ENCLOSURE 2

Beaver Valley Unit 2 IST Program

Issue 1, Revision 12

DUQUESNE LIGHT COMPANY

Beaver Valley Power Station

Unit 2

INSERVICE TESTING (IST) PROGRAM FOR PUMP AND VALVES

Issue 1 **Revision 12**

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SECTION I: PUMP TESTING REQUIREMENTS

The Inservice Test (IST) Program for pumps at Beaver Valley Power Station (BVPS), Unit 2, is based on subsection IWP - Inservice Testing of Pumps of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 edition through the summer 1983 addenda (the code) and Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs". The pumps included in this program are all ASME "class 1, 2, or 3 centrifugal or displacement type pumps that are required to perform a specific function in shutting down the reactor or in mitigating the consequences of an accident, and that are provided with an emergency power source" at BVPS, Unit 2.

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-2 Surveillance Tests. The test data will be compared to the ranges applied to the reference values for each parameter. If these ranges cannot be met, reduced range limits that allow the pump to fulfill its function will be used in lieu of the ranges given in Table IWP-3100-2.

Table IWP-3100-2
ALLOWABLE RANGES OF TEST QUANTITIES

Test Quantity	Acceptable Range	Alert Range (Note (1))		Required Action Range (Note (1))	
		Low Values	High Values	Low Values	High Values
P_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,-1.8V_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 specificed by Owner in the record of tests (IWP-6000).
(3) T_b shall be within the limits specificed by Owner in the record of tests (IWP-6000).

Corrective action shall be taken if necessary using the following:

1. If deviations fall within the "Alert Range" of Table IWP-3100-2, the frequency of testing shall be doubled until the cause of the deviation is determined and corrected and either the existing reference values reverified or a new set established.

2. If the deviations fall within the "Required Action Range" of Table IWP-3100-2, the pump shall be declared inoperative immediately and an evaluation of the pump's condition with respect to system operability and technical specifications shall be made as follows:

   a. If the inoperable pump is specifically identified in the technical specifications, then the applicable technical specification action statements must be followed.

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

   c. Corrective action shall be either replacement or repair per IWP-3111, or shall be an analysis to demonstrate that the condition does not impair pump operability and that the pump will still fulfill its function. A new set of reference values shall be established after such analysis.

   d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supercede 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-2 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 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.

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 2OST column
   a. (2BVT) - Unit 2 Beaver Valley Test
   b. (2OST) - Unit 2 Operating Surveillance Test
   c. (Q) - Quarterly Test Frequency
   d. (A) - Annual Test Frequency

e. (CSD) - Cold Shutdown Frequency

f. (R) - Refueling Test Frequency

g. (NA) - Not Applicable

3. Under Req'd column

a. (RR) - Relief Request

b. (X) - Meets or exceeds ASME requirements

c. (E) - Exempt

d. (NA) - Not Applicable

The "Pump Minimum Operating Point (MOP) Curves" section contains a graphical representation of the minimum allowable pump flow versus head, which is required to meet the applicable safety analysis, for each pump in the Unit 2 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-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Charging Pump	**Pump Number:** 2CHS*P21A	**Code Class:** 2	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** D-8	**System:** 7 Chemical and Volume Control
Function: To provide normal RCS inventory makeup, Seal Injection and High Head Safety Injection	**Type:** Centrifugal	**Remarks:** Pump is tested quarterly on recirculation flow and at full flow during Refueling outages.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	7.4 (Q)	X	Pump Suction Pressure Indicator [2CHS-PI151A], local.
	11.14 (R)	X	Pump Suction Pressure Indicator [2CHS-PI151A], local.
ΔP	7.4 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI151B] and Pump Suction Pressure, local.
	11.14 (R)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI151B] and Pump Suction Pressure, local.
Q	7.4 (Q)	X	Summation of flow rates from Flow Indicators [2CHS-FI122A, 124A, 127A, 130A, 160], Control Room, and [2CHS-FI170], local.
	11.14 (R)	X	Summation of flow rates from Flow Indicators [2CHS-FI122A, 124A, 127A, 130A] and [2SIS-FI943], Control Room.
V	7.4 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	7.4 (A)	X	Control Room computer address points for thermocouples provided for each pump end and thrust bearing. Inboard Pump Bearing (T0110A), Outboard Pump Bearing (T0111A), Pump Thrust Bearing (T0102A)
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually.
L	7.4 (Q)	X	Sight glass on oil reservoir, local.
	11.14 (R)	X	Sight glass on oil reservoir, local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Charging Pump	**Pump Number:** 2CHS*P21B	**Code Class:** 2	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** D-9	**System:** 7 Chemical and Volume Control
Function: To provide normal RCS inventory makeup, Seal Injection and High Head Safety Injection	**Type:** Centrifugal	**Remarks:** Pump is tested quarterly on recirculation flow and at full flow during Refueling outages		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	7.5 (Q)	X	Pump Suction Pressure Indicator [2CHS-PI152A], local.
	11.14 (R)	X	Pump Suction Pressure Indicator [2CHS-PI152A], local.
ΔP	7.5 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI152B] and Pump Suction Pressure, local.
	11.14 (R)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI152B] and Pump Suction Pressure, local.
Q	7.5 (Q)	X	Summation of flow rates from Flow Indicators [2CHS-FI122A, 124A, 127A, 130A, 160], Control Room, and [2CHS-FI170], local.
	11.14 (R)	X	Summation of flow rates from Flow Indicators [2CHS-FI122A, 124A, 127A, 130A] and [2SIS-FI943], Control Room.
V	7.5 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	7.5 (A)	X	Control Room computer address points for thermocouples provided for each pump end and thrust bearing. Inboard Pump Bearing (T0120A), Outboard Pump Bearing (T0121A), Pump Thrust Bearing (T0104A)
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually.
L	7.5 (Q)	X	Sight glass on oil reservoir, local.
	11.14 (R)	X	Sight glass on oil reservoir, local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21C Charging Pump	**Pump Number**: 2CHS*P21C	**Code Class**: 2	**Dwg. OM No.**: 7-1 **Dwg. Coord.**: D-10	**System**: 7 Chemical and Volume Control
Function: To provide normal RCS inventory makeup, Seal Injection and High Head Safety Injection	**Type**: Centrifugal	**Remarks**: Pump is tested quarterly on recirculation flow and at full flow during Refueling outages.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	7.6 (Q)	X	Pump Suction Pressure Indicator [2CHS-PI153A], local.
	11.14 (R)	X	Pump Suction Pressure Indicator [2CHS-PI153A], local.
ΔP	7.6 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI153B] and Pump Suction Pressure, local.
	11.14 (R)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI153B] and Pump Suction Pressure, local.
Q	7.6 (Q)	X	Summation of flow rates from Flow Indicators [2CHS-FI122A, 124A, 127A, 130A, 160], Control Room, and [2CHS-FI170], local.
	11.14 (R)	X	Summation of flow rates from Flow Indicators [2CHS-FI122A, 124A, 127A, 130A] and [2SIS-FI943], Control Room.
V	7.6 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	7.6 (A)	X	Control Room computer address points for thermocouples provided for each pump end and thrust bearing. Inboard Pump Bearing (T0130A), Outboard Pump Bearing (T0131A), Pump Thrust Bearing (T0106A)
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually.
L	7.6 (Q)	X	Sight glass on oil reservoir, local.
	11.14 (R)	X	Sight glass on oil reservoir, local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 22A Boric Acid Transfer Pump	**Pump Number:** 2CHS*P22A	**Code Class:** 3	**Dwg. OM No.:** 7-2 **Dwg. Coord.:** C-3	**System:** 7 Chemical and Volume Control
Function: Chemical Shim and Emergency Boration Supply	**Type:** Centrifugal	**Remarks:** None		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	7.1 (Q)	X	Pump Suction Pressure Indicator [2CHS-PI123A], local.
ΔP	7.1 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI105] and Pump Suction Pressure, local.
Q	7.1 (Q)	X	Flow Indicator [2CHS-FI123A], local.
V	7.1 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	7.1 (A)	X	Portable monitoring equipment required (i.e., Contact Pyrometer).
L	7.1 (Q)	X	Level indication provided at the constant level oiler (local) on bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 22B Boric Acid Transfer Pump	**Pump Number:** 2CHS*P22B	**Code Class:** 3	**Dwg. OM No.:** 7-2 **Dwg. Coord.:** F-3	**System:** 7 Chemical and Volume Control
Function: Chemical Shim and Emergency Boration Supply	**Type:** Centrifugal	**Remarks:** None		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	7.2 (Q)	X	Pump Suction Pressure Indicator [2CHS-PI123B], local.
ΔP	7.2 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2CHS-PI110] and Pump Suction Pressure, local.
Q	7.2 (Q)	X	Flow Indicator [2CHS-FI123B], local.
V	7.2 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	7.2 (A)	X	Portable monitoring equipment required (i.e., Contact Pyrometer).
L	7.2 (Q)	X	Level indication provided at the constant level oiler (local) on bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Residual Heat Removal Pump	**Pump Number:** 2RHS*P21A	**Code Class:** 2	**Dwg. OM No.:** 10-1 **Dwg. Coord.:** B-3	**System:** 10 Residual Heat Removal
Function: Long term decay heat removal	**Type:** Veritcal	**Remarks:** See RR1. Pump is tested quarterly during Cold Shutdowns and Refueling outages.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	10.1 (CSD,R)	X	Pump Suction Pressure Indicator [2RHS-PI603A], Control Room.
ΔP	10.1 (CSD,R)	X	Calculated using Pump Discharge Pressure Indicator [2RHS-PI602A] and Pump Suction Pressure, Control Room.
Q	10.1 (CSD,R)	X	Summation of flow rates from Recirculation Line flow Indicator [2RHS-FI607A], Return Line Flow Indicator to Cold Leg 22 [2RHS-FI605A], and Letdown Line Flow [2CHS-FI150], Control Room.
V	10.1 (CSD,R)	X	Motor equipped with fixed vibration sensors wired to a remote location outside containment.
Tb	10.1 (A)	X	Pump bearings in the driver. Control Room computer address points for thermocouples provided for motor bearings. Upper motor bearing (T0687A), lower motor bearing (T0686A).
L	10.1 (CSD,R)	X	Motor bearings upper and lower - oil sight glass - local (pump and driver bearings integral in motor).

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Residual Heat Removal Pump	**Pump Number:** 2RHS*P21B	**Code Class:** 2	**Dwg. OM No.:** 10-1 **Dwg. Coord.:** E-3	**System:** 10 Residual Heat Removal
Function: Long term decay heat removal	**Type:** Veritcal	**Remarks:** See RR1. Pump is tested quarterly during Cold Shutdowns and Refueling outages.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	10.2 (CSD,R)	X	Pump Suction Pressure Indicator [2RHS-PI603B], Control Room.
ΔP	10.2 (CSD,R)	X	Calculated using Pump Discharge Pressure Indicator [2RHS-PI602B] and Pump Suction Pressure, Control Room.
Q	10.2 (CSD,R)	X	Summation of flow rates from Recirculation Line flow Indicator [2RHS-FI607B], Return Line Flow Indicator to Cold Leg 22 [2RHS-FI605B], and Letdown Line Flow [2CHS-FI150], Control Room.
V	10.2 (CSD,R)	X	Motor equipped with fixed vibration sensors wired to a remote location outside containment.
Tb	10.2 (A)	X	Pump bearings in the driver. Control Room computer address points for thermocouples provided for motor bearings. Upper motor bearing (T0697A), lower motor bearing (T0696A).
L	10.2 (CSD,R)	X	Motor bearings upper and lower - oil sight glass - local (pump and driver bearings integral in motor).

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PUMP TESTING OUTLINE

Pump Name: 21A Low Head Safety Injection Pump	**Pump Number:** 2SIS*P21A	**Code Class:** 2	**Dwg. OM No.:** 11-1 **Dwg. Coord.:** E-2	**System:** 11 Safety Injection
Function: Low Pressure - High Volume Safety Injection	**Type:** Centrifugal	**Remarks:** Pump is tested quarterly on recirculation flow and at full flow during Refueling outages		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	11.1 (Q)	X	Pump Suction Pressure Indicator [2SIS-PI938], local.
	11.14 (R)	X	Pump Suction Pressure Indicator [2SIS-PI938], local.
ΔP	11.1 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2SIS-PI943] and Pump Suction Pressure, local.
	11.14 (R)	X	Calculated using Pump Discharge Pressure Indicator [2SIS-PI943] and Pump Suction Pressure, local.
Q	11.1 (Q)	X	Flow Indicator [2SIS-FIS970A], local.
	11.14 (R)	X	Flow Indicator [2SIS-FI945], Control Room.
V	11.1 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	11.1 (A)	X	Control Room computer address points for thermocouples provided for pump bearings. Inboard bearing (T2676A), outboard bearing (T2677A)
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually.
L	11.1 (Q)	X	Level indication provided at the constant level oiler (local) on each bearing housing.
	11.14 (R)	X	Level indication provided at the constant level oiler (local) on each bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Low Head Safety Injection Pump	**Pump Number:** 2SIS*P21B	**Code Class:** 2	**Dwg. OM No.:** 11-1 **Dwg. Coord.:** G-2	**System:** 11 Safety Injection
Function: Low Pressure - High Volume Safety Injection	**Type:** Centrifugal	**Remarks:** Pump is tested quarterly on recirculation flow and at full flow during Refueling outages.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	11.2 (Q)	X	Pump Suction Pressure Indicator [2SIS-PI939], local.
	11.14 (R)	X	Pump Suction Pressure Indicator [2SIS-PI939], local.
ΔP	11.2 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2SIS-PI944] and Pump Suction Pressure, local.
	11.14 (R)	X	Calculated using Pump Discharge Pressure Indicator [2SIS-PI944] and Pump Suction Pressure, local.
Q	11.2 (Q)	X	Flow Indicator [2SIS-FIS970B], local.
	11.14 (R)	X	Flow Indicator [2SIS-FI946], Control Room.
V	11.2 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	11.14 (R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	11.2 (A)	X	Control Room computer address points for thermocouples provided for pump bearings. Inboard bearing (T2678A), outboard bearing (T2679A).
	NA	NA	Not required during refueling test. Bearing temperatures are obtained in quarterly test annually.
L	11.2 (Q)	X	Level indication provided at the constant level oiler (local) on each bearing housing.
	11.14 (R)	X	Level indication provided at the constant level oiler (local) on each bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Quench Spray Pump	**Pump Number:** 2QSS*P21A	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** A-9	**System:** 13 Containment Depressurization
Function: To provide borated water from the RWST to the Containment Spray Header for containment depressurization following a DBA.	**Type:** Centrifugal	**Remarks:** None.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.1 (Q)	X	Pump Suction Pressure Indicator [2QSS-PI102A], Control Room.
ΔP	13.1 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2QSS-PI101A] and Pump Suction Pressure, Control Room.
Q	13.1 (Q)	X	Flow Indicator [2QSS-FIS101A or 102A], local.
V	13.1 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	13.1 (A)	X	Portable monitoring equipment required (i.e., Contact Pyrometer).
L	13.1 (Q)	X	Level indication provided at the constant level oilers (local) on each bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Quench Spray Pump	**Pump Number:** 2QSS*P21B	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** G-9	**System:** 13 Containment Depressurization
Function: To provide borated water from the RWST to the Containment Spray Header for containment depressurization following a DBA.	**Type:** Centrifugal	**Remarks:** None		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.2 (Q)	X	Pump Suction Pressure Indicator [2QSS-PI102B], Control Room.
ΔP	13.2 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2QSS-PI101B] and Pump Suction Pressure, Control Room.
Q	13.2 (Q)	X	Flow Indicator [2QSS-FIS101B or 102B], local.
V	13.2 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	13.2 (A)	X	Portable monitoring equipment required (i.e., Contact Pyrometer).
L	13.2 (Q)	X	Level indication provided at the constant level oilers (local) on each bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 24A Chemical Injection Pump	**Pump Number:** 2QSS*P24A	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg Coord.:** C-6	**System:** 13 Containment Depressurization
Function: Chemical injection to the Quench Spray System during Containment depressurization.	**Type:** Positive Displacement	**Remarks:** See RR6		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.10A (Q)	RR6	Positive displacement pump. Suction pressure not required.
ΔP	13.10A (Q)	RR6	Based on Pump Discharge Pressure Indicator [2QSS-PI111A], local.
Q	13.10A (Q)	X	Flow Indicator [2QSS-FIS105A], local.
V	13.10A (Q)	X	Portable Monitoring Equipment.
Tb	13.10A (A)	X	Portable monitoring equipment required (i.e., Contact Pyrometer)
L	NA	NA	Pump bearing is grease lubricated via grease fitting - no observable lubrication level.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 24B Chemical Injection Pump	**Pump Number:** 2QSS*P24B	**Code Class:** 2	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-6	**System:** 13 Containment Depressurization
Function: Chemical injection to the Quench Spray System during Containment depressurization.	**Type:** Positive Displacement	**Remarks:** See RR6.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.10B (Q)	RR6	Positive displacement pump. Suction pressure not required.
ΔP	13.10B (Q)	RR6	Based on Pump Discharge Pressure Indicator [2QSS-PI111B], local.
Q	13.10B (Q)	X	Flow Indicator [2QSS-FIS105B], local.
V	13.10B (Q)	X	Portable Monitoring Equipment.
Tb	13.10B (A)	X	Portable monitoring equipment required (i.e., Contact Pyrometer).
L	NA	NA	Pump bearing is grease lubricated via grease fitting - no observable lubrication level.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Recirculation Spray Pump	**Pump Number:** 2RSS*P21A	**Code Class:** 2	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** F-2	**System:** 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization	**Type:** Vertical	**Remarks:** See RR2. Pump is normally tested dry in Modes 1 through 4, and with flow during Refueling outages only.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.3 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	No permanently installed suction pressure gauge. Test connection for local temporary test gauge.
ΔP	13.3 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156A], Control Room, and local pressure test gauge.
Q	13.3 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Flow Indicator [2RSS-FI157A], Control Room.
V	13.3 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.
Tb	13.3 (A)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Pump and motor integral unit. All pump bearings are exempt since located in the main flow path. Control Room computer address points for thermocouples provided for motor bearing - outboard bearing (T0701A).
L	NA	NA	Motor bearings grease lubricated no observable level. Pump has self-lubricated bearing - internal pump fluid porting not observable.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Recirculation Spray Pump	**Pump Number**: 2RSS*P21B	**Code Class**: 2	**Dwg. OM No.**: 13-1 **Dwg. Coord.**: E-8	**System**: 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization	**Type**: Vertical	**Remarks**: See RR2. Pump is normally tested dry in Modes 1 through 4, and with flow during Refueling outages only.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.4 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	No permanently installed suction pressure gauge. Test connection for local temporary test gauge.
ΔP	13.4 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156B], Control Room, and local pressure test gage.
Q	13.4 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Flow Indicator [2RSS-FI157B], Control Room.
V	13.4 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.
Tb	13.4 (A)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Pump and motor integral unit. All pump bearings are exempt since located in the main flow path. Control Room computer address points for thermocouples provided for motor bearing - outboard bearing (T0711A).
L	NA	NA	Motor bearings grease lubricated no observable level. Pump has self-lubricated bearing - internal pump fluid porting not observable.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21C Recirculation Spray Pump	**Pump Number:** 2RSS*P21C	**Code Class:** 2	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** E-5	**System:** 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization and long term core recirculation	**Type:** Vertical	**Remarks:** See RR2. Pump is normally tested dry in Modes 1 through 4, and with flow during Refueling outages only.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.5 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	No permanently installed suction pressure gauge. Test connection for local temporary test gauge.
ΔP	13.5 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156C], Control Room, and local pressure test gauge.
Q	13.5 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Flow Indicator [2RSS-FI157C], Control Room.
V	13.5 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.
Tb	13.5 (A)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Pump and motor integral unit. All pump bearings are exempt since located in the main flow path. Control Room computer address points for thermocouples provided for motor bearing - outboard bearing (T0721A).
L	NA	NA	Motor bearings grease lubricated no observable level. Pump has self-lubricated bearing - internal pump fluid porting not observable.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21D Recirculation Spray Pump	**Pump Number**: 2RSS*P21D	**Code Class**: 2	**Dwg. OM No.**: 13-1 **Dwg. Coord.**: E-6	**System**: 13 Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization and long term core recirculation	**Type**: Vertical	**Remarks**: See RR2. Pump is normally tested dry in Modes 1 through 4, and with flow during Refueling outages only.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	13.6 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	No permanently installed suction pressure gauge. Test connection for local temporary test gauge.
ΔP	13.6 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156D], Control Room, and local pressure test gauge.
Q	13.6 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Flow Indicator [2RSS-FI157D], Control Room.
V	13.6 (Q)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Portable monitoring equipment - Fixed vibration probes on pump shaft.
Tb	13.6 (A)	RR2	Pump run dry and stopped as soon as pump start is verified, pump not run more than 60 seconds.
	2BVT 1.13.5 (R)	X	Pump and motor integral unit. All pump bearings are exempt since located in the main flow path. Control Room computer address points for thermocouples provided for motor bearing - outboard bearing (T0731A).
L	NA	NA	Motor bearings grease lubricated no observable level. Pump has self-lubricated bearing - internal pump fluid porting not observable.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Component Cooling Water Pump	**Pump Number**: 2CCP*P21A	**Code Class**: 3	**Dwg. OM No.**: 15-1 **Dwg. Coord.**: B-4	**System**: 15 Primary Component Cooling Water
Function: Provide Cooling Water to Residual Heat Removal Heat Exchangers and Rx Plant Components	**Type**: Centrifugal	**Remarks**: See RR7 (Pump Curve).		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	15.1 (Q)	X	Suction Pressure Indicator [2CCP-PI150A], local.
ΔP	15.1 (Q)	X	Calculated using Discharge Pressure Indicator [2CCP-PI145A], Control Room, and Pump Suction Pressure, local.
Q	15.1 (Q)	X	Containment Cooling Water Supply Header Flow Indicator [2CCP-FI117A1(A2)], Control Room.
V	15.1 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	15.1 (A)	X	Control room computer address points for thermocouples provided for Pump Bearing Oil [T0638A].
L	15.1 (Q)	X	Level indication provided at the constant level oiler (local) on bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Component Cooling Water Pump	**Pump Number:** 2CCP*P21B	**Code Class:** 3	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** F-4	**System:** 15 Primary Component Cooling Water
Function: Provide Cooling Water to Residual Heat Removal Heat Exchangers and Rx Plant Components	**Type:** Centrifugal	**Remarks:** See RR7 (Pump Curve)		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	15.2 (Q)	X	Suction Pressure Indicator [2CCP-PI150B], local.
ΔP	15.2 (Q)	X	Calculated using Discharge Pressure Indicator [2CCP-PI145B], Control Room, and Pump Suction Pressure, local.
Q	15.2 (Q)	X	Summation of flow rates from Containment Cooling Water Supply Header Flow Indicator [2CCP-FI117B1(B2)], Control Room. Nonregenerative Heat Exchanger Branch Flow Indicator [2CCP-FI103] and Seal Water Heat Exchanger Branch Flow Indicator [2CCP-FI102], local.
V	15.2 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	15.2 (A)	X	Control room computer address points for thermocouples provided for Pump Bearing Oil (T0648A).
L	15.2 (Q)	X	Level indication provided at the constant level oiler (local) on bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21C Component Cooling Water Pump	**Pump Number**: 2CCP*P21C	**Code Class**: 3	**Dwg. OM No.**: 15-1 **Dwg. Coord.**: D-4	**System**: 15 Primary Component Cooling Water
Function: Provide Cooling Water to Residual Heat Removal Heat Exchangers and Rx Plant Components	**Type**: Centrifugal	**Remarks**: See RR7 (Pump Curve).		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	15.3 (Q)	X	Suction Pressure Indicator [2CCP-PI150C], local.
ΔP	15.3 (Q)	X	Calculated using Discharge Pressure Indicator [2CCP-PI145C], Control Room, and Pump Suction Pressure, local.
Q	15.3 (Q)	X	Containment Cooling Water Supply Header Flow Indicator [2CCP-FI117A1(A2)], Control Room, OR summation of flow rates from Containment Cooling Water Supply Header Flow Indicator [2CCP-FI117B1(B2)], Control Room. Nonregenerative Heat Exchanger Branch Flow Indicator [2CCP-FI103] and Seal Water Heat Exchanger Branch Flow Indicator [2CCP-FI102], local.
V	15.3 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	15.3 (A)	X	Control room computer address points for thermocouples provided for Pump Bearing Oil (T0658A).
L	15.3 (Q)	X	Level indication provided at the constant level oiler (local) on bearing housing.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: Turbine Driven Auxiliary Feedwater Pump	**Pump Number**: 2FWE*P22	**Code Class**: 3	**Dwg. OM No.**: 24-3 **Dwg. Coord.**: E-4	**System**: 24 Auxiliary Feedwater
Function: Provide emergency makeup to Steam Generator during loss of normal feedwater	**Type**: Centrifugal	**Remarks**: Pump is tested monthly on recirculation flow and at full flow when in Mode 3 during startup from cold shutdowns and refueling outages		

