B	14	Butterfly	O	30-3	F-9	QST		1OST-30.5-Stroke & Time Closed (Q)(RPV)
MOV-1RW-106A	3	B	24	Butterfly	O	30-3	C-1	QST		1OST-30.4-Stroke & Time Closed (Q)(RPV)
RV-1RW-106A	3	C	¾ x 1	Relief		30-1	E-8	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-106B	3	B	24	Butterfly	O	30-3	F-1	QST		1OST-30.5-Stroke & Time Closed (Q)(RPV)
RV-1RW-106B	3	C	¾ x 1	Relief		30-1	E-7	SPT		1BVT 1.60.5-(R)
1RW-106	3	C	24	Check		30-1	A-9	QS		1OST-30.2(6)-FS,FD (Q)
								QS	RR31	1OST-30.8-FS,RD (R)
1RW-107	3	C	24	Check		30-1	D-9	QS		1OST-30.3(6)-FS,FD (Q)
								QS	RR31	1OST-30.8-FS,RD (R)
1RW-108	3	C	24	Check		30-3	B-4	QS		1OST-30.2(6)-FS,FD(Q)
1RW-109	3	C	24	Check		30-3	G-6	QS		1OST-30.3(6)-FS,FD(Q)
MOV-1RW-113A	3	B	4	Gate	S	30-4	F-10	QST		1OST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-113B	3	B	4	Gate	S	30-1	F-10	QST		1OST-30.4-Stroke & Time Open (Q)(RPV)
MOV-1RW-113C	3	B	4	Gate	S	30-1	G-10	QST		1OST-30.5-Stroke & Time Open (Q)(RPV)
MOV-1RW-113D1	3	B	4	Gate	S	30-5	G-8	QST		1OST-30.5-Stroke & Time Open (Q)(RPV)
MOV-1RW-114A	3	B	24	Butterfly	O	30-3	B-1	QST		1OST-30.4-Stroke & Time Closed (Q)(RPV)
MOV-1RW-114B	3	B	24	Butterfly	O	30-3	F-1	QST		1OST-30.5-Stroke & Time Closed (Q)(RPV)
MOV-1RW-116	3	B/P	8	Butterfly	S	30-3	D-1	POS		1OST-30.4 (RPV)
MOV-1RW-116A	3	B	24	Butterfly	S	30-1	B-10	QST		1OST-30.1A-Stroke & Time Open (Q)(RPV)
MOV-1RW-116B	3	B	24	Butterfly	S	30-1	D-10	QST		1OST-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/P	8	Butterfly	S	30-3	F-1	POS		1OST-30.5 (RPV)
1RW-142	3	B	3	Ball	S	30-2	C-4	QS		1OST-30.2(3)(6)-Stroke only Open (Q)
1RW-143	3	B	3	Ball	S	30-2	D-4	QS		1OST-30.2(3)(6)-Stroke only Open (Q)
1RW-150	3	B	3	Ball	S	30-2	C-5	QS		1OST-30.2(3)(6)-Stroke only Open (Q)
1RW-151	3	B	3	Ball	S	30-2	D-5	QS		1OST-30.2(3)(6)-Stroke only Open (Q)
1RW-152	3	B	3	Ball	O	30-2	C-3	QS		1OST-30.2(3)(6)-Stroke only Closed (Q)
1RW-153	3	B	3	Ball	O	30-2	D-3	QS		1OST-30.2(3)(6)-Stroke only Closed (Q)
1RW-158	3	C	3	Check		30-2	E-5	QS		1OST-30.14-FS,FD,RD(Q)
1RW-159	3	C	3	Check		30-2	C-5	QS		1OST-30.14-FS,FD,RD(Q)
1RW-193	2	C	14	Check		30-3	C-7	QS	RR45	1OST-30.12A-FS,FD(R)
1RW-194	2	C	14	Check		30-3	E-7	QS	RR45	1OST-30.12A-FS,FD(R)
1RW-195	2	C	14	Check		30-3	F-7	QS	RR45	1OST-30.12B-FS,FD(R)
1RW-196	2	C	14	Check		30-3	G-7	QS	RR45	1OST-30.12B-FS,FD(R)
1RW-206	3	B	6	Butterfly	LS	24-1	F-10	QS		1OST-24.10-Stroke Only Open (M)
1RW-207	3	B	6	Butterfly	S	24-1	G-9	QS		1OST-24.10-Stroke Only Open (M)
1RW-208	3	B	6	Butterfly	S	24-1	F-8	QS		1OST-24.10-Stroke Only Open (M)
1RW-209	3	B	4	Butterfly	S	24-1	G-2	QS		1OST-24.10-Stroke Only Open (M)

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.			
1RW-210	3	B	4	Butterfly	S	24-1	F-5	QS		1OST-24.10-Stroke Only Open (M)
1RW-486	3	C	3	Check		30-1	A-2	QS		1OST-30.2-FS,FD,RD (Q)
1RW-487	3	C	3	Check		30-1	C-2	QS		1OST-30.3-FS,FD,RD (Q)
1RW-488	3	C	3	Check		30-1	D-2	QS		1OST-30.6-FS,FD,RD (Q)
1RW-615	2	B	1	Ball	O	43-2	D-2	QS		1OST-47.3A(3B)-Stroke Only Closed (Q)
1RW-621	2	B	1	Ball	O	43-2	D-7	QS		1OST-47.3A(3B)-Stroke Only Closed (Q)
1RW-627	2	B	1	Ball	O	43-2	F-2	QS		1OST-47.3A(3B)-Stroke Only Closed (Q)
1RW-633	2	B	1	Ball	O	43-2	F-7	QS		1OST-47.3A(3B)-Stroke Only Closed (Q)
1RW-675	3	C	3/4	Check		30-1	A-2	QS	RR35	1OST-30.2-FS,FD (R)
1RW-676	3	C	3/4	Check		30-1	B-2	QS	RR35	1OST-30.3-FS,FD (R)
1RW-677	3	C	3/4	Check		30-1	D-2	QS	RR35	1OST-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 NAME: Fire Protection **SYSTEM NUMBER**: 33

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	3	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	3	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 NAME: Compressed Air (Station 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.			
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			
1IA-90	2	A/P	2	Gate	LS	34-2	E-2	LT	RR1	1BVT 1.47.5-Leak Test (R) 1OST-45.4 (RPV)
1IA-91	2	A/C/P	1	Check		34-2	E-3	LT	RR1	1BVT 1.47.5-Leak Test (R)
1IA-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)
1IA-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-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)
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)
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)