Parameter	2OST (Frequency)	Req'd	Comments
N	24.4 (Q)	X	Tachometer may be provided with steam turbine depending on governor installed, local, or use portable monitoring equipment - Stroboscope
	24.4 (CSD,R)	X	Tachometer may be provided with steam turbine depending on governor installed, local, or use portable monitoring equipment - Stroboscope
PI	24.4 (Q)	X	Pump Suction Pressure Indicator [2FWE-PI156], local
	24.4 (CSD,R)	X	Pump Suction Pressure Indicator [2FWE-PI156], local
ΔP	24.4 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2FWE-PI155] and Pump Suction Pressure, local
	24.4 (CSD,R)	X	Calculated using Pump Discharge Pressure Indicator [2FWE-PI155] and Pump Suction Pressure, local
Q	24.4 (Q)	X	Flow Indicator [2FWE-FI155], local
	24.4 (CSD,R)	X	Summation of flow rates from SG Aux FW Line Flow Indicators [2FWE-FI100A,B,C], Control Room
V	24.4 (Q)	X	Portable monitoring equipment - Fixed vibration probe
	24.4 (CSD,R)	X	Portable monitoring equipment - Fixed vibration probe
Tb	24.4 (A)	X	Control Room computer address points for thermocouples provided for each pump end and thrust bearing Inboard Pump Bearing (T2652A), Outboard Pump Bearing (T2653A), Thrust Bearing (T2404A)
	NA	NA	Not required during cold shutdown or refueling test. Bearing temperatures are obtained in monthly test annually
L	24.4 (Q)	X	Sight glass on oil reservoir, local
	24.4 (CSD,R)	X	Sight glass on oil reservoir, local

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 23A Motor Driven Auxiliary Feedwater Pump	**Pump Number:** 2FWE*P23A	**Code Class:** 3	**Dwg. OM No.:** 24-3 **Dwg. Coord.:** F-4	**System:** 24 Auxiliary Feedwater
Function: Provide emergency makeup to Steam Generator during loss of normal feedwater	**Type:** Centrifugal	**Remarks:** Pump is tested monthly on recirculation flow and at full flow during cold shutdowns and refueling outages		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
PI	24.2 (Q)	X	Pump Suction Pressure Indicator [2FWE-PI156A], local.
	24.6 (CSD,R)	X	Pump Suction Pressure Indicator [2FWE-PI156A], local.
ΔP	24.2 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2FWE-PI155A] and Pump Suction Pressure, local.
	24.6 (CSD,R)	X	Calculated using Pump Discharge Pressure Indicator [2FWE-PI155A] and Pump Suction Pressure, local.
Q	24.2 (Q)	X	Flow Indicator [2FWE-FI155A], local.
	24.6 (CSD,R)	X	Summation of flow rates from SG Aux FW Line Flow Indicators [2FWE-FI100A,B,C], Control Room.
V	24.2 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	24.6 (CSD,R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	24.2 (A)	X	Control Room computer address points for thermocouples provided for each pump end and thrust bearing. Inboard Pump Bearing (T2332A), Outboard Pump Bearing (T2333A), Thrust Bearing (T2402A).
	NA	NA	Not required during cold shutdown or refueling test. Bearing temperatures are obtained in monthly test annually.
L	24.2 (Q)	X	Sight glass on oil reservoir, local.
	24.6 (CSD,R)	X	Sight glass on oil reservoir, local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 23B Motor Driven Auxiliary Feedwater Pump	**Pump Number:** 2FWE*P23B	**Code Class:** 3	**Dwg. OM No.:** 24-3 **Dwg. Coord.:** G-4	**System:** 24 Auxiliary Feedwater
Function: Provide emergency makeup to Steam Generator during loss of normal feedwater	**Type:** Centrifugal		**Remarks:** Pump is tested monthly on recirculation flow and at full flow during cold shutdowns and refueling outages	

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	24.3 (Q)	X	Pump Suction Pressure Indicator [2FWE-PI156B], local.
	24.6 (CSD,R)	X	Pump Suction Pressure Indicator [2FWE-PI156B], local.
ΔP	24.3 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2FWE-PI155B] and Pump Suction Pressure, local.
	24.6 (CSD,R)	X	Calculated using Pump Discharge Pressure Indicator [2FWE-PI155B] and Pump Suction Pressure, local.
Q	24.3 (Q)	X	Flow Indicator [2FWE-FI155B], local.
	24.6 (CSD,R)	X	Summation of flow rates from SG Aux FW Line Flow Indicators [2FWE-FI100A,B,C], Control Room.
V	24.3 (Q)	X	Portable monitoring equipment - Fixed vibration probe.
	24.6 (CSD,R)	X	Portable monitoring equipment - Fixed vibration probe.
Tb	24.3 (A)	X	Control Room computer address points for thermocouples provided for each pump end and thrust bearing. Inboard Pump Bearing (T2392A), Outboard Pump Bearing (T2393A), Thrust Bearing (T2403A)
	NA	NA	Not required during cold shutdown or refueling test. Bearing temperatures are obtained in monthly test annually.
L	24.3 (Q)	X	Sight glass on oil reservoir, local.
	24.6 (CSD,R)	X	Sight glass on oil reservoir, local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Service Water Pump	**Pump Number:** 2SWS*P21A	**Code Class:** 3	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** C-2	**System:** 30 Service Water
Function: Provide cooling water to Recirculation Spray Heat Exchangers and Reactor Plant components under normal and emergency conditions	**Type:** Vertical	**Remarks:** See RR3 and RR8 (Pump Curve).		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	30.2 (Q)	RR3	No installed instrumentation to measure suction pressure. Calculate Pi using Unit No. 1 Ohio River Intake Water Level Indicator [LR-1CW-101], local.
ΔP	30.2 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2SWS-PI101A] local, and Intake Water Level.
Q	30.2 (Q)	X	Portable Flow Indicator [2SWS-FIT100], local.
V	30.2 (Q)	X	Portable Monitoring Equipment.
Tb	30.2 (A)	X	Pump and motor vertically mounted unit. Pump shaft bearings exempt since located within main flow path. Control Room computer address points for thermocouples provided for motor, upper guide bearing (T0751A), thrust bearing (T0752A).
L	30.2 (Q)	X	Upper motor bearing oil level sight glass, bottom motor bearing grease lubricated, bottom pump bearing grease lubricated and sealed at factory. Shaft bearing freshwater lubricated and can be observed with Supply Pressure Indicator [2SWS-PI105A], local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Service Water Pump	**Pump Number:** 2SWS*P21B	**Code Class:** 3	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** D-2	**System:** 30 Service Water
Function: Provide cooling water to Recirculation Spray Heat Exchangers and Reactor Plant components under normal and emergency conditions	**Type:** Vertical		**Remarks:** See RR3 and RR8 (Pump Curve).	

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	30.3 (Q)	RR3	No installed instrumentation to measure suction pressure. Calculate Pi using Unit No. 1 Ohio River Intake Water Level Indicator [LR-1CW-101] local.
ΔP	30.3 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2SWS-PI101B], local, and Intake Water Level.
Q	30.3 (Q)	X	Portable Flow Indicator [2SWS-FIT100S], local.
V	30.3 (Q)	X	Portable Monitoring Equipment.
Tb	30.3 (A)	X	Pump and motor vertically mounted unit. Pump shaft bearings exempt since located within main flow path. Control Room computer address points for thermocouples provided for motor, upper guide bearing (T0761A), thrust bearing (T0762A).
L	30.3 (Q)	X	Upper motor bearing oil level sight glass, bottom motor bearing grease lubricated, bottom pump bearing grease lubricated and sealed at factory. Shaft bearing freshwater lubricated and can be observed with Supply Pressure Indicator [2SWS-PI105B], local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21C Service Water Pump	**Pump Number:** 2SWS*P21C	**Code Class:** 3	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** G-2	**System:** 30 Service Water
Function: Provide cooling water to Recirculation Spray Heat Exchangers and Reactor Plant components under normal and emergency conditions	**Type:** Vertical	**Remarks:** See RR3 and RR8 (Pump Curve)		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	30.6 (Q)	RR3	No installed instrumentation to measure suction pressure. Calculate Pi using Unit No. 1 Ohio River Intake Water Level Indicator [LR-1CW-101], local.
ΔP	30.6 (Q)	X	Calculated using Pump Discharge Pressure Indicator [2SWS-PI101C], local, and Intake Water Level.
Q	30.6 (Q)	X	Portable Flow Indicator [2SWS-FIT100(S)], local.
V	30.6 (Q)	X	Portable Monitoring Equipment.
Tb	30.6 (A)	X	Pump and motor vertically mounted unit. Pump shaft bearings exempt since located within main flow path. Control Room computer address points for thermocouples provided for motor, upper guide bearing (T0771A), thrust bearing (T0772A).
L	30.6 (Q)	X	Upper motor bearing oil level sight glass, bottom motor bearing grease lubricated, bottom pump bearing grease lubricated and sealed at factory. Shaft bearing freshwater lubricated and can be observed with Supply Pressure Indicator [2SWS-PI105C], local.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21A Fuel Oil Transfer Pump	**Pump Number**: 2EGF*P21A	**Code Class**: 3	**Dwg. OM No.**: 36-1 **Dwg. Coord.**: F-3	**System**: 36 Diesel Fuel Oil System
Function: Transfer Fuel from underground storage tank to the day tank	**Type**: Vertical	**Remarks**: See RR4 and RR5. Pump is normally tested bi-monthly.		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	36.1 (Q)	RR5	No suction pressure indication provided. Suction pressure will remain almost constant.
ΔP	36.1 (Q)	RR5	Based on pump Discharge Pressure Indicator [2EGF-PI201A], local.
Q	36.1 (Q)	RR4	No instrumentation provided for flow - Level change over time in the day tank will be measured using Level Gauge [2EGF*LG201], local, and converted to flowrate.
V	36.1 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	NA	E	Pump bearings located within main flow path (IWP-4310).
L	NA	NA	Self-lubricated bearings, internal pumped fluid lubrication.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21B Fuel Oil Transfer Pump	**Pump Number:** 2EGF*P21B	**Code Class:** 3	**Dwg. OM No.:** 36-1 **Dwg. Coord.:** E-3	**System:** 36 Diesel Fuel Oil System
Function: Transfer Fuel from underground storage tank to the day tank	**Type:** Vertical		**Remarks:** See RR4 and RR5. Pump is normally tested bi-monthly.	

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	36.1 (Q)	RR5	No suction pressure indication provided. Suction pressure will remain almost constant.
ΔP	36.1 (Q)	RR5	Based on pump Discharge Pressure Indicator [2EGF-PI201B], local.
Q	36.1 (Q)	RR4	No instrumentation provided for flow - Level change over time in the day tank will be measured using Level Guage [2EGF*LG201], local, and converted to flowrate.
V	36.1 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	NA	E	Pump bearings located within main flow path (iWP-4310).
L	NA	NA	Self-lubricated bearings, internal pumped fluid lubrication.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21C Fuel Oil Transfer Pump	**Pump Number:** 2EGF*P21C	**Code Class:** 3	**Dwg. OM No.:** 36-1 **Dwg. Coord.:** F-8	**System:** 36 Diesel Fuel Oil System
Function: Transfer Fuel from underground storage tank to the day tank	**Type:** Vertical	**Remarks:** See RR4 and RR5. Pump is normally tested bi-monthly		

Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	36.2 (Q)	RR5	No suction pressure indication provided. Suction pressure will remain almost constant.
ΔP	36.2 (Q)	RR5	Based on pump Discharge Pressure Indicator [2EGF-PI201C], local.
Q	36.2 (Q)	RR4	No instrumentation provided for flow - Level change over time in the day tank will be measured using Level Gauge [2EGF*LG202], local, and converted to flowrate.
V	36.2 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	NA	E	Pump bearings located within main flow path (IWP-4310).
L	NA	NA	Self-lubricated bearings, internal pumped fluid lubrication.

BVPS-2 IST

PUMP TESTING OUTLINE

Pump Name: 21D Fuel Oil Transfer Pump	**Pump Number:** 2EGF*P21D	**Code Class:** 3	**Dwg. OM No.:** 36-1 **Dwg. Coord.:** E-8	**System:** 36 Diesel Fuel Oil System
Function: Transfer Fuel from underground storage tank to the day tank	**Type:** Vertical	**Remarks:** See RR4 and RR5. Pump is normally tested bi-monthly.		

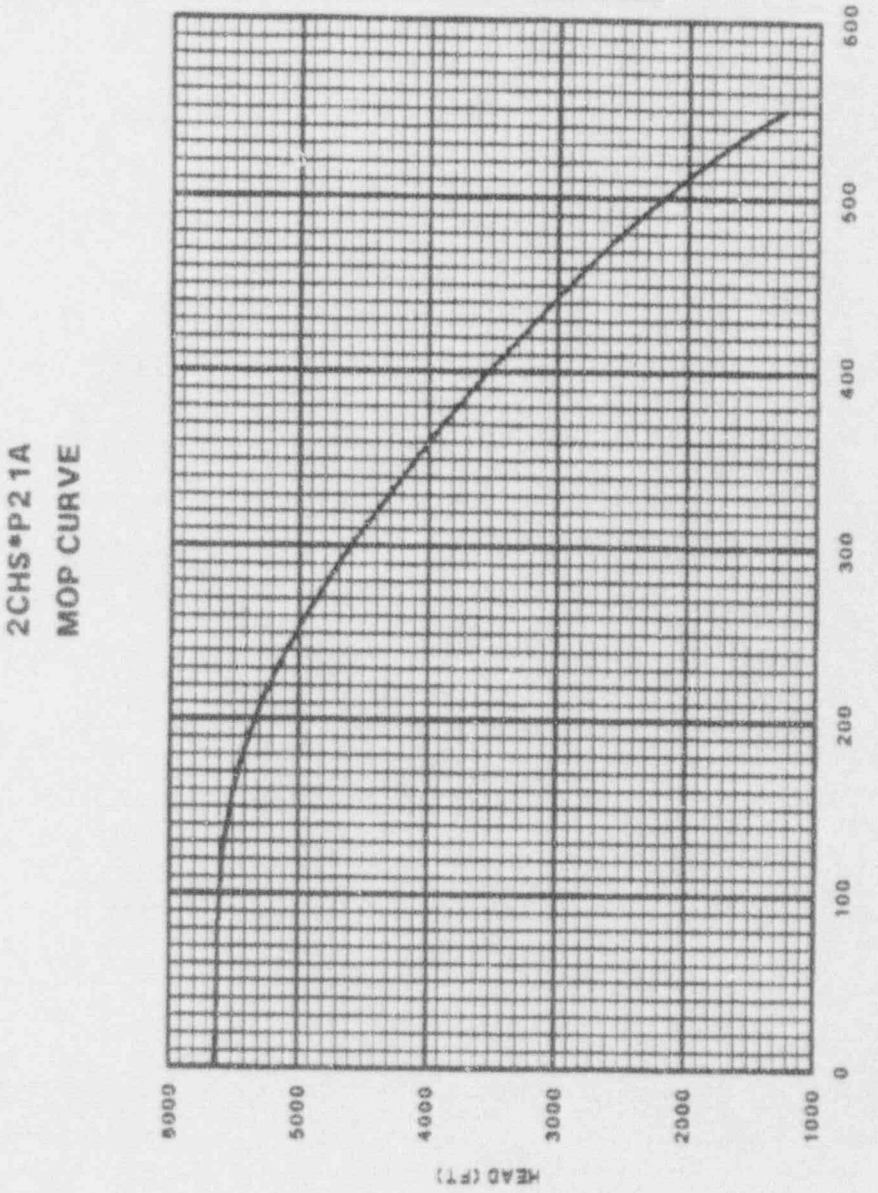
Parameter	2OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
Pi	36.2 (Q)	RR5	No suction pressure indication provided. Suction pressure will remain almost constant.
ΔP	36.2 (Q)	RR5	Based on pump Discharge Pressure Indicator [2EGF-PI201D], local.
Q	36.2 (Q)	RR4	No instrumentation provided for flow - Level change over time in the day tank will be measured using Level Gauge [2EGF*LG202], local, and converted to flowrate.
V	36.2 (Q)	X	Portable Monitoring Equipment - Fixed vibration probe.
Tb	NA	E	Pump bearings located within main flow path. (IWP-4310).
L	NA	NA	Self-lubricated bearings, internal pumped fluid lubrication.

SECTION III: PUMP MINIMUM OPERATION POINT (MOP) CURVES

Pump Name: 21A Charging Pump **Pump Number:** 2CHS*P21A

MOP CURVE DATA POINTS:

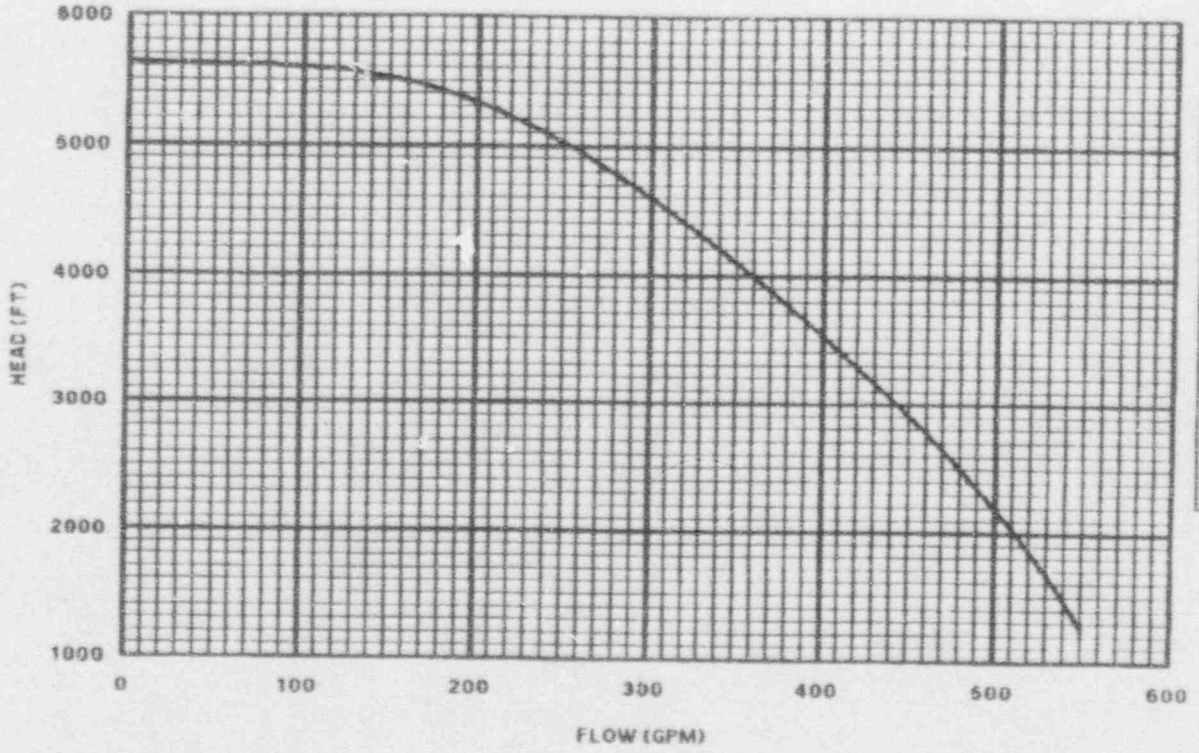
FLOW (GPM)	HEAD (FT.)
0	5649
50	5629
100	5595
150	5538
200	5331
250	5021
300	4599
350	4098
400	3541
450	2902
500	2200
550	1260



SUPPLIED BY WESTINGHOUSE PER
LETTER NO BV2-SET 024 (2/3/87)

Pump Name: 21B Charging Pump **Pump Number:** 2CHS*P21B

2CHS*P21B
MOP CURVE



MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
0	5649
50	5629
100	5595
150	5538
200	5331
250	5021
300	4599
350	4098
400	3541
450	2902
500	2200
550	1260

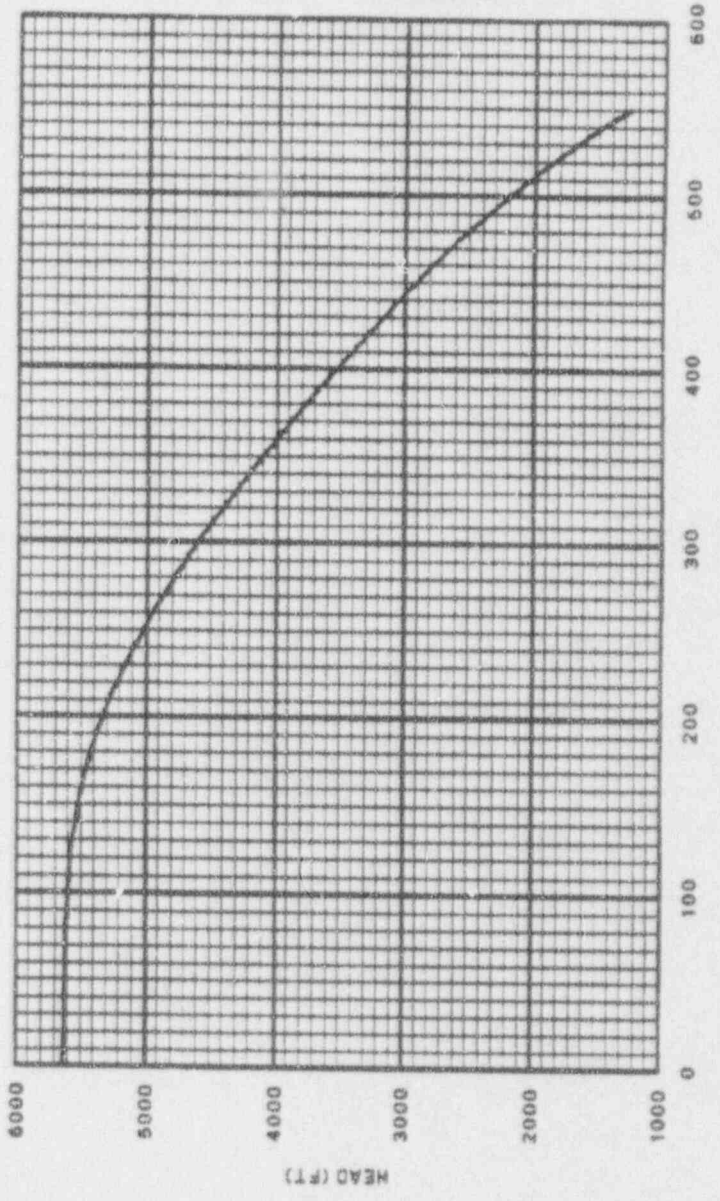
SUPPLIED BY WESTINGHOUSE PER
LETTER NO. BV2-SET-024 (2/3/87)

Pump Name: 21C Charging Pump **Pump Number:** 2CHS*P21C

MOP CURVE DATA POINTS:

FLOW (GPM)	HEAD (FT.)
0	5649
50	5629
100	5595
150	5538
200	5331
250	5021
300	4599
350	4098
400	3541
450	2902
500	2200
550	1260

2CHS*P21C
MOP CURVE



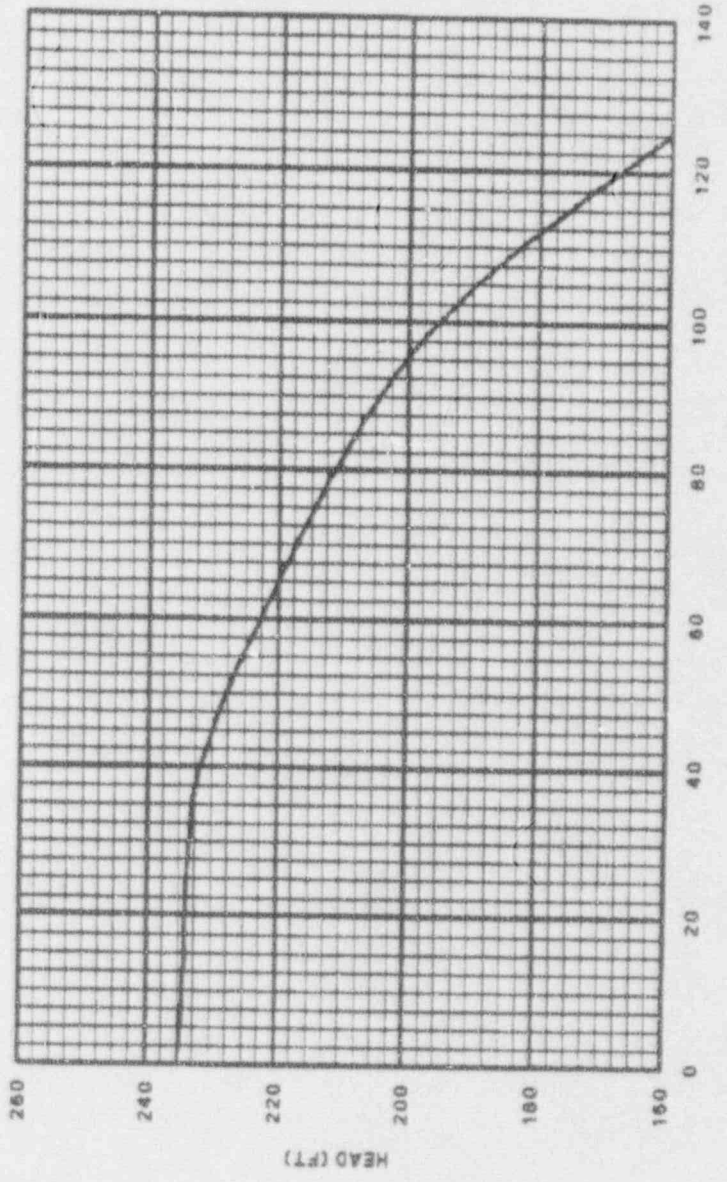
SUPPLIED BY WESTINGHOUSE PER
LETTER NO BV2-SET-024 (2/3/87)

Pump Name: 22A Boric Aicd Transfer Pump **Pump Number:** 2CHS*P22A

MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
0	235
20	234
40	232
60	223
80	212
100	195
120	168
125	160

2CHS*P22A
MOP CURVE

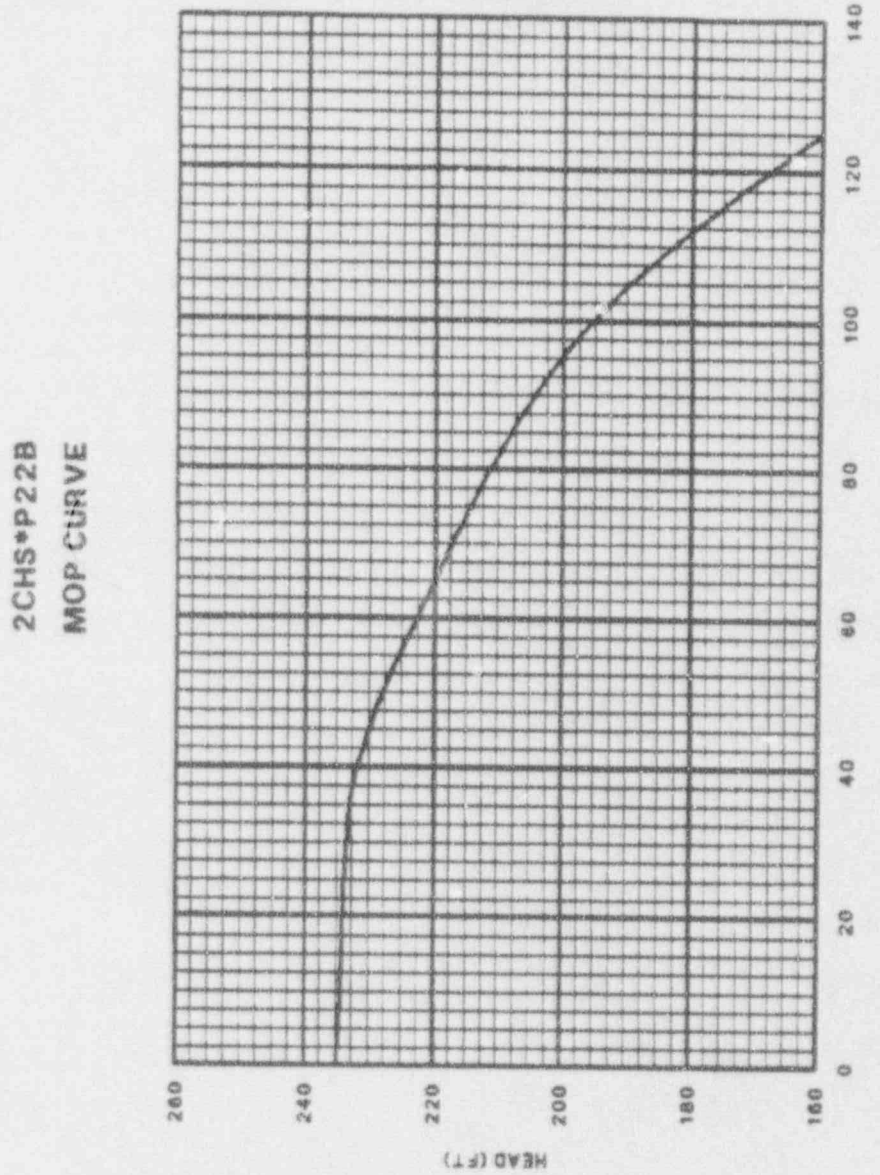


SUPPLIED BY WESTINGHOUSE PER
LETTER NO BY2-SET-024 (2/3/67)

Pump Name: 22B Boric Aicd Transfer Pump **Pump Number:** 2CHS*P22B

MOP CURVE DATA POINTS:

FLOW (GPM)	HEAD (FT.)
0	235
20	234
40	232
60	223
80	212
100	195
120	168
125	160



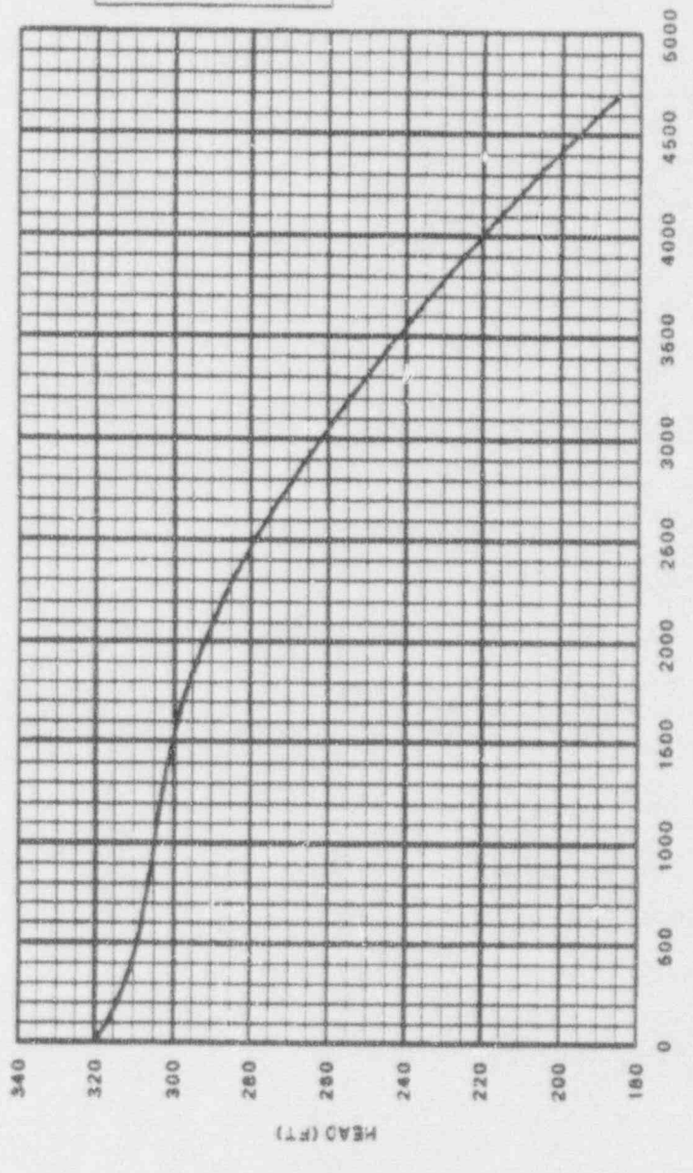
SUPPLIED BY WESTINGHOUSE PER
LETTER NO. BV2-SET-024 (2/3/87)

Pump Name: 21A Residual Heat Removal Pump **Pump Number:** 2RHS*P21A

MOP CURVE DATA POINTS:

FLOW (GPM)	HEAD (FT.)
0	320
1000	305
2000	292
3000	262
4000	220
4700	185

2RHS*P21A
MOP CURVE



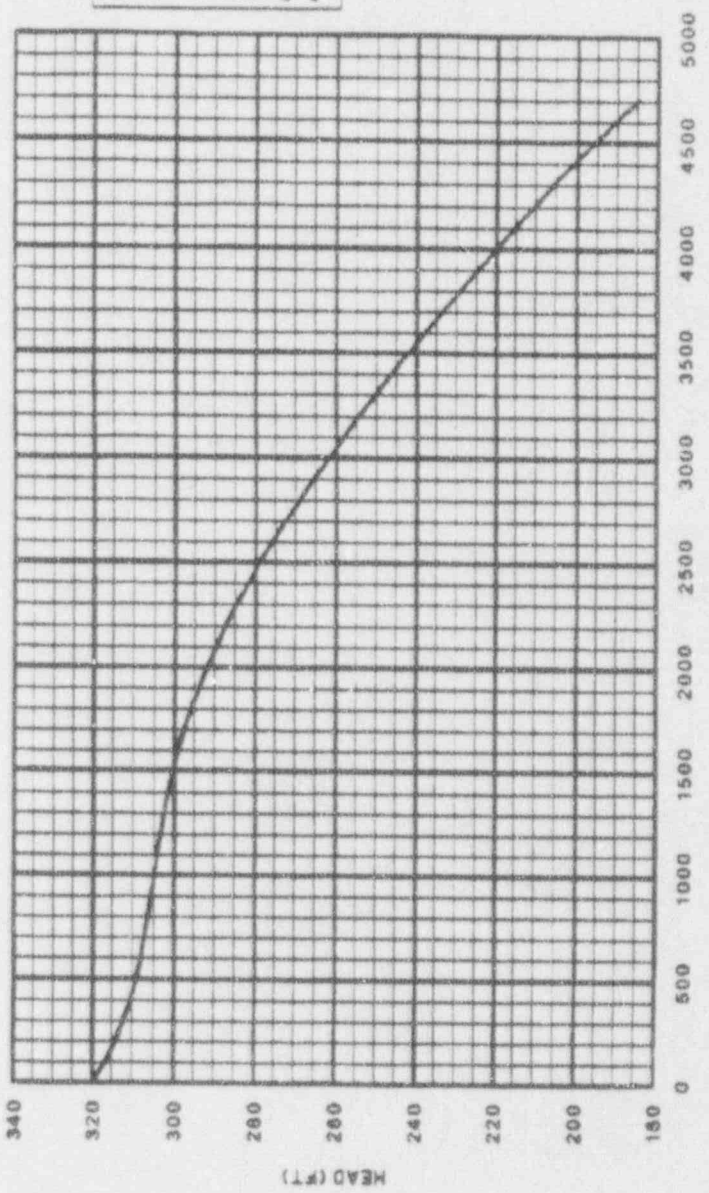
SUPPLIED BY WESTINGHOUSE PER
LETTER NO BVZ-SLT-024 (2/3/87)

Pump Name: 21B Residual Heat Removal Pump **Pump Number:** 2RHS*P21B

MOP CURVE DATA POINTS:

FLOW (GPM)	HEAD (FT.)
0	320
1000	305
2000	292
3000	262
4000	220
4700	185

2RHS*P21B
MOP CURVE

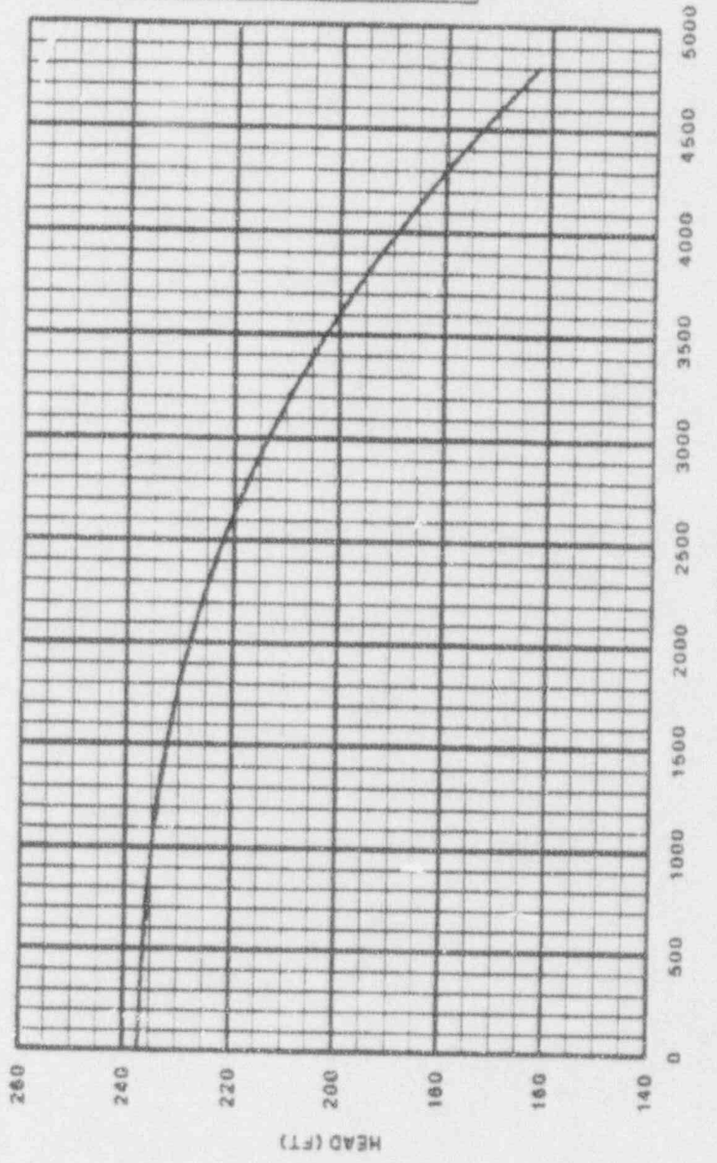


SUPPLIED BY WESTINGHOUSE PER
LETTER NO. 8V2-SET-024 (2/3/87)

Pump Name: 21A Low Head Safety Injection Pump **Pump Number:** 2SIS*P21A

MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
0	237.1
800	235.6
1600	231.6
2000	228.1
2400	223.3
2800	217.2
3200	209.4
3600	200.1
4000	189.2
4400	176.7
4800	162.6

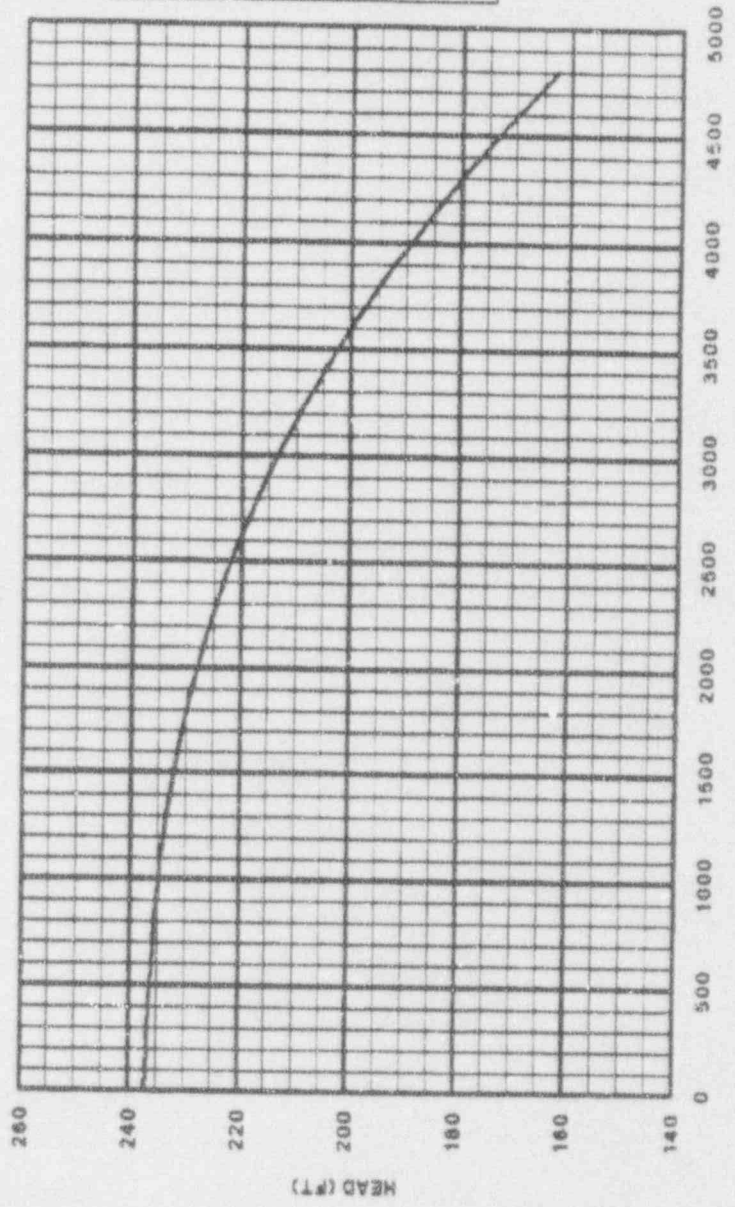


SUPPLIED BY WESTINGHOUSE PER
LETTER NO DLW-90-582 (4/10/90)