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
						O&M No.	Coord.			
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)

BVPS-1 IST
VALVE TESTING OUTLINE

SYSTEM NAME: 4KV Station Service (Diesel Fuel Oil) **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.			
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-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)
1FO-116	3	B	2	Gate	LS	36-2	B-1	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
1FO-117	3	B	2	Gate	LS	36-2	F-1	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
RV-1EE-101A	3	C	¾ x 1	Relief		36-2	B-4	SPT		1BVT 1.60.5-(R)
RV-1EE-101B	3	C	¾ x 1	Relief		36-2	A-4	SPT		1BVT 1.60.5-(R)
RV-1EE-101C	3	C	¾ x 1	Relief		36-2	E-4	SPT		1BVT 1.60.5-(R)
RV-1EE-101D	3	C	¾ x 1	Relief		36-2	E-4	SPT		1BVT 1.60.5-(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.11-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.11-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.11-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	A/C	1/4	Check		44A-2	F-7	QS		1/2 OST-44A.12-FS,FD (Q)
								LT		1BVT 2.34.4-Leak Test (R)
1VS-545	3	A/C	1/4	Check		44A-2	G-7	QS		1/2 OST-44A.12-FS,FD (Q)
								LT		1BVT 2.34.4-Leak Test (R)

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-546	3	A/C	1/4	Check		44A-2	E-7	QS		1/2 OST-44A.12-FS,FD (Q)
								LT		1BVT 2.34.4-Leak Test (R)
1VS-547	3	A/C	1/4	Check		44A-2	F-7	QS		1/2 OST-44A.12-FS,FD (Q)
								LT		1BVT 2.34.4-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.			
1HY-101	2	A	2	Ball	LS	46-1	A-3	QS		1OST-47.3A(3B)-Stroke Only Open (Q) 1OST-45.4-(RPV)
								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) 1OST-45.4-(RPV)
								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	RR49	1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
SOV-1HY-102A2	2	A	3/8	Globe	S	46-2	B-4	QST	RR49	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	RR49	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	RR49	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) 1OST-45.4-(RPV)
								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	RR49	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	Globe	S	46-2	B-4	QST	RR49	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	Globe	S	46-2	F-3	QST	RR49	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	Globe	S	46-2	F-4	QST	RR49	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) 1OST-45.4-(RPV)
								LT	RR1,RR41	1BVT 1.47.5-Leak Test (R)
SOV-1HY-104A1	2	A	3/8	Globe	S	46-2	C-3	QST	RR49	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	Globe	S	46-2	C-4	QST	RR49	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	Globe	S	46-2	G-3	QST	RR49	1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)

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-104B2	2	A	3/8	Globe	S	46-2	F-4	QST	RR49	1OST-47.3A(3B)-Stroke & Time Open/Closed (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)(RPV)
1HY-110	2	A	2	Ball	LS	46-1	C-2	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1HY-111	2	A	2	Ball	LS	46-1	G-2	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1HY-196	2	A	2	Ball	LS	46-1	C-3	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)
1HY-197	2	A	2	Ball	LS	46-1	G-3	QS		1OST-47.3A(3B)-Stroke Only Open (Q)
								LT	RR1	1BVT 1.47.5-Leak Test (R)

BVPS-1 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Containment **SYSTEM NUMBER**: 47

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	1½	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)
1VS-168	2	A/P	1½	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)
1VS-169	2	A/P	1½	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)
1VS-170	2	A/P	1½	Ball	S	47-5	None	LT	RR1	1BVT 1.47.5-Leak Test (R)
1VS-176	3	B/P	1½	Gate	S	47-5	None	NA		NA
1VS-177	3	B/P	1½	Gate	S	47-5	None	NA		NA
1VS-178	3	B/P	1½	Gate	S	47-5	None	NA		NA
1VS-179	3	B/P	1½	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 noncondensible gases. Periodic stroking of these valves at power could degrade this system by repeatedly challenging the downstream valves due to a phenomenon known as "burping". This phenomenon has been previously described in ASME report "Spurious Opening of Hydraulic-Assisted Pilot-Operated Valves - An Investigation of the Phenomenon". The phenomenon involves a rapid pressure surge buildup at the valve inlet caused by opening the upstream valve in a series double isolation arrangement or closing a valve in a parallel redundant flow path isolation arrangement. The pressure surge is sufficient enough to lift the valve plug until a corresponding pressure increase in a control chamber above the pilot and disc can create enough downward differential pressure to close the valve.

Alternate Test: Full-stroke exercise and time open and closed 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, not to exceed once per 92 days, per 1OST-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 1OST-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 1CST-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.

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.

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.

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.

COLD SHUTDOWN JUSTIFICATION 8

DELETED

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.

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 Δp. 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 per 1OST-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 1OST-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 1OST-1.10.

COLD SHUTDOWN JUSTIFICATION 33

Valve No.:

1AS-278

Category A/C **Class** 2

Function: Inside Containment Isolation check valve air ejector air discharge to Containment.

Test Requirement: Quarterly Full Stroke

Basis for CSJ: This valve is physically located in the subatmospheric containment building. These valves cannot be full-stroke opened with air flow because the dP between containment and the condenser is not as high as when the check valve is fulfilling its function. The valves are part-stroke exercised quarterly by opening the isolation valve [TV-1SV-100A] and watching containment pressure.

Alternate Test: Full-stroke exercised open by mechanical exerciser utilizing the weighted swing arm at cold shutdown per 1OST-1.10.

COLD SHUTDOWN JUSTIFICATION 34

Valve No.:

1CH-152
1CH-153
1CH-154

Category C **Class** 2

Function: Charging Pump Mini-Flow Check Valves

Test Requirement: Quarterly Full Stroke

Basis for CSJ: The function of these check valves is to open to allow mini-flow recirc capability for the charging pumps. Full-stroke capability can only be verified by establishing design flow through the line. However, there is no installed flow instrumentation. In order to measure flow quarterly, temporary ultrasonic or permanently installed flow meters would have to be installed. In addition, the wet-flow calibration of the ultrasonic flow meters, which involves sending the transmitters and flow computers off-site, must be purchased and maintained for the instrumentation. Permanent installation would be preferred for the flow meters because it would save the set-up time and ensure that the same site, with the same characteristics, would be used for each test. However, if permanent instrumentation was used, a plant design change would also be required.