Pump Name: 21B Low Head Safety Injection Pump **Pump Number:** 2SIS*P21B

MOP CURVE DATA POINTS:

FLOW (GPM)	HEAD (FT.)
0	237.1
800	235.6
1600	231.6
2000	228.1
2400	223.3
2600	217.2
3200	209.4
3600	200.1
4000	189.2
4400	176.7
4800	162.6



SUPPLIED BY WESTINGHOUSE PER
LETTER NO. DLW-90-582 (4/10/90)

Pump Name: 21A Quench Spray Pump **Pump Number:** 2QSS*P21A

(IN DEVELOPMENT)

Pump Name: 21B Quench Spray Pump **Pump Number:** 2QSS*P21B

(IN DEVELOPMENT)

Pump Name: 24A Chemical Injection Pump **Pump Number:** 2QSS*P24A

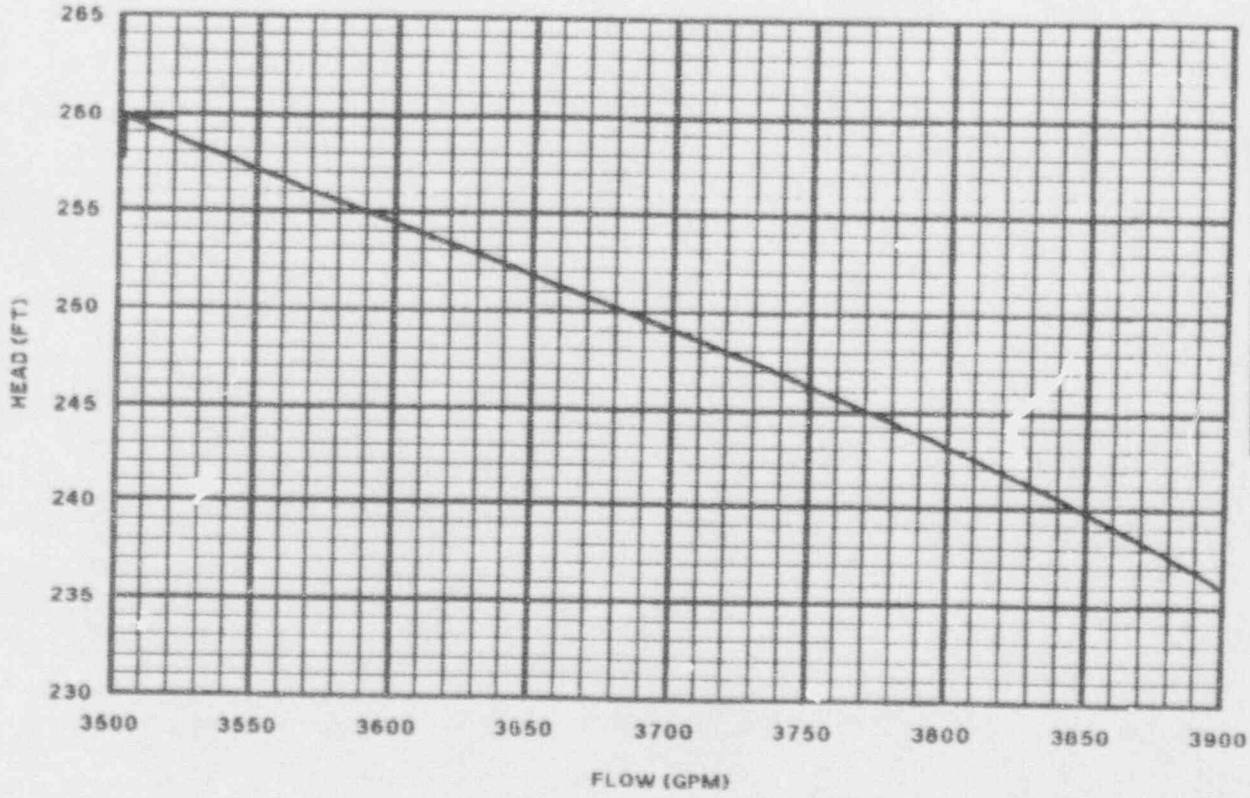
(IN DEVELOPMENT)

Pump Name: 24B Chemical Injection Pump **Pump Number:** 2QSS*P24B

(IN DEVELOPMENT)

Pump Name: 21A Recirculation Spray Pump **Pump Number:** 2RSS*P21A

2RSS*P21A
MOP CURVE



MOP CURVE DATA POINTS:

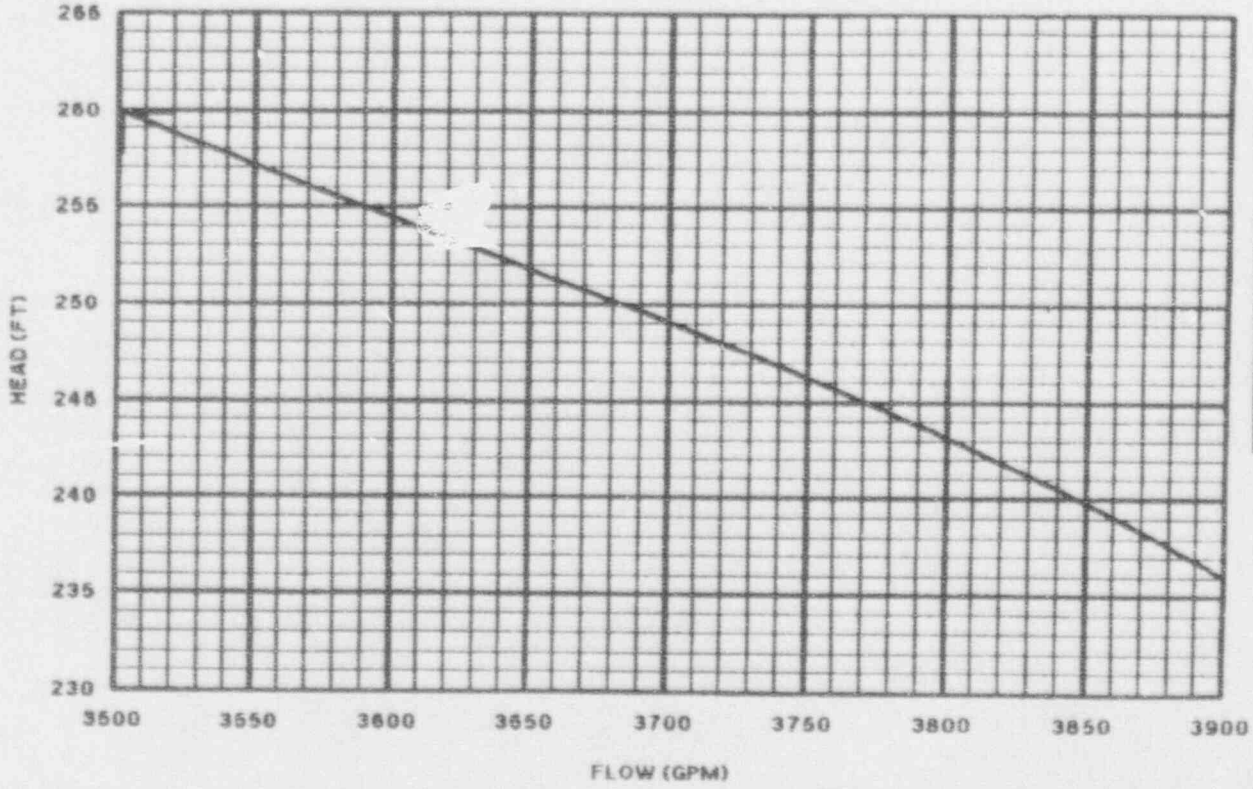
FLOW (GPM)	HEAD (FT.)
3500	260
3550	257
3600	254.5
3650	252
3700	249
3750	246.3
3800	243
3850	240
3900	236

MOP POINT IS AT 260 FT AT 3500 GPM AND IS DERIVED FROM SWEC CALC 12241-US(B)-193-0 REFERENCE LETTER NO 2DLS-28716 (8/7/86)

SUPPLIED BY ENGINEERING PER EM 63835 (3/14/89)

Pump Name: 21B Recirculation Spray Pump Pump Number: 2RSS*P21B

2RSS*P21B
MOP CURVE



MOP CURVE DATA POINTS:

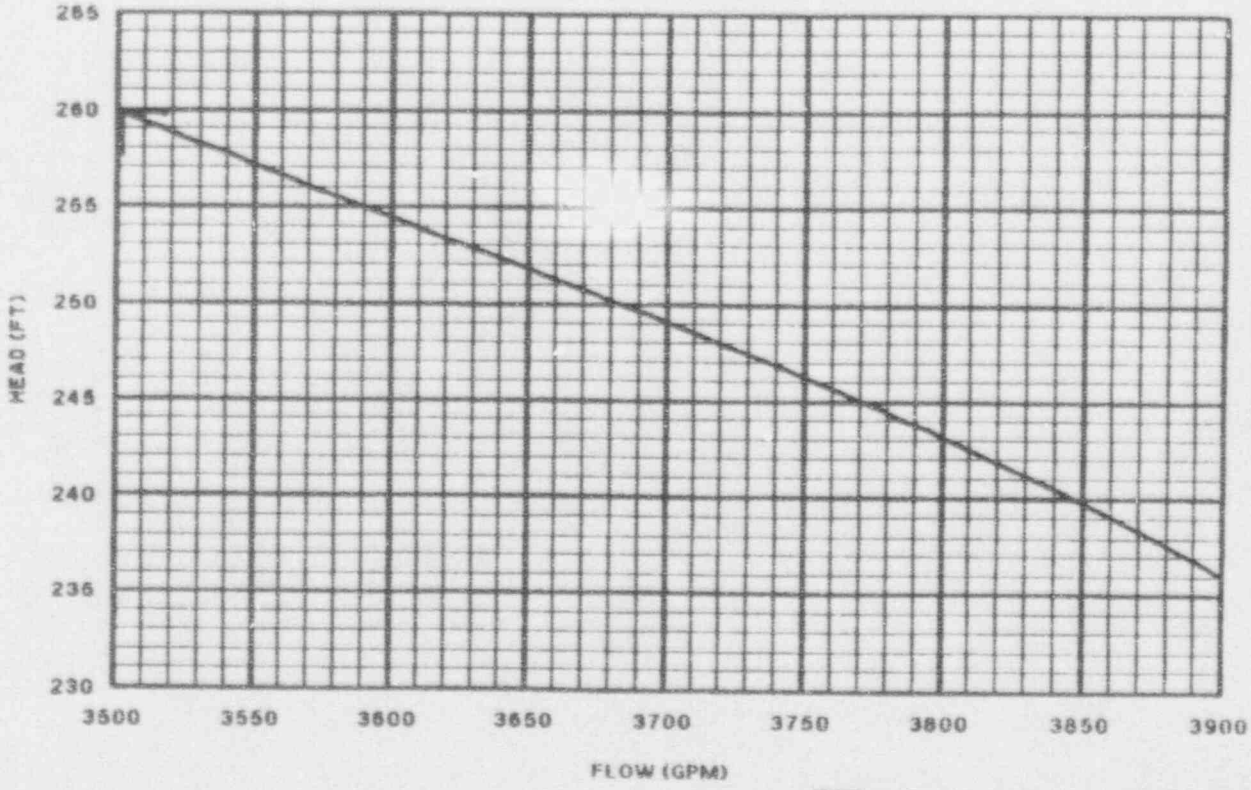
FLOW (GPM)	HEAD (FT.)
3500	260
3550	257
3600	254.5
3650	252
3700	249
3750	246.3
3800	243
3850	240
3900	236

MOP POINT IS AT 260 FT AT 3500 GPM AND IS DERIVED FROM SWEC CALC 12241-US(B)-193-0 REFERENCE LETTER NO 2DLS-28716 (8/7/86).

SUPPLIED BY ENGINEERING PER EM 63835 (3/14/89).

Pump Name: 21C Recirculation Spray Pump Pump Number: 2RSS*P21C

2RSS*P21C
MOP CURVE



MOP CURVE DATA POINTS:

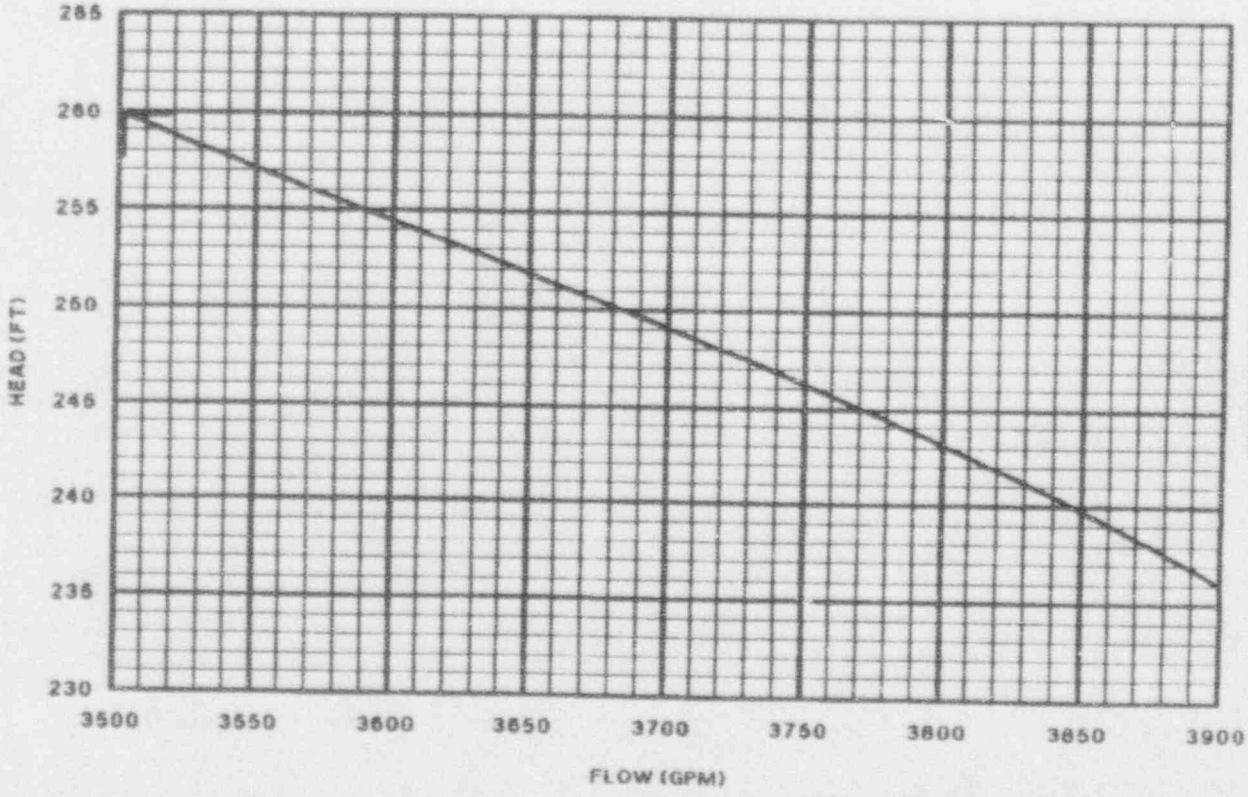
FLOW (GPM)	HEAD (FT.)
3500	260
3550	257
3600	254.5
3650	252
3700	249
3750	246.3
3800	243
3850	240
3900	236

MOP POINT IS AT 260 FT AT 3500 GPM AND IS DERIVED FROM SWEC CALC. 12241-US(B)-193-0 REFERENCE LETTER NO. 2DLS-28716 (8/7/86)

SUPPLIED BY ENGINEERING PER EM 63835 (3/14/89)

Pump Name: 21D Recirculation Spray Pump Pump Number: 2RSS*P21D

2RSS*P21D
MOP CURVE



MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
3500	260
3550	257
3600	254.5
3650	252
3700	249
3750	246.3
3800	243
3850	240
3900	236

MOP POINT IS AT 260 FT AT 3500 GPM AND IS DERIVED FROM SWEC CALC 12241-US(B)-193-0 REFERENCE LETTER NO. 2DLS-28716 (8/7/86)

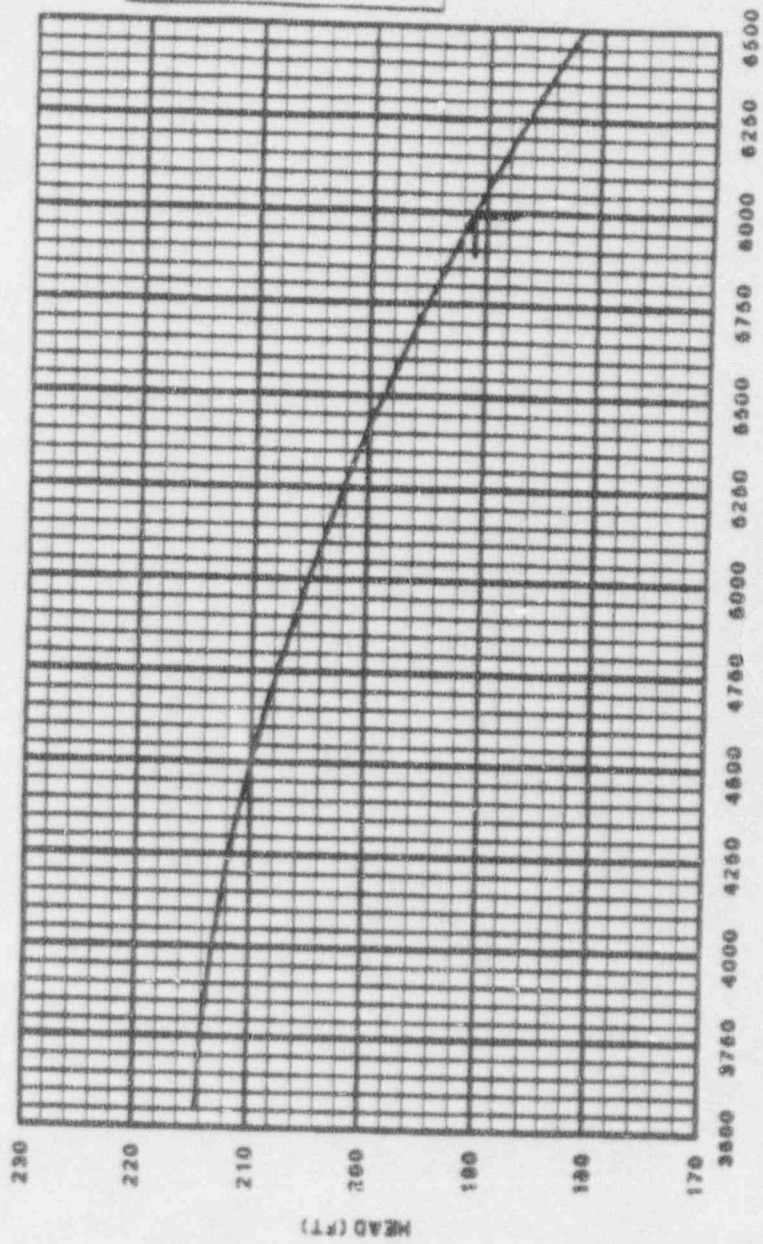
SUPPLIED BY ENGINEERING PER EM 63835 (3/14/89)

Pump Name: 21A Component Cooling Water Pump **Pump Number:** 2CCP*P21A

2CCP*P21A
MOP CURVE

MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
3550	214.5
[illegible]	212.9
4500	210.0
4800	207.3
5093	204.1
5750	195.1
6000	191.0
6500	181.8



MOP POINT IS AT 191 FT AT 6000 GPM PER CALC 12241-MT-260 (1/23/87) (REF EM 106280, 9/3/93)

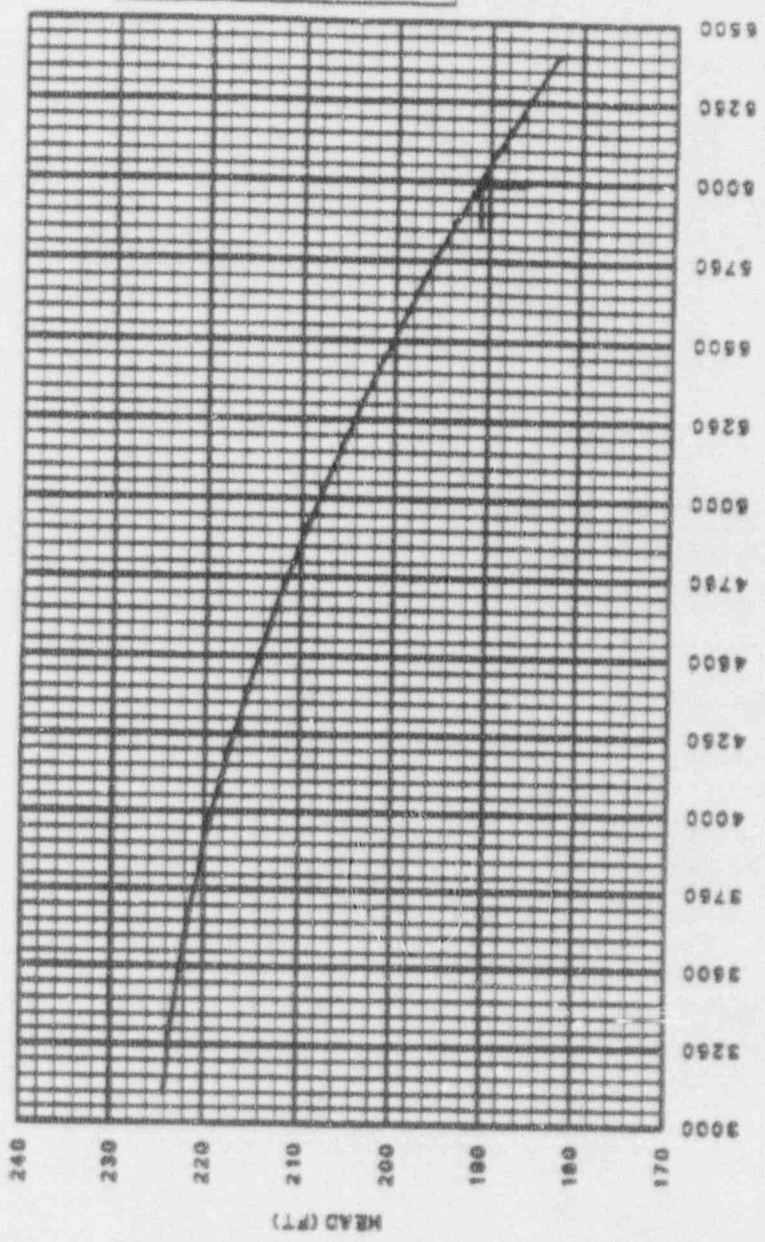
DERIVED AS 66 74% OF PUMP PERFORMANCE CURVE AS APPROVED BY NED PER EM 108287 (9/8/93)

Pump Name: 21B Component Cooling Water Pump **Pump Number:** 2CCP*P21B

2CCP*P21B
MOP CURVE

MOP CURVE DATA POINTS:

FLOW (GPM)	HEAD (FT.)
3094	224.3
3522	222.5
3950	219.6
4378	215.6
4806	210.6
5234	204.6
5662	197.4
6000	191.0
6395	182.7



MOP POINT IS AT 191 FT AT 6000 GPM PER CALC 12241-MT-250 (1/23/87) (REF EM 106280, 9/3/93)

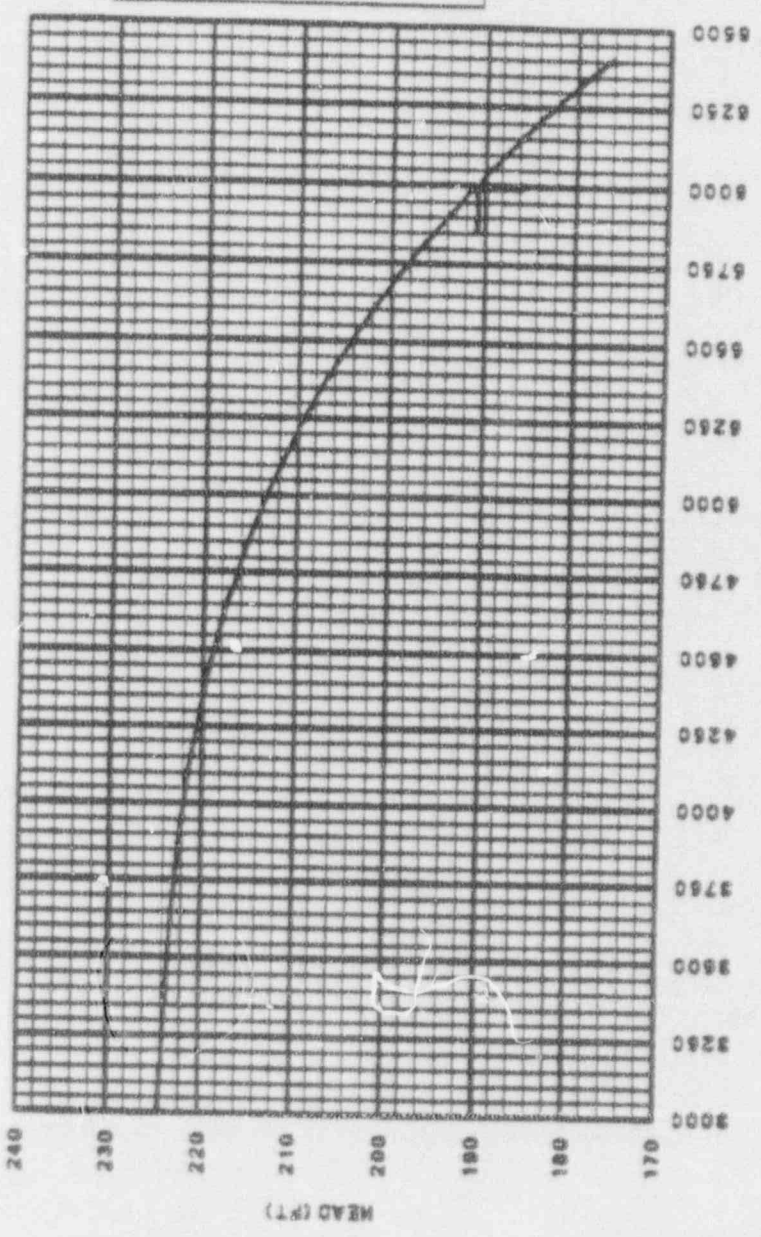
DERIVED AS 92.28% OF PUMP PERFORMANCE CURVE AS APPROVED BY NED PER EM 106287 (9/8/93)

Pump Name: 21C Component Cooling Water Pump **Pump Number:** 2CCP*P21C

2CCP*P21C
MOP CURVE

MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
3000	224.4
3500	223.4
4912	221.9
4500	218.8
4625	217.7
5024	213.0
5531	203.6
6050	189.4
6100	187.7
6405	176.3



MOP POINT IS AT 191 FT AT 6000 GPM PER CALC 12241-MT-250 (1/23/87) (REF EM 106280 9/3/93)

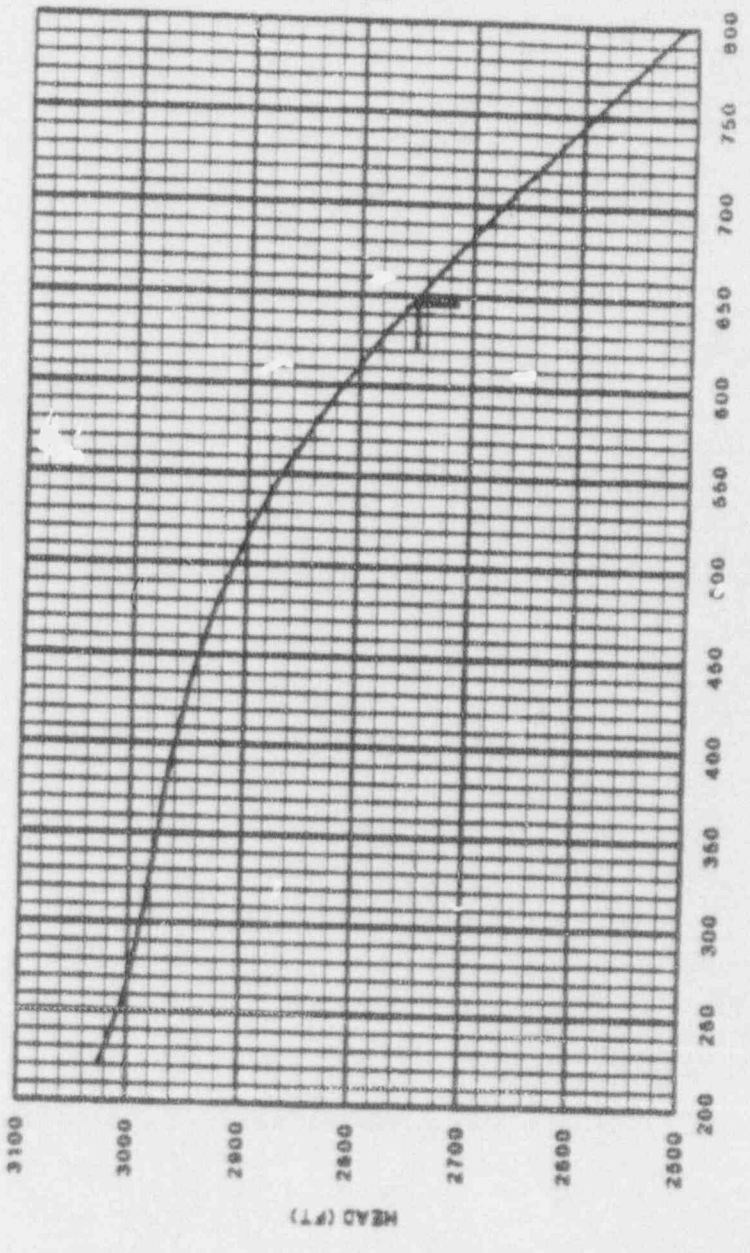
DERIVED AS 91.67% OF PUMP PERFORMANCE CURVE AS APPROVED BY NED PER EM 106267 (9/8/93)

Pump Name: Turbine Driven Auxiliary Feedwater Pump **Pump Number:** 2FWE*P22

2FWE*P22
MOP CURVE

MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
255	3005
300	2988
400	2961
500	2911
600	2815
700	2673
800	2510

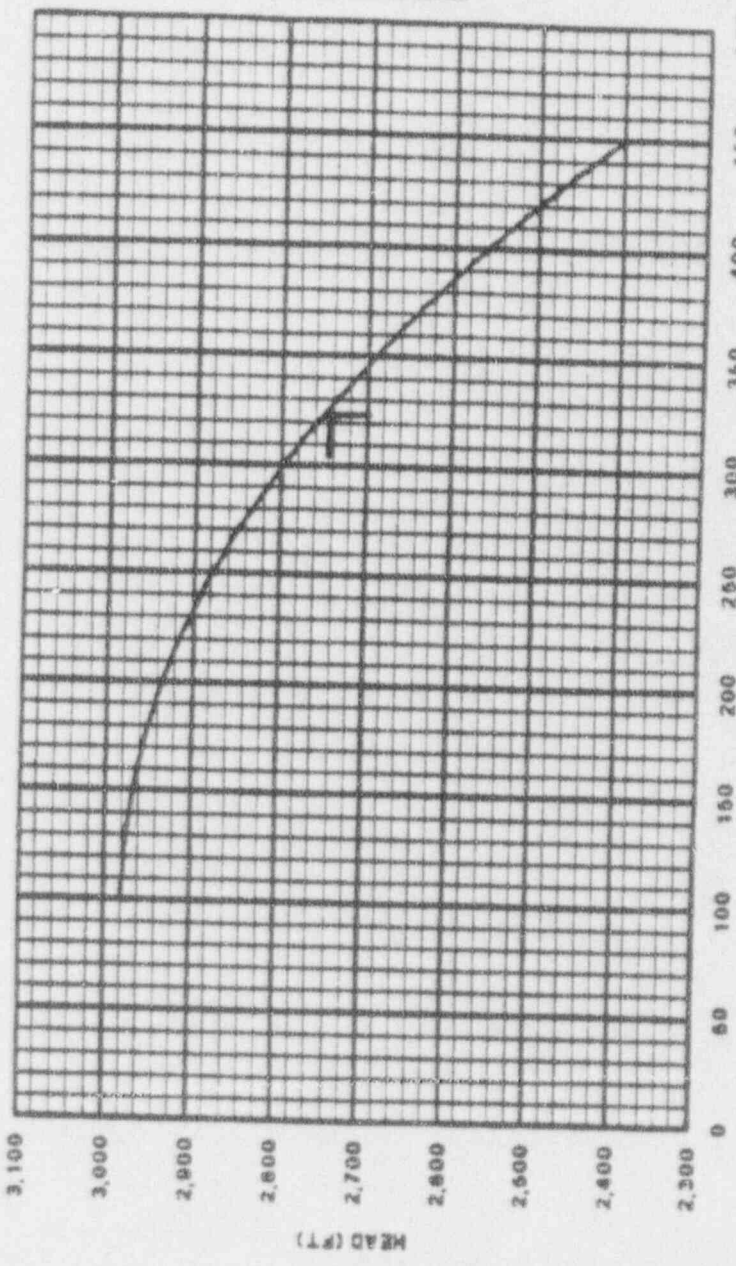


Pump Name: 23A Motor Driven Auxiliary Feedwater Pump **Pump Number:** 2FWE*P23A

2FWE*P23A
MOP CURVE

MOP CURVE
DATA POINTS

FLOW (GPM)	HEAD (FT)
100	2980
150	2972
200	2927
250	2852
300	2747
323	2747
370	2634
400	2567
450	2398



MOP POINT IS AT 2747 FT AT 323 GPM AND IS
DERIVED FROM SWEC CALC 12241 PH 96 AND 150
REFERENCE LETTER NO 2DLS-2871(8/7/86)

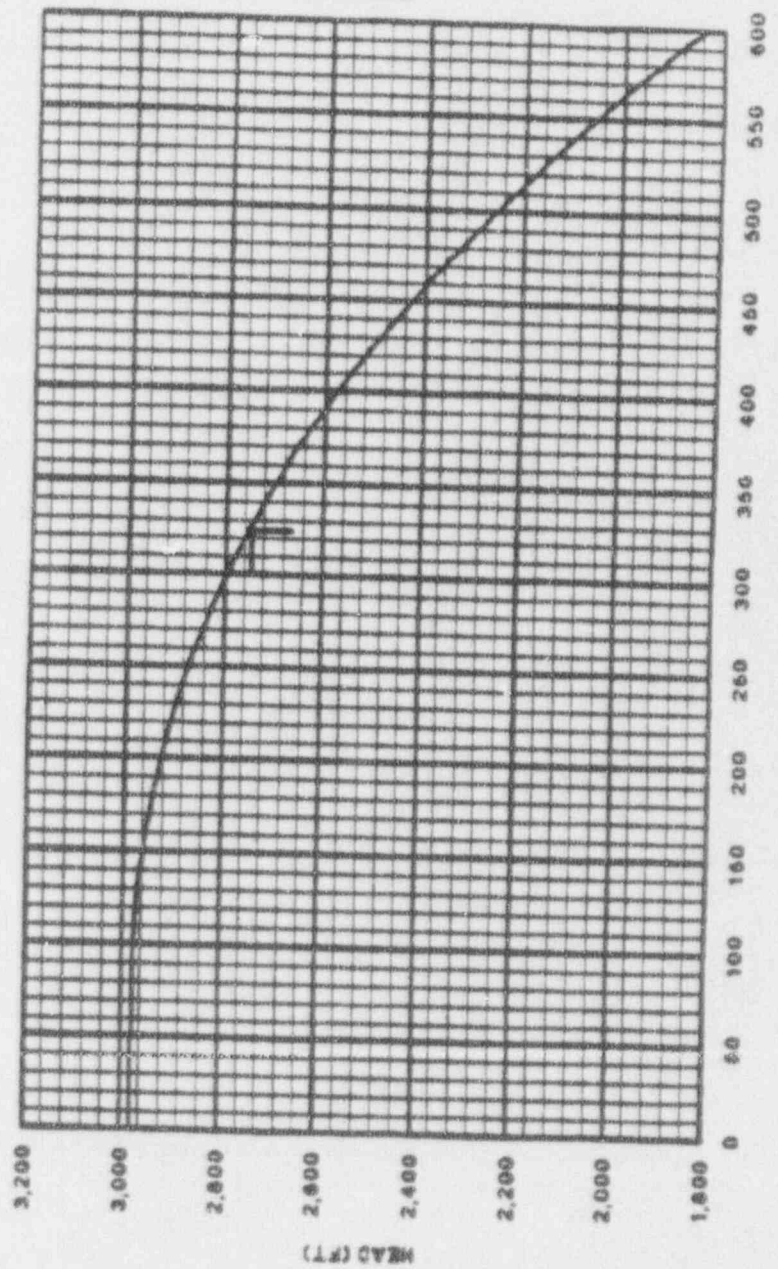
DERIVED AS 98.7% OF PUMP PERFORMANCE CURVE
AS APPROVED BY NED PER EM 103200 (5/2/92)

Pump Name: 23B Motor Driven Auxiliary Feedwater Pump **Pump Number:** 2FWE*P23B

2FWE*P23B
MOP CURVE

MOP CURVE DATA POINTS:

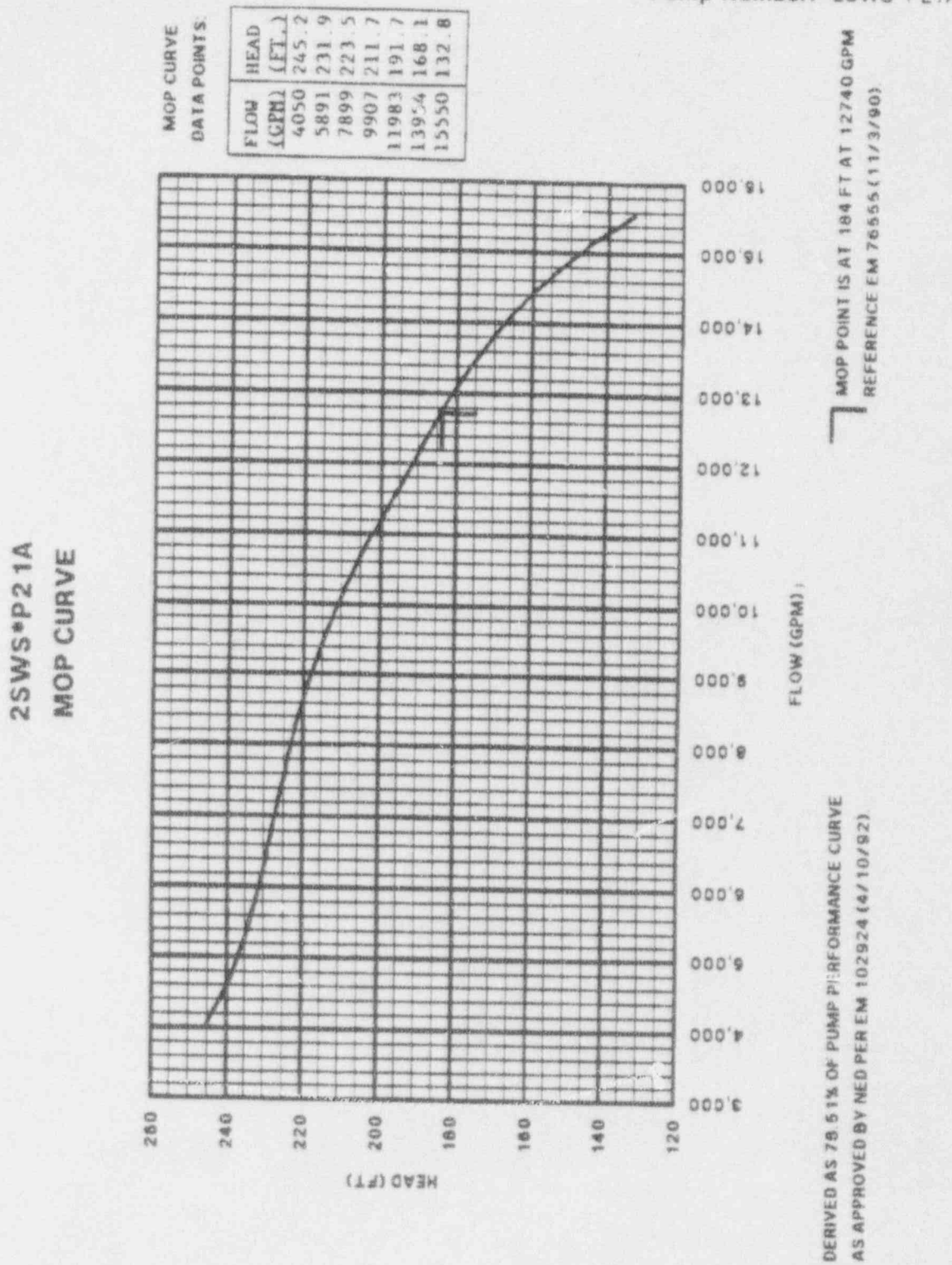
FLOW (GPM)	HEAD (FT.)
0	2980
100	2978
200	2925
300	2797
400	2577
500	2256
600	1837



MOP POINT IS AT 2747 FT AT 323 GPM AND IS DERIVED FROM SWEC CALC 12241 PM 96 AND 150 REFERENCE LETTER NO ZDLS-2871G (8/7/86)