The guidance in NUREG-1482, published April 1995, states: "Check valves that can be stroked quarterly, but must be monitored by a nonintrusive technique to verify full stroke, may be full-stroke tested during cold shutdowns or refueling outages if another method of verifying full-stroke exists at these plant conditions. However, the quarterly partial-stroke testing would continue to be required. Also, the NRC would not require a licensee to invest in nonintrusive equipment for the purpose of testing check valves quarterly in lieu of testing during cold shutdowns or refueling outages, though the use of nonintrusive techniques is recommended where practical."

The current test method uses pump performance to verify the operability of the check valves. A significant change in lube oil cooler flow would be seen as a change in pump performance. These valves are in a clean system, and therefore, have little chance of becoming fouled. A flow restricting orifice is in line with each of the check valves and the flow remains constant. Flow through the mini-flow recirc line has been measured during the last few refueling outages and has been consistent.

Performing flow measurements quarterly would not enhance our ability to assess the operability of the check valves enough to compensate for the increased cost.

Therefore, because of the increased cost without a compensating increase in reliability, and based on the guidance in NUREG-1482 on the testing of check valves using nonintrusive techniques, the use of ultrasonic flow meters will not be used for quarterly testing of these check valves.

Alternate Test:

Part-stroke quarterly by monitoring the total dynamic head developed by the pump during the charging pump tests, 1OST-7.4, 5, 6.

Full-stroke during cold shutdowns by installing a temporary ultrasonic flow meter on the mini-flow recirc line in 1OST-7.4, 5, 6.

COLD SHUTDOWN JUSTIFICATION 35

Valve No.:

1FW-50
1FW-51
1FW-52
1FW-68
1FW-69
1FW-70

Category C **Class** 3

Function: AFW Pump Lube Oil Cooler Line Check Valves

Test Requirement: Quarterly Full Stroke

Basis for CSJ: The function of these check valves is to open to allow cooling flow to the lube oil coolers for the AFW pumps. Full-stroke capability can only be verified by establishing design flow through the line. However, there is no installed flow instrumentation. In order to measure flow quarterly, temporary ultrasonic or permanently installed flow meters would have to be installed. In addition, the wet-flow calibration of the ultrasonic flow meters, which involves sending the transmitters and flow computers off-site, must be purchased and maintained for the instrumentation. Permanent installation would be preferred for the flow meters because it would save the set-up time and ensure that the same site, with the same characteristics, would be used for each test. However, if permanent instrumentation was used, a plant design change would also be required.

The guidance in NUREG-1482, published April 1995, states: "Check valves that can be stroked quarterly, but must be monitored by a nonintrusive technique to verify full stroke, may be full-stroke tested during cold shutdowns or refueling outages if another method of verifying full-stroke exists at these plant conditions. However, the quarterly partial-stroke testing would continue to be required. Also, the NRC would not require a licensee to invest in nonintrusive equipment for the purpose of testing check valves quarterly in lieu of testing during cold shutdowns or refueling outages, though the use of nonintrusive techniques is recommended where practical."

The test method currently used measures the temperature of the lube oil cooler line to verify sufficient cooling capability exists. In addition, a significant change in lube oil cooler flow would be seen as a change in pump performance. During 10R all of the check valves were disassembled and inspected for wear and obstructions. It was observed that the check valves were in good condition and free of obstructions. These valves are in a clean system using demineralized water as the flow medium, and therefore, have little chance of becoming fouled. Flow through the lube oil cooler has been measured during the last few refueling outages and has been consistent.

Performing flow measurements quarterly would not enhance our ability to assess the operability of the check valves enough to compensate for the increased cost.

Therefore, because of the increased cost without a compensating increase in reliability, and based on the guidance in NUREG-1482 on the testing of check valves using nonintrusive techniques, the use of ultrasonic flow meters will not be used for quarterly testing of these check valves.

Alternate Test:

Part-stroke quarterly by measuring lube oil temperature and by monitoring the total dynamic head developed by the pump during the AFW pump tests, 1OST-24.2, 3, 4.

Full-stroke during cold shutdowns by installing a temporary ultrasonic flow meter on the lube oil cooling line in 1OST-24.8, 9.

COLD SHUTDOWN JUSTIFICATION 36

Valve No.:

MOV-1CH-142

Category A **Class** 2

Function: Residual Heat Removal Letdown to the Chemical and Volume Control System

Test Requirement: Quarterly Full Stroke and Time

Basis for CSJ: This valve is normally shut and must remain shut at power. Opening it during normal operation would divert normal letdown back into the RHR system and could cause a pressure shock in the RHR system. This valve would only be opened when the RHR system is in service. (RHR is normally placed in service in Mode 4 when preparing to enter Mode 5 and remains in service upon exiting Mode 5 during plant start-up). Tech. Specs. require Containment Isolation capability in Mode 4, therefore, this valve would have to be closed if containment isolation was required.

Also, the installed instrumentation for this valve includes a potentiometer control, making it difficult to time consistently. In order to time the stroke of this valve, a temporary "on-off" switch must be installed. Therefore, because this valve cannot be opened during power operations and because it has a potentiometer control, this valve will be stroked and timed during cold shutdowns.

Alternate Test: Stroke and time closed during cold shutdowns per 1OST-1.10.