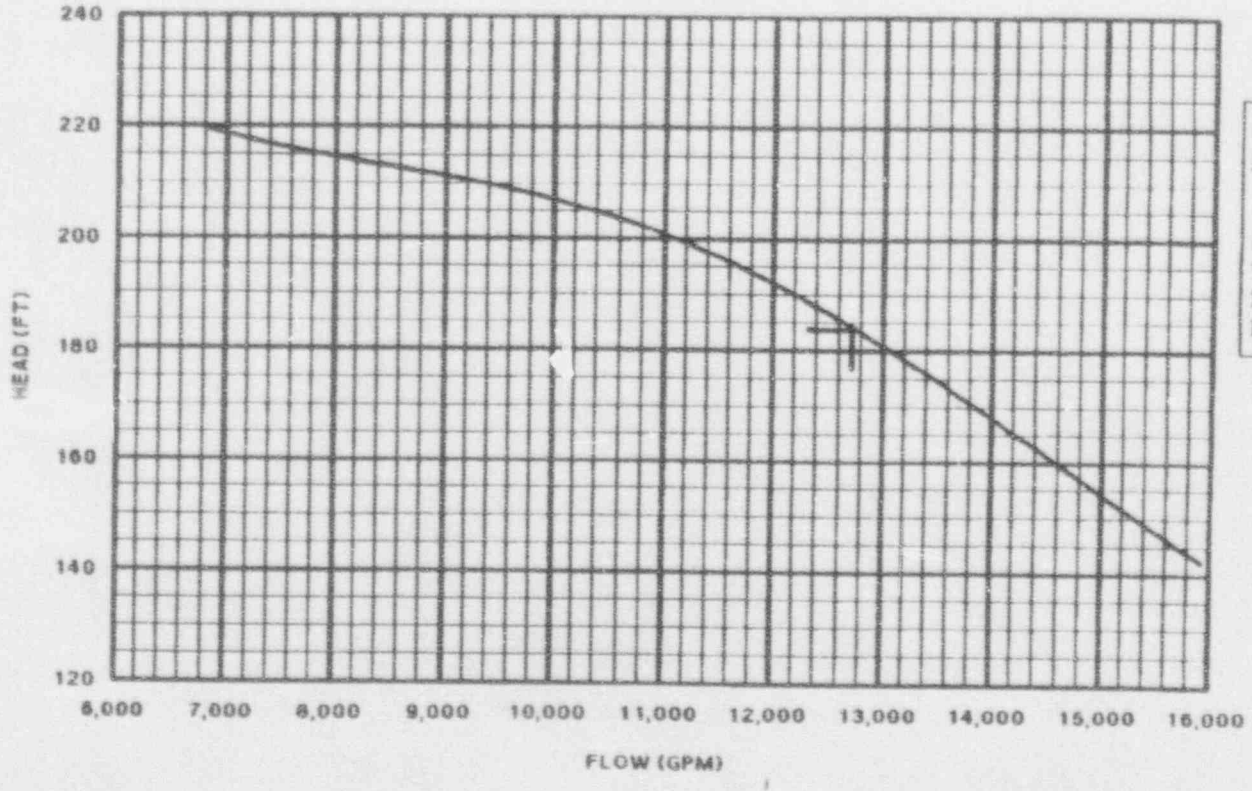
SUPPLIED BY ENGINEERING PER EM 2:1783 (3/11/91)

Pump Name: 21A Service Water Pump **Pump Number:** 2SWS*P21A



Pump Name: 21B Service Water Pump **Pump Number:** 2SWS*P21B

2SWS*P21B
MOP CURVE



MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
6793	219.8
8950	211.5
10914	201.4
12879	182.4
14943	156.5
15928	142.3

DERIVED AS 75.2% OF PUMP PERFORMANCE CURVE
AS APPROVED BY NED PER EM 103674 (8/20/92)

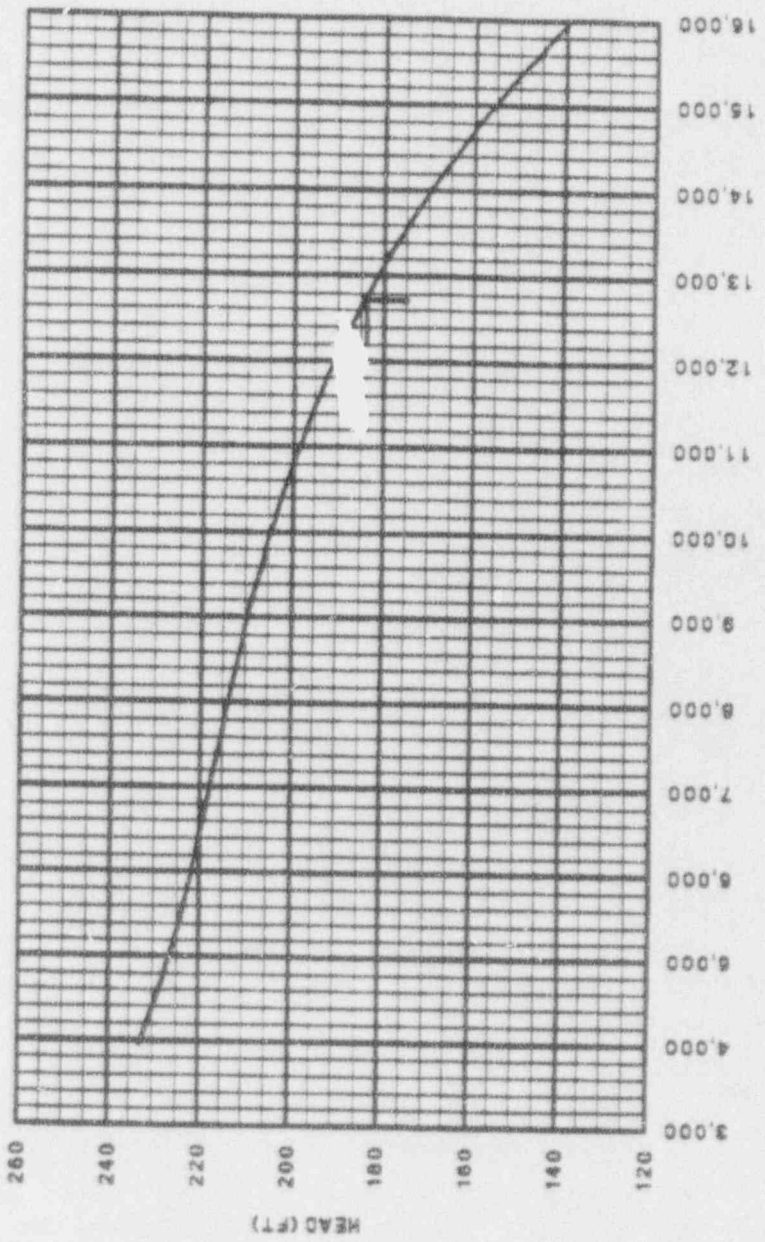
MOP POINT IS AT 184 FT AT 12740 GPM
REFERENCE EM 76555 (11/3/90)

Pump Name: 21C Service Water Pump **Pump Number:** 2SWS*P21C

2SWS*P21C
MOP CURVE

MOP CURVE
DATA POINTS:

FLOW (GPM)	HEAD (FT.)
3950	233.0
5917	222.2
7885	214.4
10097	204.2
12065	190.3
14033	169.2
16000	139.0



MOP POINT IS AT 184 FT AT 12740 GPM
REFERENCE EM 76555 (11/3/90)

DERIVED AS 76.01% OF PUMP PERFORMANCE CURVE
AS APPROVED BY NED PER EM 104:04 (1/20/93)

Pump Name: 21A Fuel Oil Transfer Pump **Pump Number:** 2EGF*P21A

(IN DEVELOPMENT)

Pump Name:

Pump Number: 2EGF*P21B

(IN DEVELOPMENT)

Pump Name: 21C Fuel Oil Transfer Pump **Pump Number:** 2EGF*P21C

(IN DEVELOPMENT)

Pump Name: 21D Fuel Oil Transfer Pump **Pump Number:** 2EGF*P21D

(IN DEVELOPMENT)

SECTION IV: PUMP TESTING RELIEF REQUESTS

RELIEF REQUEST 1

Pump Mark No(s).:

2RHS*P21A
2RHS*P21B

Code Test Requirement: Quarterly pump testing.

Basis for Relief: These pumps are not required to be run at power or fulfill any safety function to mitigate a design basis accident. Possible overheating of the pumps could occur during pump testing on recirculation only and could compromise the system integrity. The system has no associated surge tank and the only available expansion protection is the system relief valve. Test personnel would have to make a containment entry to properly monitor pump operation.

Alternate Test: These pumps will be tested quarterly during cold shutdowns and refueling outages per 2OST-10.1 and 10.2.

RELIEF REQUEST 2

Pump Mark No(s).:

2RSS*P21A
2RSS*P21C
2RSS*P21B
2RSS*P21D

Code Test Requirement: Quarterly pump tests.

Basis for Relief: The function of these pumps is to take suction on the containment sump and discharge to the spray rings on the containment ceiling during a DBA. In order to test these pumps, a temporary dike must be installed in the containment around the safeguards sump to ensure adequate NPSH for each pump. Quarterly testing at power in this manner is a safety concern since it would block off the sump from the containment in the event of an accident. Pump testing during cold shutdowns, while not involving the same safety concern, would increase personnel radiation exposure, create additional radioactive liquid 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 2OST-13.3, 13.4, 13.5, and 13.6 for not more than 60 seconds and stopped as soon as pump start is verified. Also, run on test line recirculation per 2BVT 1.13.5 during Refueling Outages.

RELIEF REQUEST 3

Pump Mark No(s).

2SWS*P21A
2SWS*P21B
2SWS*P21C

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 for these pumps, therefore, relief is requested from this requirement.

Alternate Test: The static head of the Ohio River water level will be used to calculate suction pressure, once per test per 2OST-30.2, 30.3, and 30.6.

RELIEF REQUEST 4

Pump Mark No(s).:

2EGF*P21A
2EGF*P21B
2EGF*P21C
2EGF*P21D

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

Basis for Relief: There is no installed instrumentation provided to measure flow rate for these pumps, therefore, relief is requested from this requirement.

Alternate Test: Flow rate will be calculated by measuring the level change over time of the diesel fuel oil day tank and converting this data to diesel fuel oil transfer pump flow rate per 2OST-2.36.1 and 36.2.

RELIEF REQUEST 5

Pump Mark No(s).:

2EGF*P21A
2EGF*P21B
2EGF*P21C
2EGF*P21D

Code Test Requirement: Measurement of pump suction pressure (before pump startup and during test) and delta-P.

Basis for Relief: There is no installed instrumentation provided to measure suction pressure for these pumps. Suction pressure is dependent on the level in the diesel generator fuel oil storage tank. Due to the minimum technical specification level permitted in the tank (91.2%), suction pressure will remain almost constant (within 1/2 psig). The pump performance is dependent on flowrate and delta-P. Since suction pressure will remain almost constant, any pump degradation due to changes in delta-P would solely be dependent on discharge pressure.

Alternate Test: Discharge pressure will be recorded and trended as an indication of pump performance in 2OST-36.1 and 36.2.

RELIEF REQUEST 6

Pump Mark No(s).:

2QSS*P24A
2QSS*P24B

Code Test Requirement: Measure pump suction pressure, ΔP and flow.

Basis for Relief: The function of these pumps is to provide a NaOH water solution to the suction of the quench spray pumps during an accident. Since these pumps are rotary positive displacement pumps, 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 (at greater than or equal to the pressure at which the pumps are required to perform their safety function) and flow rate will be utilized for evaluating pump performance in 2OST-13.10A and 2OST-13.10B.

RELIEF REQUEST 7

Pump Mark No(s).:

2CCP*P21A
2CCP*P21B
2CCP*P21C

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 Primary Component Cooling Water (CCP) System flow is dependent on the Service Water System and on seasonal Ohio River water temperatures due to the design of the CCP temperature control system. During Primary Component Cooling Pump testing, additional flow is obtained by placing the Residual Heat Removal (RHR) System Heat Exchangers into service. The overall amount of flow may vary by several hundred gallons per minute between cool winter months and warm summer months.

In order to increase flow to a reference value during cold winter months, the manual valves at the discharge of the RHR Heat Exchangers would require throttling in the open direction. These valves are located in the reactor containment building which is maintained subatmospheric as required by technical specifications. The subatmospheric condition present a hazardous working environment for station personnel (i.e., requires self-contained breathing apparatus and entry via an airlock into an atmosphere of approximately 9 psia) and is considered inaccessible for surveillance testing. Surveillance testing that requires reactor containment entry is performed at cold shutdown and refueling.

RELIEF REQUEST 7

Basis for Relief:

In order to throttle flow to a reference value during warm summer months, a manual valve at the discharge of the pumps needs to be used since the RHR Heat Exchanger throttle valves are located inside containment. Operating experience has shown that any throttling of the pump discharge 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 resulting in low flow alarms. This could result in heatup of the Reactor Coolant Pumps to near required manual pump trip setpoints which could ultimately result in a plant trip. In addition, the added thermal cycling of these coolers for pump testing could prematurely degrade 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, requested 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 seasonal temperatures per 2OST-15.1, 2OST-15.2 and 2OST-15.3 each quarter. Since normal flow varies based on Component Cooling Water System requirements due to Service Water System and seasonal Ohio River water temperatures, 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.

RELIEF REQUEST 8

Pump Mark No(s).:

2SWS*P21A
2SWS*P21B
2SWS*P21C

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: Operating experience has shown that plant conditions due to heat loads requiring cooling by the Service Water System may preclude returning the Service Water Pumps to the exact flowrate or differential pressure during pump surveillance testing. The Service Water System is dependent on seasonal Ohio River water temperatures and flow may vary from approximately 6,000 gpm in the cool winter months to approximately 12,000 gpm in the warm summer months.

In order to increase flow to a reference value during cold winter months, idle heat exchangers would need to be placed into service or additional flow would be needed through heat exchangers already in service. Increased cooling flow through primary and secondary component cooling and chiller unit heat exchangers already in service could result in a thermal transient and a potential plant trip. Clean heat exchangers may require placement into service prematurely if additional flow is required to return to a reference value. Idle heat exchangers are normally held in reserve following cleaning to improve plant reliability and safety until one of the inservice heat exchangers becomes fouled.

In order to throttle flow to a reference value during warm summer months, any inservice primary and secondary component cooling and chiller unit heat exchangers would need flow reduced or isolated which could interrupt flow of cooling water to Train A or Train B cooling loads resulting in a thermal transient and potential plant trip. In addition, the added thermal cycling due to placement and/or removal of heat exchangers from service for pump testing could prematurely degrade the heat exchangers.

RELIEF REQUEST 8

Basis for Relief:

The thermal transients created by increasing or throttling Service Water System flow to the turbine plant cooling loads raises operational concerns of stability problems. Changes in oil temperature from the turbine generator lube oil system create vibration problems. Changes in the Hydrogen gas cooler temperatures could imply problems or mask real problems with the generator. Chiller unit heat exchanger flow disturbances ofter result in a trip of the chiller unit causing reactor containment temperature risks of exceeding the technical specification limit.

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, requested 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 Service Water System loads per 2OST-30.2, 2OST-30.3, and 2OST-30.6 each quarter. Since normal flow varies based on Service Water System requirements due to seasonal Ohio River water temperatures, 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 2, is based on subsection IWV - Inservice Testing of Valves of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 edition through the summer 1983 addenda (the code) and Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs". The valves included in this section are all ASME "Class 1, 2, or 3 valves (and their actuating and position indicating systems) which are required to perform a specific function in shutting down the reactor to cold shutdown or in mitigating the consequences of an accident" at BVPS, Unit 2.

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 timing 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 supercede 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 two (2) second limit for valves with stroke times under one (1) second. (rapid-acting valves)
4. The average of past stroke times plus 100% for valves with stroke times less than or equal to ten (10) seconds.

5. The average of past stroke times plus 50% for valves with stroke times greater than ten (10) seconds.

6. The design time listed in the UFSAR.

In addition, Category A valves are leak rate tested at the same (or greater) frequency as scheduled refueling outages, not to exceed every two years. If the leak rate exceeds the allowable limit, the valve will be repaired or replaced.

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

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

Check valves will be exercised to the position required to fulfill their function every three months, unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the check valve will be part-stroke exercised at power and full-stroke exercised every cold shutdown, not to exceed more than once every three months. Check valves that are normally open during plant operation and whose function is to prevent reversed flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Check valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated, or when a mechanical opening force is applied to the disk.

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

1. If the inoperable check valve is specifically identified in the technical specifications, then the applicable technical specification action statements must be followed.

2. If the inoperable check valve is in a system covered by a technical specification, an assessment of its condition must be made to determine if it makes the system inoperable. If the condition of the check valve renders the system inoperable, then the applicable system technical specification action statements must be followed.

3. Corrective action (ie., MWR) shall be initiated immediately for the check valve's repair or replacement.

4. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supercede 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 Beaver Valley Power Station, Unit 2.

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

Table IWV-3700-1
INSERVICE TEST QUANTITIES (1)

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

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

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

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

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

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

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

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

A. The "Valve Testing Outlines" section is a listing of all the valves in the IST Program, their class, category, size, type, NSA, drawing number and coordinates, testing requirements, specific cold shutdown justification reference numbers, relief request reference numbers, and test procedure numbers and comments.

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

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

   AOV - Air Operated Valve
   FCV - Flow Control Valve
   HCV - Hand Control Valve
   HYV - Hydraulic Valve
   LCV - Level Control Valve
   MOD - Motor Operated Damper
   MOV - Motor Operated Valve
   PCV - Pressure Control Valve
   RV - Relief Valve
   SOV - Solenoid Operated Valve
   SV - Safety Valve
   DMP - Damper (Manual)

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
   SS - Sealed 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:

   2OM - Operating Manual (Unit 2)
   2BVT - Beaver Valley Test (Unit 2)
   2OST - Operating Surveillance Test (Unit 2)
   CMP - Corrective Maintenance Procedure
   CSD - Cold Shutdown Frequency
   R - Refueling Frequency
   SA - Semiannually Frequency
   Q - Quarterly Frequency
   M - Monthly 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.

   Beaver Valley Unit 2 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-2 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.			
2RCS*68	2	A/C	2 ½	Check		6-2	E-2	QS	CSJ1	2OST-1.10 FS,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2RCS*72	2	A/C	3	Check		6-2	F-2	QS	CSJ2	2OST-1.10 FS,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2RCS*RV100	2	A/C	¾	Relief		6-2	G-2	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2RCS*AOV101	2	A	¾	Globe	S	6-2	E-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2RCS*SOV200A	1	B	1	Globe	S	6-2	E-6	QST	RR29,RR30	2OST-6.9 Stroke & Time Open/Closed (R) (RPV)
2RCS*SOV200B	1	B	1	Globe	S	6-2	F-6	QST	RR29,RR30	2OST-6.9 Stroke & Time Open/Closed (R) (RPV)
2RCS*SOV201A	1	B	1	Globe	S	6-2	E-6	QST	RR29,RR30	2OST-6.9 Stroke & Time Open/Closed (R) (RPV)
2RCS*SOV201B	1	B	1	Globe	S	6-2	F-6	QST	RR29,RR30	2OST-6.9 Stroke & Time Open/Closed (R) (RPV)
2RCS*HCV250A	2	B	1	Globe	S	6-2	G-6	QST	RR29	2OST-6.9 Stroke & Time Open/Closed (R) (RPV)
2RCS*HCV250B	2	B	1	Globe	S	6-2	G-6	QST	RR29	2OST-6.9 Stroke & Time Open/Closed (R) (RPV)
2RCS*PCV455C	1	B	3	Globe	A	6-1	F-1	QST	CSJ4,RR30	2OST-6.8 Stroke & Time Open (CSD) (RPV)
2RCS*PCV455D	1	B	3	Globe	A	6-1	F-1	QST	CSJ4,RR30	2OST-6.8 Stroke & Time Open (CSD) (RPV)
2RCS*PCV456	1	B	3	Globe	A	6-1	E-1	QST	CSJ4,RR30	2OST-6.8 Stroke & Time Open (CSD) (RPV)

BVPS-2 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.			
2RCS*AOV519	2	A	3	Globe	S	6-2	F-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2RCS*MOV535	1	B	1	Gate	O	6-1	F-2	QST		2OST-6.6 Stroke & Time Open/Closed (Q) (RPV)
2RCS*MOV536	1	B	1	Gate	O	6-1	E-2	QST		2OST-6.6 Stroke & Time Open/Closed (Q) (RPV)
2RCS*MOV537	1	B	1	Gate	O	6-1	F-2	QST		2OST-6.6 Stroke & Time Open/Closed (Q) (RPV)
2RCS*RV551A	1	C	6x6	Relief		6-1	D-3	SPT		2BVT 1.60.5 (R)
2RCS*RV551B	1	C	6x6	Relief		6-1	D-3	SPT		2BVT 1.60.5 (R)
2RCS*RV551C	1	C	6x6	Relief		6-1	D-4	SPT		2BVT 1.60.5 (R)

BVPS-2 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 Request	Comments
						OM No.	Coord.			
2CHS*22	2	C	3	Check		7-1	C-8	QS		2OST-7.4-PS,FD (Q)
								QS		2OST-7.5(6)-FS,RD (Q)
								QS	RF-1	2OST-11.14-FS,FD (R)
2CHS*23	2	C	3	Check		7-1	C-10	QS		2OST-7.5-PS,FD (Q)
								QS		2OST-7.4(6)-FS,RD (Q)
								QS	RR3	2OST-11.14-FS,FD (R)
2CHS*24	2	C	3	Check		7-1	C-9	QS		2OST-7.6-PS,FD (Q)
								QS		2OST-7.4(5)-FS,RD (Q)
								QS	RR3	2OST-11.14-FS,FD (R)
2CHS*31	2	A/C	3	Check		7-1	B-6	QS	CSJ5	2OST-1.10-FS,RD by Mechanical Exerciser (CSD)
								LT		2BVT-1.47.11-Leak Test (R)
2CHS*75	3	C	2	Check		7-2	B-3	QS		2OST-7.1-FS,FD (Q)
2CHS*76	3	C	2	Check		7-2	F-3	QS		2OST-7.2-FS,FD (Q)
2CHS*84	3	C	2	Check		7-2	E-7	QS	CSJ7	2OST-7.13-FS,FD (CSD)
2CHS*FCV113A	3	B	2	Globe	A	7-2	E-7	QST		2OST-47.3A(3B)-Stroke & Time Open (Q),(RPV)
2CHS*LCV115B	2	A	8	Gate	A	7-1	F-8	QST		2OST-47.3A(3B)-Stroke & Time Open (Q),(RPV)
								LT		2BVT-1.47.11-Leak Test (R)