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 1

Containment Isolation Valves

*MOV-1CC-112A2	TV-1CC-107E2	1CV-58	1HY-101
*1CCR-247	TV-1CC-105E1	1CV-59	TV-1CH-150A
*MOV-1CC-112B3	TV-1CC-105E2	1CV-60	1HY-103
*1CCR-252	TV-1CH-200A	TV-1SS-111A1	*HCV-1CV-151
*MOV-1CC-112A3	TV-1CH-200B	TV-1SS-111A2	*HCV-1CV-151-1
*1CCR-251	TV-1CH-200C	TV-1SS-100A1	SOV-1HY-102B1
*MOV-1CC-112B2	RV-1CH-203	TV-1SS-100A2	SOV-1HY-102B2
*1CCR-248	MOV-1CH-142	TV-1SS-102A1	SOV-1HY-103B1
TV-1CC-107D1	TV-1CH-204	TV-1SS-102A2	SOV-1HY-103B2
TV-1CC-107D2	TV-1DG-108A	TV-1SS-105A1	SOV-1HY-104B1
*TV-1CC-111D1	TV-1DG-108B	TV-1SS-105A2	SOV-1HY-104B2
*TV-1CC-111D2	1FP-804	*TV-1CC-103A1	TV-1SS-104A1
*TV-1CC-110D	TV-1FP-105	*TV-1CC-103A	TV-1SS-104A2
*TV-1CC-110F1	1FP-800	*1QS-4	TV-1SS-103A1
*TV-1CC-110F2	TV-1FP-106	*MOV-1QS-101B	TV-1SS-103A2
1FP-827	TV-1DA-100A	*1QS-3	*1PC-38
TV-1FP-107	TV-1DA-100B	*MOV-1QS-101A	*1PC-37
*TV-1CC-110E3	1SA-15	*1RS-101	*1PC-9
*TV-1CC-110E2	1SA-14	*1RS-100	*1PC-10
*TV-1CC-111A2	TV-1CV-102-1	1HY-196	TV-1SS-112A1
*TV-1CC-111A1	TV-1CV-102	1HY-111	TV-1SS-112A2
*TV-1CC-103B1	TV-1CV-101A	1HY-197	MOV-1SI-842
*TV-1CC-103B	TV-1CV-101B	1HY-110	TV-1SI-889
*TV-1CC-103C1	1RC-72	*AS-278	SOV-1HY-102A1
*TV-1CC-103C	TV-1RC-519	*TV-1SV-100A	SOV-1HY-102A2
MOV-1CH-378	1IA-91	*VS-D-5-3B	SOV-1HY-103A1
1CH-369	1IA-90	*VS-D-5-3A	SOV-1HY-103A2
MOV-1CH-381	TV-1DG-109A2	*VS-D-5-5B	SOV-1HY-104A1
1SI-42	TV-1DG-109A1	*VS-D-5-5A	SOV-1HY-104A2
1SI-41	1RC-68	*VS-D-5-6	1RC-277
*1RH-14	TV-1RC-101	TV-1CV-150C	1RC-278
1RH-16	TV-1SI-101-2	1HY-102	1VS-169
*1RH-15	TV-1SI-101-1	TV-1CH-150D	1VS-170
*TV-1CC-105D1	TV-1SS-109A1	1HY-104	1VS-167
*TV-1CC-105D2	TV-1SS-109A2	TV-1CV-150B	1VS-168
TV-1CC-107E1	1CV-57		

* 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_2 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.

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

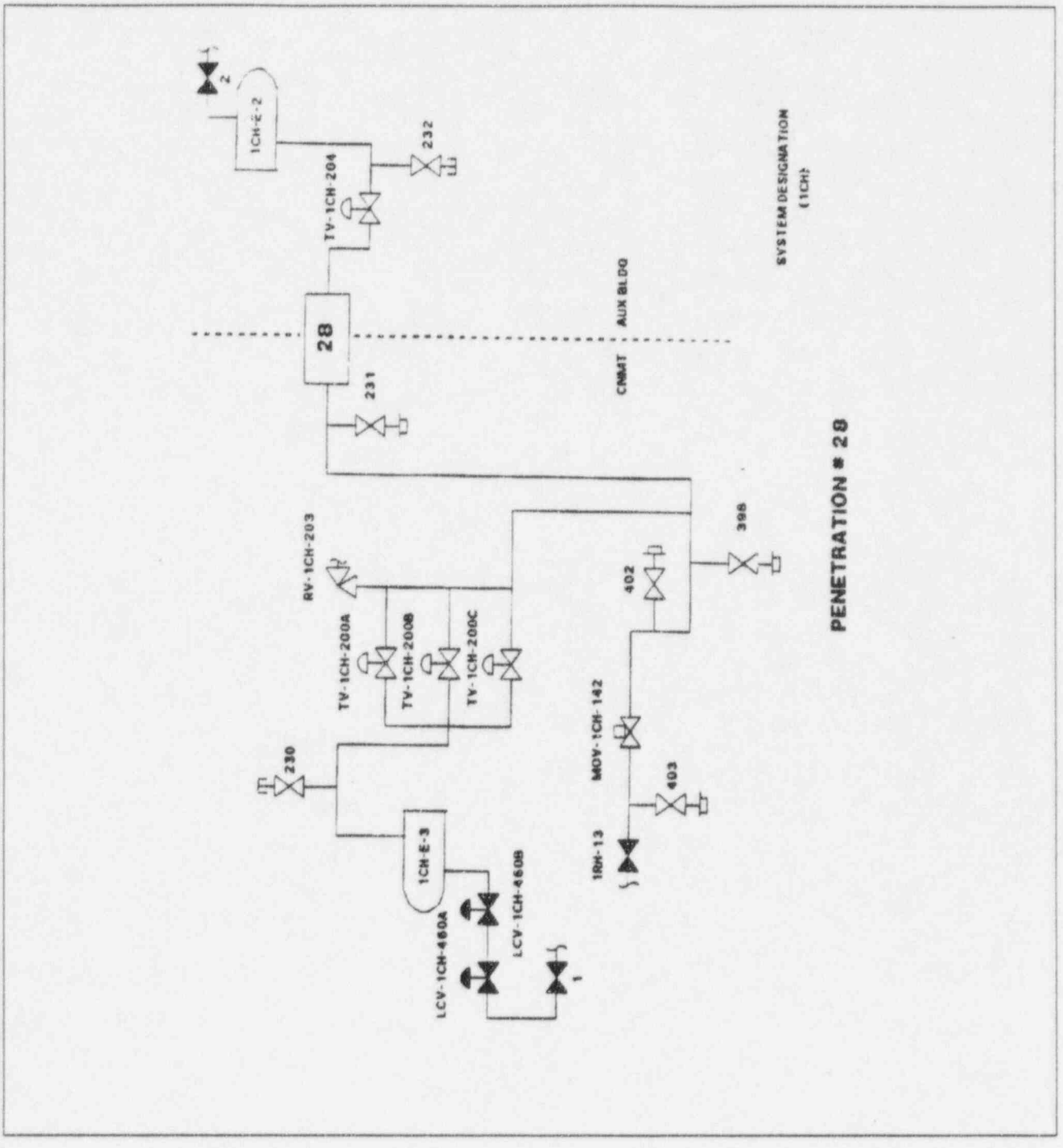
Function: Reactor coolant letdown orifice inside containment isolation valves.