BVPS-2 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.			
2CHS*LCV115C	2	B	4	Gate	A	7-1	G-7	QST	CSJ6	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
2CHS*LCV115D	2	A	8	Gate	A	7-1	F-10	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*LCV115E	2	B	4	Gate	A	7-1	G-7	QST	CSJ6	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
2CHS*136	2	C	2	Check		7-2	E-8	QS	CSJ7	2OST-7.13 FS,FD (CSD)
2CHS*141	2	C	2	Check		7-2	F-9	QS	CSJ7	2OST-7.13 FS,FD (CSD)
2CHS*HCV142	2	A	2	Globe	S	7-1	F-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2CHS*152	2	C	2	Check		7-1	B-7	QS		2OST-7.4 FS,FD (Q)
2CHS*153	2	C	2	Check		7-1	D-7	QS		2OST-7.5 FS,FD (Q)
2CHS*154	2	C	2	Check		7-1	D-7	QS		2OST-7.6 FS,FD (Q)
2CHS*FCV160	2	A/P	2	Globe	S	7-1	B-7	POS		2OST-47.3A(3B) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*RV160	2	C	¼x1	Relief		7-1	A-7	SPT		2BVT 1.60.5 (R)
2CHS*AOV200A	2	A	2	Globe	S	7-1	B-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR2, RR24	2BVT 1.47.5 Leak Test (R)

BVPS-2 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.			
2CHS*AOV200B	2	A	2	Globe	O	7-1	D-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR2, RR24	2BVT 1.47.5 Leak Test (R)
2CHS*AOV200C	2	A	2	Globe	S	7-1	E-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR2, RR24	2BVT 1.47.5 Leak Test (R)
2CHS*RV203	2	A/C	2x3	Relief		7-1	E-1	SPT		2BVT 1.60.5 (R)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2CHS*AOV204	2	A	2	Globe	O	7-1	G-2	QST	CSJ8	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2CHS*SOV206	2	B	1	Globe	S	7-2	E-8	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2OST-7.13 (RPV)
2CHS*RV260A	2	C	¾x1	Relief		7-3	B-4	SPT		2BVT 1.60.5 (R)
2CHS*RV260B	2	C	¾x1	Relief		7-3	E-3	SPT		2BVT 1.60.5 (R)
2CHS*RV260C	2	C	¾x1	Relief		7-3	G-4	SPT		2BVT 1.60.5 (R)
2CHS*MOV275A	2	B/P	2	Globe	O	7-1	F-6	POS		2OST-47.3B (RPV)
2CHS*MOV275B	2	B/P	2	Globe	O	7-1	F-7	POS		2OST-47.3B (RPV)
2CHS*MOV275C	2	B/P	2	Globe	O	7-1	F-7	POS		2OST-47.3B (RPV)
2CHS*MOV289	2	A	3	Gate	O	7-1	B-6	QST	CSJ9	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)

BVPS 2 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.			
2CHS*MOV308A	2	A	2	Gate	O	7-3	B-3	QST	CSJ10	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*MOV308B	2	A	2	Gate	O	7-3	D-3	QST	CSJ10	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*MOV308C	2	A	2	Gate	O	7-3	G-3	QST	CSJ10	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*MOV310	2	B	3	Gate	O	7-1	A-9	QST	CSJ11	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
2CHS*MOV350	2	B	2	Globe	S	7-2	F-8	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2CHS*MOV373	2	B/P	3	Gate	O	7-3	F-10	POS		2OST-1.10 (RPV)
2CHS*MOV378	2	A	3	Gate	O	7-3	E-8	QST	CSJ13	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR23	2BVT 1.47.5 Leak Test (R)
2CHS*MOV381	2	A	3	Gate	O	7-3	F-8	QST	CSJ13	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2CHS*RV382A	2	C	2x3	Relief		7-3	C-8	SPT		2BVT 1.60.5 (R)
2CHS*RV382B	2	C	2x3	Relief		7-3	E-10	SPT		2BVT 1.60.5 (R)
2CHS*LCV460A	1	B	2	Globe	O	7-1	A-1	QST	CSJ14	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
2CHS*LCV460B	1	B	2	Globe	O	7-1	A-3	QST	CSJ14	2OST-1.10 Stroke & Time Closed (CSD) (RPV)

BVPS 2 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.			
2CHS*472	2	A/C/P	2½	Check		7-1	B-7	LT		2BVT 1.47.11 Leak Test (R)
2CHS*473	2	A/C	2½	Check		7-3	E-8	QS	CSJ15	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1,RR23	2BVT 1.47.5 Leak Test (R)
2CHS*474	2	A/C	2½	Check		7-3	B-4	QS	CSJ16	2OST-1.10 FS,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*475	2	A/C	2½	Check		7-3	G-4	QS	CSJ16	2OST-1.10 FS,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*476	2	A/C	2½	Check		7-3	D-4	QS	CSJ16	2OST-1.10 FS,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11 Leak Test (R)
2CHS*MOV8130A	2	B	8	Gate	LO	7-1	E-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8130B	2	B	8	Gate	LO	7-1	E-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8131A	2	B	8	Gate	LO	7-1	E-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8131B	2	B	8	Gate	LO	7-1	E-10	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8132A	2	B	4	Gate	LO	7-1	C-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8132B	2	B	4	Gate	LO	7-1	C-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8133A	2	B	4	Gate	LO	7-1	C-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2CHS*MOV8133B	2	B	4	Gate	LO	7-1	C-9	QST	CSJ17	2OST-1.10 Stroke & Time Closed (CSD),(RPV)

BVPS-2 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 OM No.	Drawing Coord.	Test Requirement	CSJ or Relief Requests	Comments
2CHS*RV8144	2	C	¾x1	Relief		7-1	A-5	SPT		2BVT 1.60.5 (R)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Vents and Drains (Aerated Drains) **SYSTEM NUMBER:** 9

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						Dwg No.	Coord.			
2DAS*AOV100A	2	A	2	Globe	O	9-1	F-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2DAS*AOV100B	2	A	2	Globe	O	9-1	F-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2DAS*RV110	2	A/C	1⅛x2⅛	Relief		9-1	F-3	ST		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Vents and Drains (Hydrogenated Drains) **SYSTEM NUMBER:** 9

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing OM No.	Drawing Coord.	Test Requirement	CSJ or Relief Requests	Comments
2DGS*AOV108A	2	A	2	Globe	O	9-1	F-10	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2DGS*AOV108B	2	A	2	Globe	O	9-1	E-10	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5-Leak Test (R)
2DGS*RV115	2	A/C	1½x2	Relief		9-1	E-9	ST		2BVT 1.60.5-(R)
								LT	RR1,RR28	2BVT 1.47.5-Leak Test (R)

SVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Reactor Plant Vents and Drains (Hydrogenated Gaseous Vents) **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.			
2VRS*AOV109A1	2	A	1½	Globe	O	9-1	C-9	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2VRS*AOV109A2	2	A	1½	Globe	O	9-1	C-9	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Residual Heat Removal **SYSTEM NUMBER:** 19

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	CSJ or Relief Request	Comments
						OM No.	Coord.			
2RHS*3	2	C	10	Check		10-1	B-3	QS	CSJ18	2OST-19.3-FS,RD (CSD)
								QS	CSJ18	2OST-19.1-FS,FD (CSD)
2RHS*4	2	C	10	Check		10-1	E-3	QS	CSJ18	2OST-19.4-FS,RD (CSD)
								QS	CSJ18	2OST-19.2-FS,FD (CSD)
2RHS*15	2	A/P	6	Globe	LS	10-1	D-8	LT	RR1,RR2, RR28	2BVT 1.47.5 Leak Test (R)
2RHS*RV100	2	A/C	¾x1	Relief		10-1	D-8	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR2, RR28	2BVT 1.47.5 Leak Test (R)
2RHS*107	2	A/P	6	Globe	LS	10-1	D-7	LT	RR1,RR2	2BVT 1.47.5 Leak Test (R)
2RHS*FCV605A	2	B	8	Butterfly	T	10-1	B-5	QST	CSJ19	2OST-10.3 Stroke, Time & Fail Closed (CSD), (RPV)
2RHS*FCV605B	2	B	8	Butterfly	T	10-1	F-5	QST	CSJ19	2OST-10.4 Stroke, Time & Fail Closed (CSD), (RPV)
2RHS*MOV701A	1	A	12	Gate	S	10-1	C-1	QST	CSJ20	2OST-10.3 Stroke & Time Closed (CSD), (RPV)
								LT		2OST-10.5 Leak Test (R)
2RHS*MOV701B	1	A	12	Gate	S	10-1	D-1	QST	CSJ20	2OST-10.4 Stroke & Time closed (CSD), (RPV)
								LT		2OST-10.5 Leak Test (R)
2RHS*MOV702A	1	A	12	Gate	S	10-1	C-1	QST	CSJ20	2OST-10.3 Stroke & Time Closed (CSD), (RPV)
								LT		2OST-10.5 Leak Test (R)

BVPS-2 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.			
2RHS*MOV702B	1	A	12	Gate	S	10-1	D-1	QST	CSJ20	2OST-10.4 Stroke & Time Closed (CSD) (RPV)
								LT		2OST-10.5 Leak Test (R)
2RHS*MOV720A	1	A	10	Gate	S	10-1	C-8	QST	CSJ20	2OST-10.3 Stroke & Time Closed (CSD) (RPV)
								LM		Continuously Monitored by 2OM-54 Station Log LS-120
2RHS*MOV720B	1	A	10	Gate	S	10-1	F-8	QST	CSJ20	2OST-10.4 Stroke & Time Closed (CSD) (RPV)
								LM		Continuously Monitored by 2OM-54 Station Log LS-120
2RHS*RV721A	2	C	3x4	Relief		10-1	C-1	SPT		2BVT 1.60.5 (R)
2RHS*RV721B	2	C	3x4	Relief		10-1	E-1	SPT		2BVT 1.60.5 (R)
2RHS*HCV758A	2	B	10	Butterfly	T	10-1	D-5	QST	CSJ21	2OST-10.3 Stroke, Time & Fail Open (CSD) (RPV)
2RHS*HCV758B	2	B	10	Butterfly	T	10-1	F-5	QST	CSJ21	2OST-10.4 Stroke, Time & Fail Open (CSD) (RPV)

BVPS-2 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.			
2SIS*6	2	A/C	10	Check		11-1	E-4	QS		2OST-11.2 FS,RD (Q)
								QS	RR4	2OST-11.14 FS,FD (R)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*7	2	A/C	10	Check		11-1	G-4	QS		2OST-11.1 FS,RD (Q)
								QS	RR4	2OST-11.14 FS,FD (R)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*27	2	A/C	8	Check		11-1	F-1	QS	RR5	2OST-1.10 PS,FD (CSD)
								QS	RR5	2OST-11.14 FS,FD (R)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*41	2	A/P	1	Globe	S	11-2	C-2	LT	RR1,RR29	2BVT 1.47.5 Leak Test (R)
2SIS*42	2	A/C	2½	Check		11-2	E-2	QS	CSJ22	2OST-1.10 FS,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2SIS*46	2	C	10	Check		11-1	F-5	QS	CSJ53	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
2SIS*47	2	C	10	Check		11-1	D-5	QS	CSJ53	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
2SIS*83	2	A/C	3	Check		11-1	A-4	QS	CSJ23	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11 Leak Test (R)

BVPS-2 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.			
2SIS*84	2	A/C	3	Check		11-1	B-4	QS	CSJ23	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11-Leak Test (R)
2SIS*94	2	A/C	3	Check		11-1	D-6	QS	CSJ23	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11-Leak Test (R)
2SIS*95	2	A/C	3	Check		11-1	C-6	QS	CSJ23	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2BVT 1.47.11-Leak Test (R)
2SIS*107	1	A/C	6	Check		11-1	G-9	QS	RR6	2OST-11.14 FS,FD (R)
								LT		2OST-11.16 Leak Test (R)
2SIS*108	1	A/C	6	Check		11-1	E-9	QS	RR6	2OST-11.14 FS,FD (R)
								LT		2OST-11.16 Leak Test (R)
2SIS*109	1	A/C	6	Check		11-1	F-9	QS	RR6	2OST-11.14 FS,FD (R)
								LT		2OST-11.16 Leak Test (R)
2SIS*122	1	C	2	Check		11-1	A-7	QS	RR7	2OST-11.14 FS,FD (R)
2SIS*123	1	C	2	Check		11-1	A-7	QS	RR7	2OST-11.14 FS,FD (R)
2SIS*124	1	C	2	Check		11-1	A-7	QS	RR7	2OST-11.14 FS,FD (R)
2SIS*125	1	C	2	Check		11-1	B-7	QS	RR7	2OST-11.14 FS,FD (R)
2SIS*126	1	C	2	Check		11-1	B-7	QS	RR7	2OST-11.14 FS,FD (R)

BVPS-2 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.			
2SIS*127	1	C	2	Check		11-1	B-7	QS	RR7	2OST-11.14 FS,FD (R)
2SIS*128	1	A/C	6	Check		11-1	B-8	QS	RR8	2OST-11.14 FS,FD (R)
								LT		2OST-11.16 Leak Test (R)
2SIS*129	1	A/C	6	Check		11-1	B-10	QS	RR8	2OST-11.14 FS,FD (R)
								LT		2OST-11.16 Leak Test (R)
2SIS*130	2	A/C	10	Check		11-1	F-9	QS	CSJ24	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2BVT-1.47.11 Leak Test (R)
2SIS*RV130	2	A/C	¾x1	Relief		11-2	D-2	SPT		2BVT-1.60.5 (R)
								LT	RR1,RR28	2BVT-1.47.5 Leak Test (R)
2SIS*132	2	A/C	10	Check		11-1	F-9	QS	CSJ24	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2OST-11.16 Leak Test (R)
2SIS*133	2	A/C	10	Check		11-1	E-9	QS	CSJ24	2OST-1.10 FS,FD,RD by Mechanical Exerciser (CSD)
								LT		2OST-11.16 Leak Test (R)
2SIS*134	1	C	2	Check		11-1	C-9	QS	RR9	2OST-11.14 FS,FD (R)
2SIS*135	1	C	2	Check		11-1	D-9	QS	RR9	2OST-11.14 FS,FD (R)
2SIS*136	1	C	2	Check		11-1	D-9	QS	RR9	2OST-11.14 FS,FD (R)
2SIS*137	1	C	2	Check		11-1	C-9	QS	RR9	2OST-11.14 FS,FD (R)

BVPS-2 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.			
2SIS*138	1	C	2	Check		11-1	C-9	QS	RR9	2OST-11.14-FS,FD (R)
2SIS*139	1	C	2	Check		11-1	C-9	QS	RR9	2OST-11.14-FS,FD (R)
2SIS*141	1	A/C	12	Check		6-1	E-6	QS	RR10	2BVT 1.11.3-FS,FD (R)
								LT		2OST-11.4-Leak Test (R)
2SIS*142	1	A/C	12	Check		11-2	F-9	QS	RR10	2BVT 1.11.3-FS,FD (R)
								LT		2OST-11.5-Leak Test (R)
2SIS*145	1	A/C	12	Check		6-1	D-6	QS	RR10	2BVT 1.11.3-FS,FD (R)
								LT		2OST-11.4-Leak Test (R)
2SIS*147	1	A/C	12	Check		11-2	F-7	QS	RR10	2BVT 1.11.3-FS,FD (R)
								LT		2OST-11.5-Leak Test (R)
2SIS*148	1	A/C	12	Check		11-2	F-4	QS	RR10	2BVT 1.11.3-FS,FD (R)
								LT		2OST-11.5-Leak Test (R)
2SIS*151	1	A/C	12	Check		6-1	D-5	QS	RR10	2BVT 1.11.3-FS,FD (R)
								LT		2OST-11.4-Leak Test (R)
2SIS*RV175	2	A/C	¾x1	Relief		11-2	F-1	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR28	2BVT 1.47.5-Leak Test (R)
2SIS*545	1	C	8	Check		11-1	A-9	QS	RR11	2OST-11.14-FS,FD (R)

BVPS 2 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.			
2SIS*546	1	C	6	Check		11-1	A-9	QS	RR11	2OST-11.14-FS,FD (R)
2SIS*547	1	C	6	Check		11-1	A-9	QS	RR11	2OST-11.14-FS,FD (R)
2SIS*548	1	C	6	Check		11-1	A-10	QS	RR12	2OST-11.14-FS,FD (R)
2SIS*550	1	C	6	Check		11-1	A-10	QS	RR12	2OST-11.14-FS,FD (R)
2SIS*552	1	C	6	Check		11-1	A-10	QS	RR12	2OST-11.14-FS,FD (R)
2SIS*MOV836	2	A	3	Gate	S	11-1	D-5	QST	CSJ25	2OST-1.10 Stroke & Time Open/Closed (CSD) (RPV)
								LT		2BVT 1.47.11-Leak Test (R)
2SIS*MOV840	2	A	1	Globe	S	11-1	C-5	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT		BVT 1.47.11-Leak Test (R)
2SIS*MOV841	2	B	3	Gate	O	11-1	B-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SIS*MOV842	2	A	2	Globe	S	11-2	F-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2SIS*RV858A	2	C	1x2	Relief		11-2	D-4	SPT		2BVT 1.60.5 (R)
2SIS*RV858B	2	C	1x2	Relief		11-2	D-7	SPT		2BVT 1.60.5 (R)
2SIS*RV858C	2	C	1x2	Relief		11-2	D-10	SPT		2BVT 1.60.5 (R)
2SIS*MOV863A	2	B	8	Gate	S	11-1	D-7	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2SIS*MOV863B	2	B	8	Gate	S	11-1	F-6	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Safety Injection **SYSTEM NUMBER:** 11

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	ASA	Drawing		Test Requirement	CSJ or Relief Requests	Comments
						OM No.	Coord.			
2SIS*MOV865A	2	B/P	12	Gate	O	11-2	F-4	POS		2OM-54 Log LS-35 Position Verified 2BVT 1.11.3 (RPV)
2SIS*MOV865B	2	B/P	12	Gate	O	11-2	F-6	POS		2OM-54 Log LS-35 Position Verified 2BVT 1.11.3 (RPV)
2SIS*MOV865C	2	B/P	12	Gate	O	11-2	F-9	POS		2OM-54 Log LS-35 Position Verified 2BVT 1.11.3 (RPV)
2SIS*MOV867A	2	B	3	Gate	S	11-1	B-2	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2SIS*MOV867B	2	B	3	Gate	S	11-1	C-2	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2SIS*MOV867C	2	A	3	Gate	S	11-1	C-6	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*MOV867D	2	A	3	Gate	S	11-1	C-5	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*HCV868A	2	B	1	Globe	S	11-1	D-5	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) 2OST-11.14 (RPV)
2SIS*HCV868B	2	B	1	Globe	S	11-1	B-3	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) 2OST-11.14 (RPV)
2SIS*MOV869A	2	A	3	Gate	S	11-1	A-3	QST	CSJ26	2OST-1.10 Stroke & Time Open/Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*MOV869B	2	A	3	Gate	S	11-1	B-3	QST	CSJ26	2OST-1.10 Stroke & Time Open/Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*AOV889	2	A	3/4	Globe	S	11-2	F-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)

BVPS-2 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.			
2SIS*894	2	C	4	Check		11-1	E-3	QS		2OST-11.1-FS,FD (Q)
								QS		2OST-11.2-FS,FD (Q)
2SIS*895	2	C	4	Check		11-1	F-4	QS		2OST-11.2-FS,FD (Q)
								QS		2OST-11.1-FS,RD (Q)
2SIS*MOV8809A	2	A	14	Gate	O	11-1	E-1	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
								LT		2BVT 1.47.11-Leak Test (R)
2SIS*MOV8809B	2	A	14	Gate	O	11-1	G-1	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
								LT		2BVT 1.47.11-Leak Test (R)
2SIS*MOV8811A	2	B	10	Gate	S	11-1	E-5	QST		2OST-47.3A(3B)-Stroke & Time Open (Q) (RPV)
2SIS*MOV8811B	2	B	10	Gate	S	11-1	F-5	QST		2OST-47.3A(3B)-Stroke & Time Open (Q) (RPV)
2SIS*RV8804A	2	C	¾x1	Relief		11-1	F-7	SPT		2BVT 1.60.5-(R)
2SIS*RV8804B	2	C	¾x1	Relief		11-1	G-6	SPT		2BVT 1.60.5-(R)
2SIS*RV8805	2	C	¾x1	Relief		11-1	F-7	SPT		2BVT 1.60.5-(R)
2SIS*MOV8887A	2	B	10	Gate	O	11-1	F-7	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
2SIS*MOV8887B	2	B	10	Gate	O	11-1	F-8	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
2SIS*MOV8888A	2	A	10	Gate	O	11-1	E-8	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q) (RPV)
								LT		2BVT 1.47.11-Leak Test (R)

BVPS-2 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.			
2SIS*MOV8888B	2	A	10	Gate	O	11-1	G-8	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*MOV8889	2	A	10	Gate	S	11-1	F-8	QST	CSJ27	2OST-1.10 Stroke & Time Open/Closed (CSD) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*MOV8890A	2	A	4	Gate	S	11-1	F-4	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)
2SIS*MOV8890B	2	A	4	Gate	S	11-1	F-4	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
								LT		2BVT 1.47.11 Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Safety Injection (Gaseous Nitrogen) **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.			
2GNS*AOV101-1	2	A	1	Globe	O	11-2	C-3	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) 2BVT 1.11.3 (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2GNS*AOV101-2	2	A	1	Globe	O	11-2	C-3	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) 2BVT 1.11.3 (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2GNS*SOV853A	2	B	1	Globe	S	11-2	D-4	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV853B	2	B	1	Globe	S	11-2	C-6	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV853C	2	B	1	Globe	S	11-2	C-9	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV853D	2	B	1	Globe	S	11-2	C-4	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV853E	2	B	1	Globe	S	11-2	C-6	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV853F	2	B	1	Globe	S	11-2	D-9	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV854A	2	B	1	Globe	S	11-2	C-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)
2GNS*SOV854B	2	B	1	Globe	S	11-2	D-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open (Q) 2BVT 1.11.3 (RPV)