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

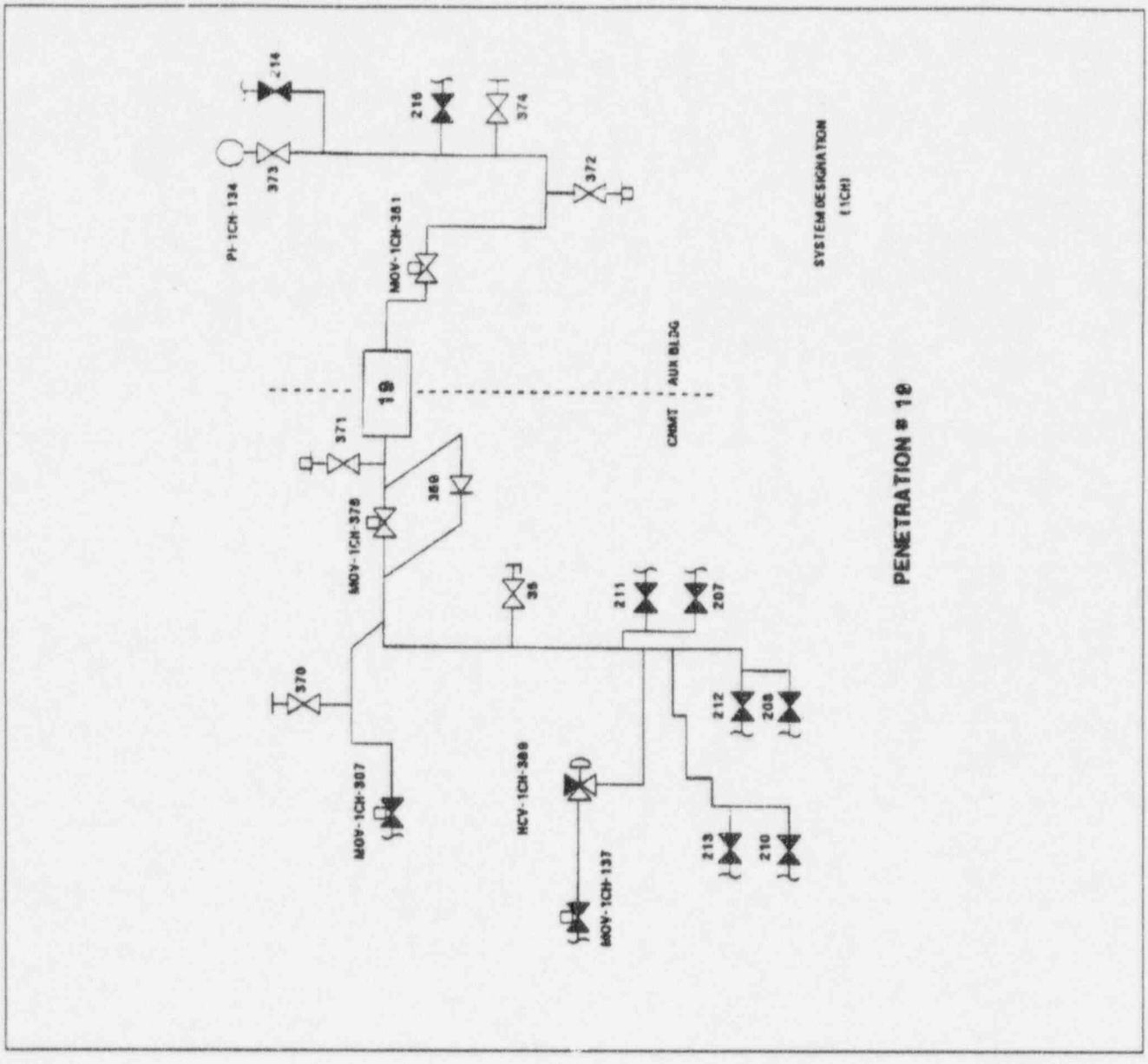
Function: RCP seal water return line inside containment isolation valves.

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

DELETED

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 the sample frequency of GL 89-04 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/C **Class** 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. 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 Intergranual 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 Intergrannular 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 the sample frequency of GL 89-04 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:

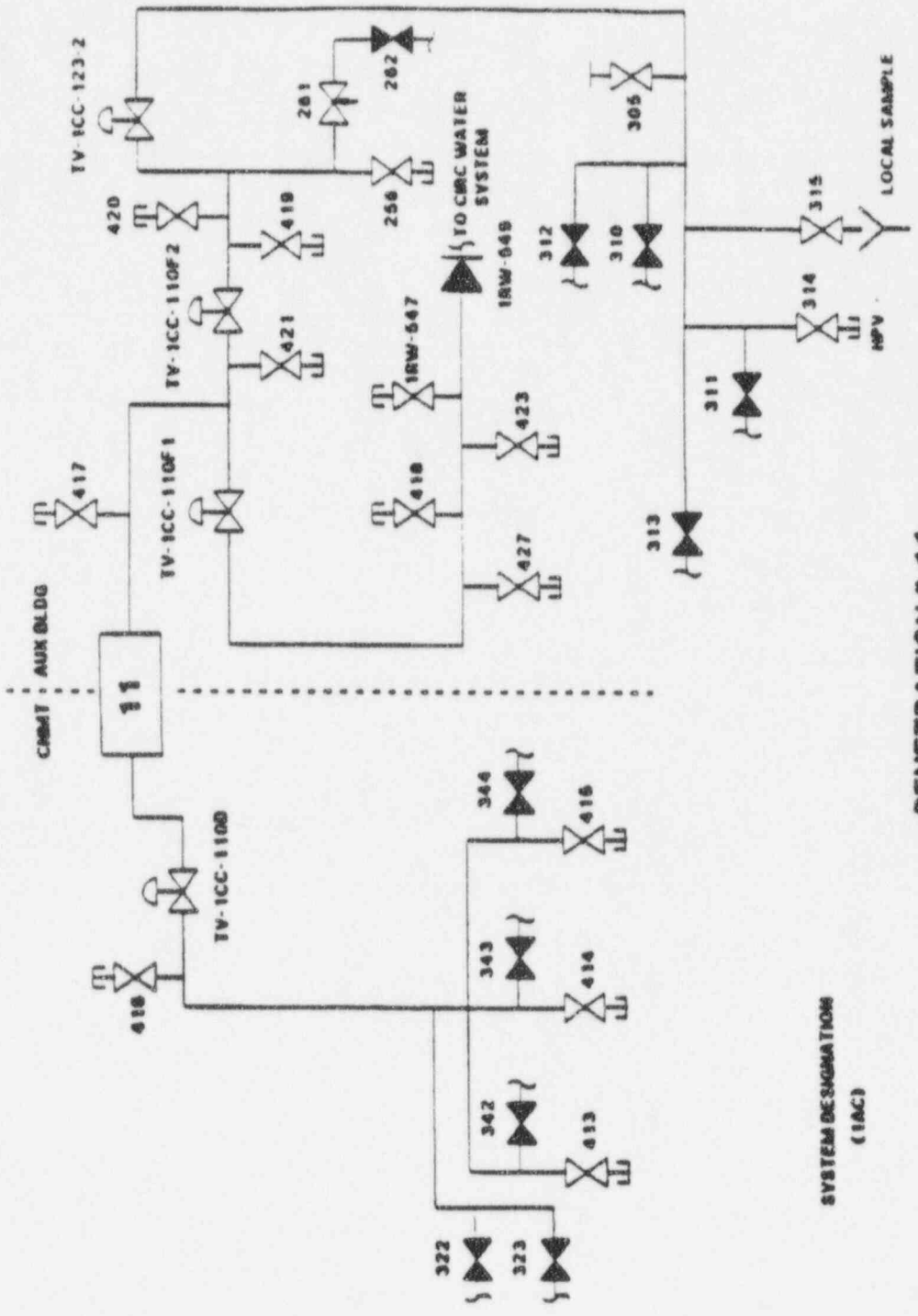
As shown on the attached figure for Penetration #11, the configuration of this containment penetration (i.e., two outside containment isolation valves in parallel) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. The boundary 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



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 the sample frequency of GL89-04 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

DELETED

RELIEF REQUEST 33

DELETED

RELIEF REQUEST 34

DELETED

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.

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 A **Class** 2

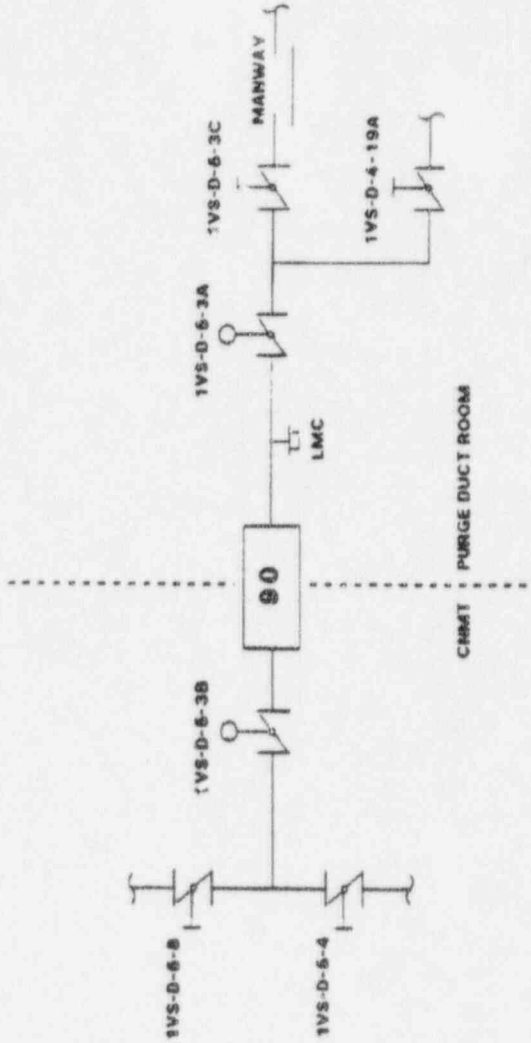
Function: Containment purge exhaust fan containment isolation dampers.

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



PENETRATION # 90

RELIEF REQUEST 39

Valve No.:

1VS-D-5-5A
1VS-D-5-5B
1VS-D-5-6

Category A **Class** 2

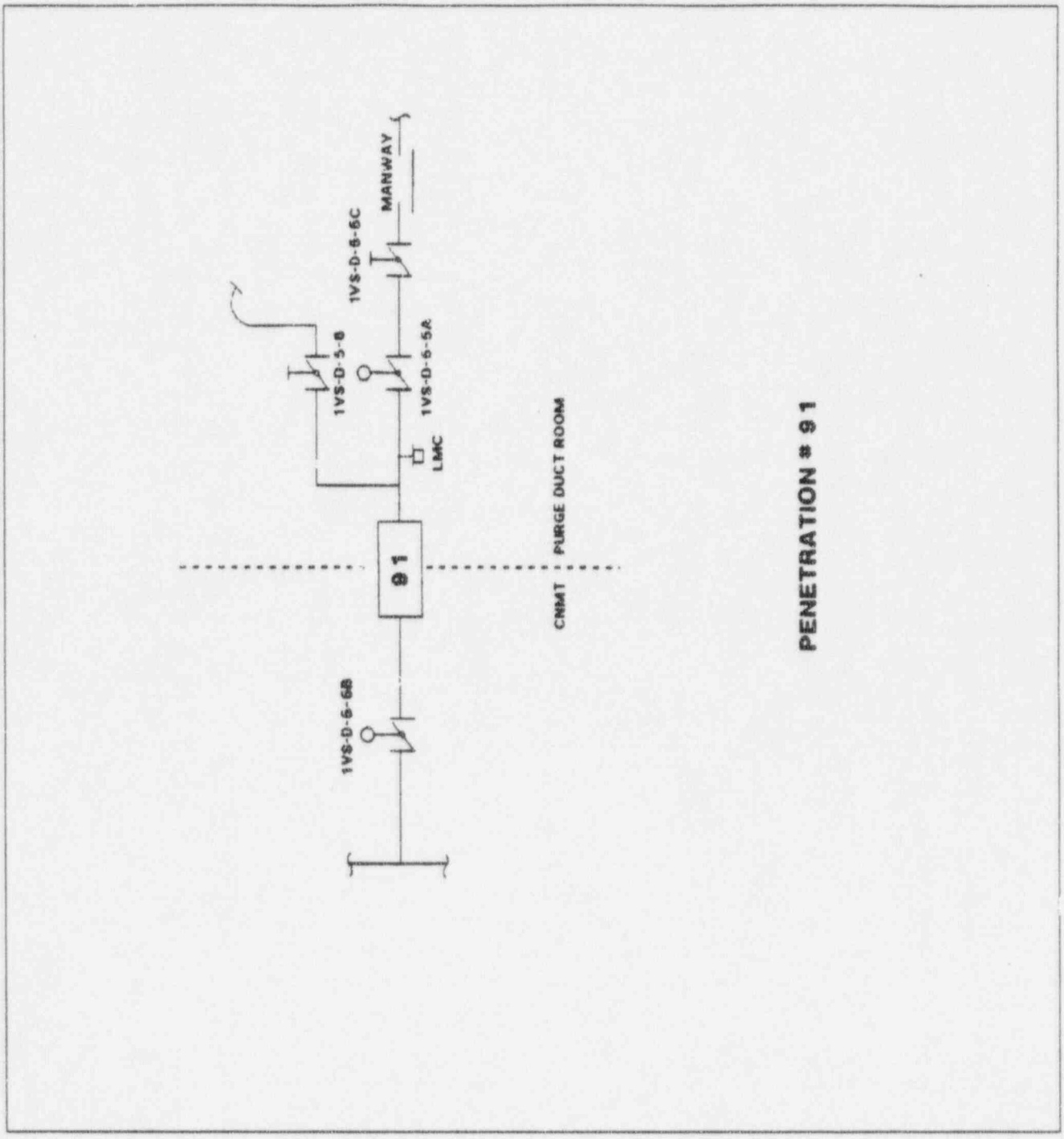
Function: Containment purge supply fan containment isolation dampers.

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



RELIEF REQUEST 40

Valve No.:

TV-1CV-150A
TV-1CV-150B
1HY-101
1HY-103

Category A **Class** 2

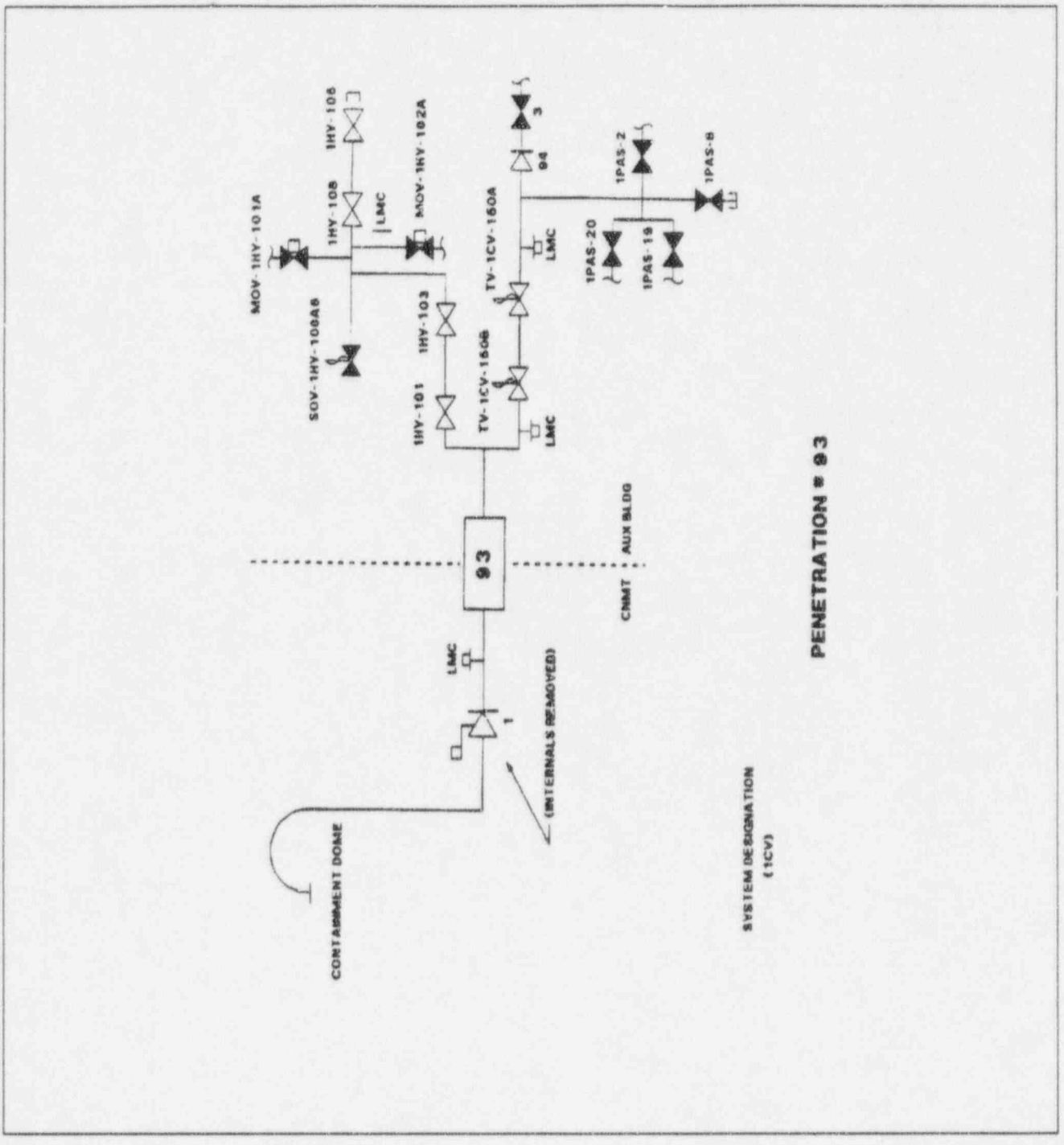
Function: Containment Vacuum Pump 1A and Hydrogen Recombiner 1A suction containment isolation valves.

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

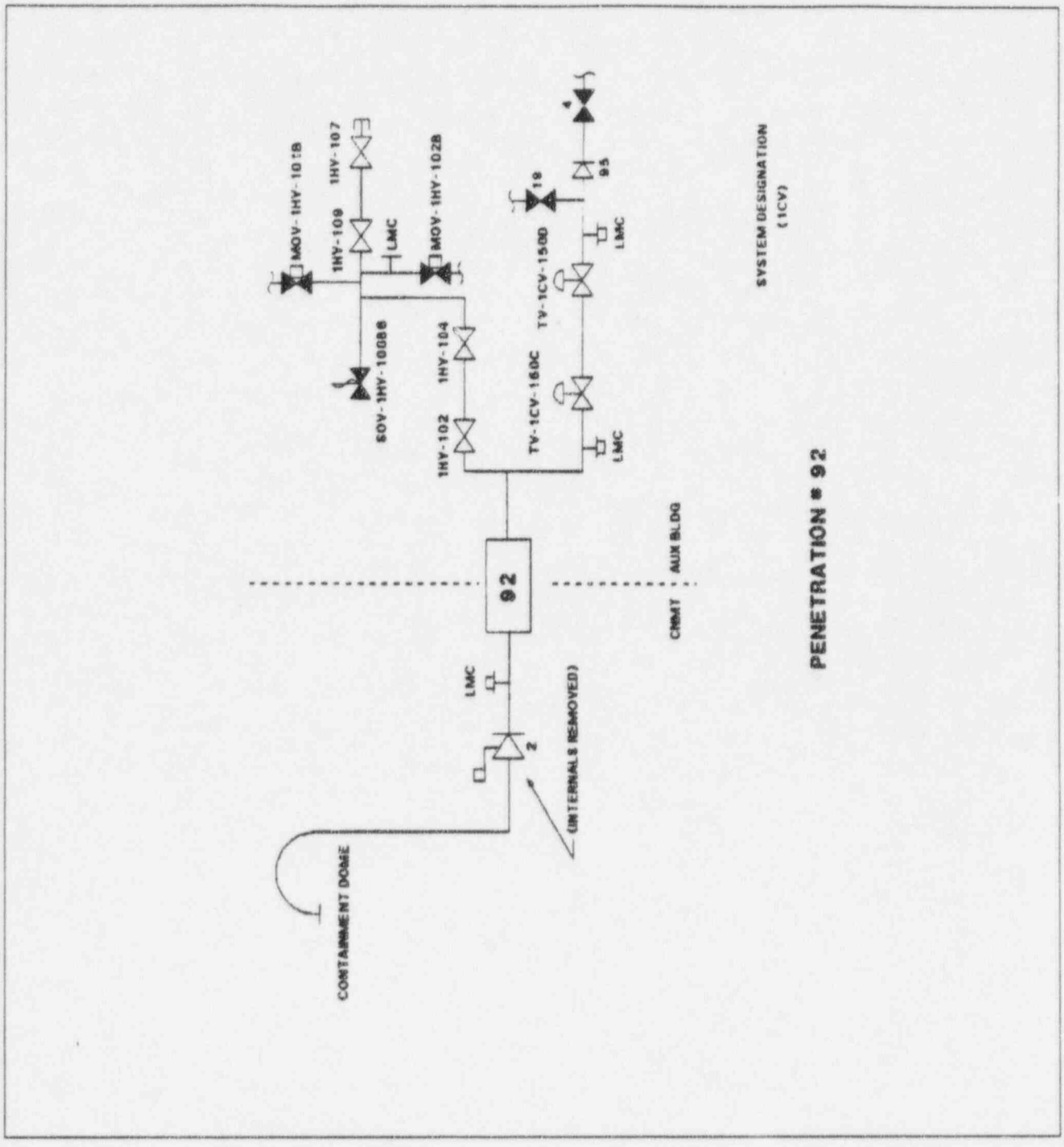
Function: Containment Vacuum Pump 1B and Hydrogen Recombiner 1B suction containment isolation valves.

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

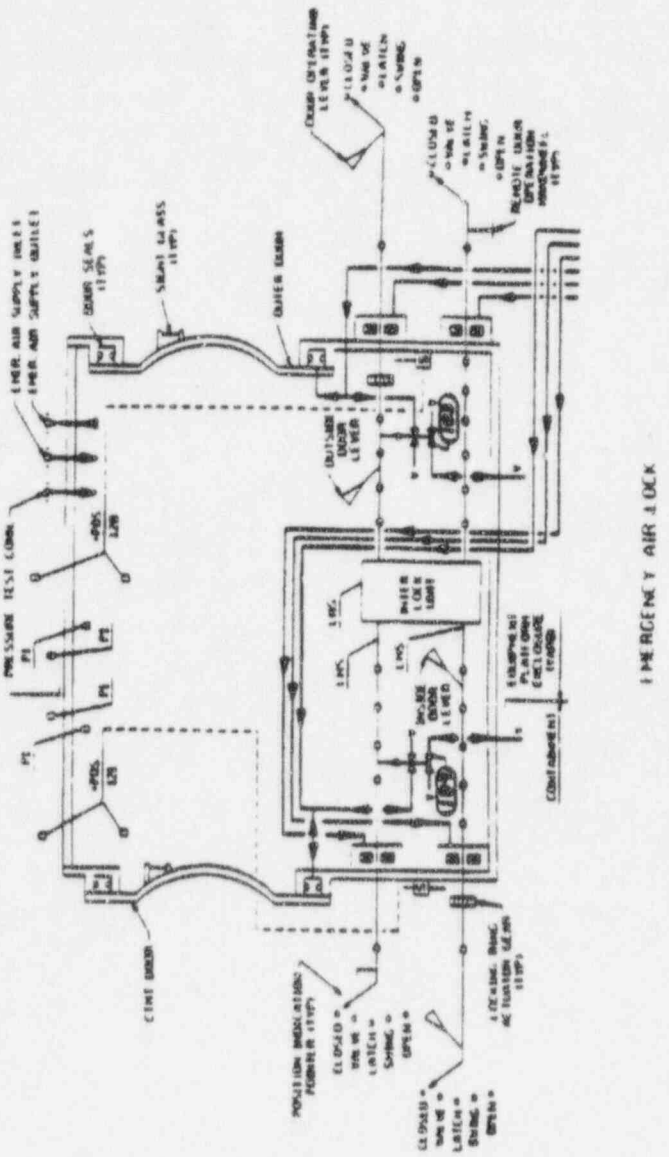
Function: Containment Isolation (Emergency Air Lock)

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

DELETED

RELIEF REQUEST 44

DELETED

RELIEF REQUEST 45

Valve No.:

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.

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-30.12A(B).

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 1OST-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.:

1IA-116
1IA-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 C **Class** 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.

RELIEF REQUEST 49

Valve No.:

See below

Category A,B **Class** 1,2, 3

Function: Various

Test Requirement: Stroke time trending, IWV-3417(a)

Basis for Relief: Stroke times for rapid acting valves are affected by variations in the response time of personnel performing the test. Therefore, trending stroke times for rapid acting valves is not practical and relief from trending these valves is permitted by Generic Letter No. 89-04, Attachment 1, Item 6.

Alternate Test: Assign a limiting stroke time of 2 seconds to these valves and delete trending requirements.

RAPID ACTING VALVES

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

TV-1CV-150A
TV-1CV-150B
TV-1CV-102
TV-1CV-102-1
TV-1SS-102A1
TV-1SS-102A2
TV-1SS-105A1
TV-1SS-105A2

SOV-1HY-102A1
SOV-1HY-102A2
SOV-1HY-102B1
SOV-1HY-102B2
SOV-1HY-103A1
SOV-1HY-103A2
SOV-1HY-103B1
SOV-1HY-103B2
SOV-1HY-104A1
SOV-1HY-104A2
SOV-1HY-104B1
SOV-1HY-104B2