BVPS 2 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.			
2CVS*93	2	A/C	1	Check		12-1	E-2	QS	RR13	2BVT 1.47.5-FS.RD by Leak Test (R)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2CVS*SOV102	2	A	1	Globe	O	12-1	E-3	QST	CSJ52,RR30	2OST-1.10-Stroke & Time Open/Closed (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)
2CVS*151	2	A/P	8	Butterfly	LS	12-1	A-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2CVS*151-1	2	A/P	8	Butterfly	LS	12-1	A-	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2CVS*SOV151A	2	A	2	Globe	O	12-1	C-4	QST	RR30	2OST-47.3A(3B)-Stroke & Time Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)
2CVS*SOV151B	2	A	2	Globe	O	12-1	D-4	QST	RR30	2OST-47.3A(3B)-Stroke & Time Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)
2CVS*SOV152A	2	A	2	Globe	O	12-1	C-5	QST	RR30	2OST-47.3A(3B)-Stroke & Time Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)
2CVS*SOV152B	2	A	2	Globe	O	12-1	D-4	QST	RR30	2OST-47.3A(3B)-Stroke & Time Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)
2CVS*SOV153A	2	A	1	Globe	O	12-1	F-3	QST	CSJ52,RR30	2OST-1.10-Stroke & Time Closed (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)

BVPS-2 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.			
2CVS*SOV153B	2	A	1	Globe	O	12-1	F-2	QST	CSJ52,RR30	2OST-1.10 Stroke & Time Closed (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R),(RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Leakage Monitoring **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.			
2LMS*51	2	A/P	⅜	Gate	SS	12-2	E-6	LT	RR1	2BVT 1.47.5-Leak Test (R)
2LMS*52	2	A/P	⅜	Gate	SS	12-2	E-6	LT	RR1	2BVT 1.47.5-Leak Test (R)
2LMS*SOV950	2	B	¾	Globe	O	12-1	F-9	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OM-12.4.A-(RPV)
2LMS*SOV951	2	B	¾	Globe	O	12-1	E-9	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OM-12.4.A-(RPV)
2LMS*SOV952	2	B	¾	Globe	O	12-1	C-9	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OM-12.4.A-(RPV)
2LMS*SOV953	2	B	¾	Globe	O	12-1	B-9	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OM-12.4.A-(RPV)

BVPS-2 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.			
2QSS*3	2	A/C	10	Check		13-2	E-10	QS	CSJ28	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2QSS*4	2	A/C	10	Check		13-2	C-9	QS	CSJ28	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2QSS*MOV100A	2	B	12	Gate	O	13-2	A-8	QST		2OST-47.3A(3B)-Stroke & Time Open (Q),(RPV)
2QSS*MOV100B	2	B	12	Gate	O	13-2	G-8	QST		2OST-47.3A(3B)-Stroke & Time Open (Q),(RPV)
2QSS*SOV100A	2	A	2	Globe	S	13-2	D-7	QST	CSJ29,RR30	2OST-1.10-Strike & Time Open/Closed (CSD)
								LT	RR1,RR27	2BVT 1.47.5-Leak Test (R),(RPV)
2QSS*SOV100B	2	A	2	Globe	S	13-2	E-7	QST	CSJ29,RR30	2OST-1.10-Stroke & Time Open/Closed (CSD)
								LT	RR1,RR27	2BVT 1.47.5-Leak Test (R),(RPV)
2QSS*MOV101A	2	A	10	Gate	O	13-2	C-9	QST		2OST-47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2QSS*MOV101B	2	A	10	Gate	O	13-2	D-9	QST		2OST-47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2QSS*RV101A	2	A/C	¼x1	Relief		13-2	C-9	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)

BVPS-2 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.			
2QSS*RV101B	2	A/C	¾x1	Relief		13-2	E-9	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2QSS*SOV101A	2	B	2	Globe	O	13-2	D-7	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OST-13.10A-(RPV-Open) 2BVT 1.47.5-(RPV-Closed)
2QSS*SOV101B	2	B	2	Globe	O	13-2	E-7	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OST-13.10B-(RPV-Open) 2BVT 1.47.5-(RPV-Closed)
2QSS*MOV102A	2	B	6	Gate	S	13-2	B-5	QST	CSJ57	2OST-1.10-Stroke & Time Open (CSD)-(RPV)
2QSS*MOV102B	2	B	6	Gate	S	13-2	E-5	QST	CSJ57	2OST-1.10-Stroke & Time Open (CSD)-(RPV)
2QSS*RV102A	2	C	1½x2	Relief		13-2	C-6	SPT		2BVT 1.60.5-(R)
2QSS*RV102B	2	C	1½x2	Relief		13-2	E-9	SPT		2BVT 1.60.5-(R)
2QSS*SOV102A	2	B	2	Globe	O	13-2	D-7	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OST-13.10A-(RPV-Open) 2BVT 1.47.5-(RPV-Closed)
2QSS*SOV102B	2	B	2	Globe	O	13-2	E-7	QST	RR30	2OST-47.3A(3B)-Stroke & Time Open/Closed (Q) 2OST-13.10B-(RPV-Open) 2BVT 1.47.5-(RPV-Closed)
2QSS*AOV120A	2	B	6	Globe	O	13-2	D-3	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q)-(RPV)
2QSS*AOV120B	2	B	6	Globe	O	13-2	D-3	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q)-(RPV)
2QSS*227	2	C	2	Check		13-2	C-6	QS		2OST-13.10A-FS-FD (Q)
								QS		2OST-13.10B-FS-RD (Q)
2QSS*228	2	C	2	Check		13-2	D-6	QS		2OST-13.10B-FS-FD (Q)
								QS		2OST-13.10A-FS-RD (Q)

BVPS-2 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.			
2QSS*267	2	A/C	2½	Check		13-2	C-9	QS	CSJ30	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2QSS*303	2	C	2	Check		13-2	A-8	QS		2OST-13.10A-FS,FD (Q)
								QS	CSJ34	2OST-1.10-FS,RD (CSD)
2QSS*304	2	C	2	Check		13-2	F-8	QS		2OST-13.10B-FS,FD (Q)
								QS	CSJ34	2OST-1.10-FS,RD (CSD)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Containment Depressurization (Recirculation 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.			
2RSS*29	2	C	12	Check		13-1	B-2	QS	CSJ31	2OST-1.10-FS,FD by Mechanical Exerciser (CSD)
2RSS*30	2	C	12	Check		13-1	B-9	QS	CSJ31	2OST-1.10-FS,FD by Mechanical Exerciser (CSD)
2RSS*31	2	C	12	Check		13-1	B-4	QS	CSJ31	2OST-1.10-FS,FD by Mechanical Exerciser (CSD)
2RSS*32	2	C	12	Check		13-1	B-7	QS	CSJ31	2OST-1.10-FS,FD by Mechanical Exerciser (CSD)
2RSS*RV101C	2	C	¾x1	Relief		13-1	C-4	SPT		2BVT 1.60.5-(R)
2RSS*RV101D	2	C	¾x1	Relief		13-1	C-7	SPT		2BVT 1.60.5-(R)
2RSS*MOV154C	2	B	3	Gate	S	13-1	C-4	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q)
2RSS*MOV154D	2	B	3	Gate	S	13-1	C-7	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q)
2RSS*MOV155A	2	B	12	Butterfly	O	13-1	G-4	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV155B	2	B	12	Butterfly	O	13-1	G-7	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV155C	2	B	12	Butterfly	O	13-1	F-5	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV155D	2	B	12	Butterfly	O	13-1	F-6	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV156A	2	B	12	Gate	O	13-1	B-2	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV156B	2	B	12	Gate	O	13-1	B-9	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV156C	2	B	12	Gate	O	13-1	B-4	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*MOV156D	2	B	12	Gate	O	13-1	B-7	QST		2OST 47.3A(3B)-Stroke & Time Open/Closed (Q),(RPV)
2RSS*RV156A	2	C	¾x1	Relief		13-1	B-2	SPT		2BVT 1.60.5-(R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Containment Depressurization (Recirculation Spray) **SYSTEM NUMBER:** 13

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing OM No.	Drawing Coord.	Test Requirement	CSJ or Relief Requests	Comments
2RSS*RV156B	2	C	¾x1	Relief		13-1	B-9	SPT		2BVT 1.60.5-(R)
2RSS*RV156C	2	C	¾x1	Relief		13-1	B-4	SPT		2BVT 1.60.5-(R)
2RSS*RV156D	2	C	¾x1	Relief		13-1	B-7	SPT		2BVT 1.60.5-(R)

BVPS-2 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.			
2SSR*AOV100A1	2	A	¾	Globe	O	14A-1	C-9	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2SSR*AOV100A2	2	A	¾	Globe	O	14A-1	D-9	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*AOV102A1	2	A	¾	Globe	O	14A-2	C-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2SSR*AOV102A2	2	A	¾	Globe	O	14A-2	D-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*AOV109A1	2	A	¾	Globe	O	14A-1	C-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2SSR*AOV109A2	2	A	¾	Globe	O	14A-1	D-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*AOV112A1	2	A	¾	Globe	O	14A-1	C-8	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2SSR*AOV112A2	2	A	¾	Globe	O	14A-1	D-8	QST	RR30	2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*AOV117A	2	B	¾	Globe	O	14A-1	B-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)

BVPS-2 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.			
2SSR*AOV117B	2	B	¾	Globe	O	14A-1	B-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SSR*AOV117C	2	B	¾	Globe	O	14A-1	B-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SSR*RV117	2	A/C	¾x1	Relief		14A-1	D-7	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*RV118	2	A/C	¾x1	Relief		14A-2	C-1	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*RV119	2	A/C	¾x1	Relief		14A-1	D-9	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*RV120	2	A/C	¾x1	Relief		14A-2	C-2	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*RV121	2	A/C	¾x1	Relief		14A-1	D-8	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*RV122	2	A/C	¾x1	Relief		14A-2	C-3	SPT		2BVT 1.60.5 (R)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R)
2SSR*SOV128A1	2	A	¾	Globe	O	14A-2	B-3	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)

BVPS-2 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.			
2SSR*SOV128A2	2	A	¾	Globe	O	14A-2	D-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R),(RPV)
2SSR*SOV129A1	2	A	¾	Globe	O	14A-2	B-4	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R),(RPV)
2SSR*SOV129A2	2	A	¾	Globe	O	14A-2	D-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1,RR28	2BVT 1.47.5 Leak Test (R),(RPV)
2SSR*SOV130A1	2	A	¾	Globe	O	14A-2	B-10	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R),(RPV)
2SSR*SOV130A2	2	A	¾	Globe	O	14A-2	C-10	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R),(RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Post Accident Sample

SYSTEM NUMBER: 14C

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing OM No.	Drawing Coord.	Test Requirement	CSJ or Relief Requests	Comments
2PAS*SOV105A1	2	A	¼	Globe	S	14C-2	A-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R).(RPV)
2PAS*SOV105A2	2	A	¼	Globe	S	14C-2	A-3	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R).(RPV)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Primary 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.			
2CCP*4	3	C	20	Check		15-1	B-5	QS		2OST-15.1-FS,FD,RD (Q)
2CCP*5	3	C	20	Check		15-1	F-5	QS		2OST-15.2-FS,FD,RD (Q)
2CCP*6	3	C	20	Check		15-1	D-5	QS		2OST-15.3-FS,FD,RD (Q)
2CCP*27A	3	B	20	Butterfly	O	15-1	C-6	QS	CSJ54	2OST-1.10-Stroke Only Closed (CSD)
2CCP*27B	3	B	20	Butterfly	O	15-1	E-6	QS	CSJ54	2OST-1.10-Stroke Only Closed (CSD)
2CCP*RV102	2	A/C	¾x1	Relief		15-2	D-4	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2CCP*RV103	2	A/C	¾x1	Relief		15-2	D-5	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2CCP*RV104	2	A/C	¾x1	Relief		15-2	D-4	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2CCP*RV105	2	A/C	¾x1	Relief		15-2	E-4	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2CCP*AOV107A	3	A	2	Globe	O	15-3	C-5	QST	CSJ32	2OST-1.10-Stroke, Time & Fail Closed (CSD),(RPV)
								LT		2BVT 1.60.6-Leak Test (R)
2CCP*AOV107B	3	A	2	Globe	O	15-3	F-5	QST	CSJ32	2OST-1.10-Stroke, Time & Fail Closed (CSD),(RPV)
								LT		2BVT 1.60.6-Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Primary 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.			
2CCP*AOV107C	3	A	2	Globe	O	15-3	F-10	QST	CSJ32	2OST-1.10 Stroke, Time & Fail Closed (CSD) (RPV)
								LT		2BVT 1.60.5 Leak Test (R)
2CCP*MOV112A	3	B	18	Butterfly	S	15-2	D-8	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2CCP*MOV112B	3	B	18	Butterfly	S	15-2	F-9	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2CCP*RV116A	3	C	¾x1	Relief		15-3	C-2	SPT		2BVT 1.60.5 (R)
2CCP*RV116B	3	C	¾x1	Relief		15-3	F-1	SPT		2BVT 1.60.5 (R)
2CCP*RV116C	3	C	¾x1	Relief		15-3	F-6	SPT		2BVT 1.60.5 (R)
2CCP*MOV118	3	B	2	Ball	O	15-2	C-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV119	3	B	2	Ball	O	15-2	C-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV120	3	B	2	Ball	O	15-2	A-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*RV120A	3	C	¾x1	Relief		15-2	C-2	SPT		2BVT 1.60.5 (R)
2CCP*RV140	3	C	¾x1	Relief		15-2	E-7	SPT		2BVT 1.60.5 (R)
2CCP*RV141	3	C	¾x1	Relief		15-2	B-7	SPT		2BVT 1.60.5 (R)
2CCP*MOV150-1	2	A	18	Butterfly	O	15-2	D-4	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR2, RR28	2BVT 1.47.5 Leak Test (R)
2CCP*MOV150-2	2	A	18	Butterfly	O	15-2	D-5	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR2	2BVT 1.47.5 Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Primary 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.			
2CCP*MOV151-1	2	A	18	Butterfly	O	15-2	E-4	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1, RR2, RR28	2BVT 1.47.5 Leak Test (R)
2CCP*MOV151-2	2	A	18	Butterfly	O	15-2	E-5	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1, RR2,	2BVT 1.47.5 Leak Test (R)
2CCP*MOV156-1	2	A	18	Butterfly	O	15-2	D-3	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1, RR2, RR28	2BVT 1.47.5 Leak Test (R)
2CCP*MOV156-2	2	A	18	Butterfly	O	15-2	D-4	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1, RR2,	2BVT 1.47.5 Leak Test (R)
2CCP*MOV157-1	2	A	18	Butterfly	O	15-2	E-3	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1, RR2, RR28	2BVT 1.47.5 Leak Test (R)
2CCP*MOV157-2	2	A	18	Butterfly	O	15-2	E-4	QST	CSJ33	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1, RR2,	2BVT 1.47.5 Leak Test (R)
2CCP*AOV171	3	B	3	Globe	O	15-2	E-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*AOV172	3	B	3	Globe	O	15-2	D-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*AOV173	3	B	3	Globe	O	15-2	B-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*AOV174	3	B	3	Globe	O	15-2	B-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV175-1	3	B	10	Butterfly	O	15-5	B-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Primary 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.			
2CCP*MOV175-2	3	B	10	Butterfly	O	15-5	B-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV176-1	3	B	10	Butterfly	O	15-5	A-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV176-2	3	B	10	Butterfly	O	15-5	A-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV177-1	3	B	10	Butterfly	O	15-5	G-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV177-2	3	B	10	Butterfly	O	15-5	G-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV178-1	3	B	10	Butterfly	O	15-5	G-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*MOV178-2	3	B	10	Butterfly	O	15-5	G-5	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2CCP*289	3	A/C	2	Check		15-3	C-1	QS	RR14	2BVT 1.60.6-FS,RD By Leak Test (R)
								LT		2BVT 1.60.6-Leak Test (R)
2CCP*290	3	A/C	2	Check		15-3	F-1	QS	RR14	2BVT 1.60.6-FS,RD By Leak Test (R)
								LT		2BVT 1.60.6-Leak Test (R)
2CCP*291	3	A/C	2	Check		15-3	F-6	QS	RR14	2BVT 1.60.6-FS,RD By Leak Test (R)
								LT		2BVT 1.60.6-Leak Test (R)
2CCP*321	3	B	2	Butterfly	O	15-1	B-3	QS		2OST-15.1-Stroke Only Closed (Q)
2CCP*322	3	B	2	Butterfly	O	15-1	F-3	QS		2OST-15.2-Stroke Only Closed (Q)
2CCP*323	3	B	2	Gate	O	15-1	C-3	QS		2OST-15.1-Stroke Only Closed (Q)
2CCP*324	3	B	20	Butterfly	O	15-1	E-3	QS		2OST-15.2-Stroke Only Closed (Q)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Primary 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.			
2CCP*325	3	B	20	Butterfly	O	15-1	C-3	QS		2OST-15.1 Stroke Only Closed (Q)
2CCP*326	3	B	2	Butterfly	O	15-1	E-3	QS		2OST-15.2 Stroke Only Closed (Q)
2CCP*352	3	C	2	Check		15-2	A-2	QS	RR15	2BVT 1.60.6-FS,RD By Leak Test (R)
2CCP*354	3	B	20	Butterfly	O	15-1	E-8	QS	CSJ54	2OST-1.10 Stroke Only Closed (CSD)
2CCP*355	3	B	20	Butterfly	O	15-1	D-9	QS	CSJ54	2OST-1.10 Stroke Only Closed (CSD)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Fuel Pool Cooling & 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.			
2FNC*9	2	A/P	8	Ball	LS	20-1	E-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2FNC*38	2	A/P	6	Ball	LS	20-1	E-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2FNC*121	2	A/P	6	Ball	LS	20-1	D-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2FNC*122	2	A/P	6	Ball	LS	20-1	F-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)

BVPS-2 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.			
2MSS*18	3	C	3	Check		21-2	A-3	QS	RR16	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS		2OST-24.4-FS,FD (Q)
2MSS*19	3	C	3	Check		21-2	C-2	QS	RR16	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS		2OST-24.4-FS,FD (Q)
2MSS*20	3	C	3	Check		21-2	D-2	QS	RR16	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS		2OST-24.4-FS,FD (Q)
2MSS*AOV101A	2	B	32	Globe	O	21-1	G-8	QS		2OST-21.1 Partial Stroked Closed Only (Q)
								QST	CSJ35	2OST-21.7-Stroke & Time Closed (CSD),(RPV)
2MSS*AOV101B	2	B	32	Globe	O	21-1	D-8	QS		2OST-21.2-Partial Stroked Closed Only (Q)
								QST	CSJ35	2OST-21.7-Stroke & Time Closed (CSD),(RPV)
2MSS*AOV101C	2	B	32	Globe	O	21-1	B-8	QS		2OST-21.3-Partial Stroked Closed Only (Q)
								QST	CSJ35	2OST-21.7-Stroke & Time Closed (CSD),(RPV)
2MSS*SV101A	2	C	6x10	Relief		21-1	F-5	SPT		2BVT 1.21.1(2)-(R)
2MSS*SV101B	2	C	6x10	Relief		21-1	C-5	SPT		2BVT 1.21.1(2)-(R)
2MSS*SV101C	2	C	6x10	Relief		21-1	A-5	SPT		2BVT 1.21.1(2)-(R)
2MSS*AOV102A	2	B	2	Globe	S	21-1	G-7	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
2MSS*AOV102B	2	B	2	Globe	S	21-1	E-7	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)

BVPS-2 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.			
2MSS*AOV102C	2	B	2	Globe	S	21-1	C-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2MSS*SV102A	2	C	6x10	Relief		21-1	F-5	SPT		2BVT 1.21.1(2) (R)
2MSS*SV102B	2	C	6x10	Relief		21-1	C-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SV102C	2	C	6x10	Relief		21-1	A-5	SPT		2BVT 1.21.1(2) (R)
2MSS*SV103A	2	C	6x10	Relief		21-1	F-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SV103B	2	C	6x10	Relief		21-1	C-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SV103C	2	C	6x10	Relief		21-1	A-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SV104A	2	C	6x10	Relief		21-1	F-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SV104B	2	C	6x10	Relief		21-1	C-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SV104C	2	C	6x10	Relief		21-1	A-4	SPT		2BVT 1.21.1(2) (R)
2MSS*SOV105A	2	B	3	Globe	S	21-2	D-1	QST		2OST-24.4 Stroke & Time Open/Closed (Q) (RPV)
2MSS*SOV105B	2	B	3	Globe	S	21-2	C-2	QST	RR30	2OST-24.4 Stroke & Time Open/Closed (Q) (RPV)
2MSS*SOV105C	2	B	3	Globe	S	21-2	A-1	QST	RR30	2OST-24.4 Stroke & Time Open/Closed (Q) (RPV)
2MSS*SOV105D	2	B	3	Globe	S	21-2	D-2	QST		2OST-24.4 Stroke & Time Open (Q) (RPV)
2MSS*SOV105E	2	B	3	Globe	S	21-2	C-2	QST	RR30	2OST-24.4 Stroke & Time Open (Q) (RPV)
2MSS*SOV105F	2	B	3	Globe	S	21-2	A-2	QST	RR30	2OST-24.4 Stroke & Time Open (Q) (RPV)
2MSS*SV105A	2	C	6x10	Relief		21-1	F-3	SPT		2BVT 1.21.1(2) (R)

BVPS-2 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.			
2MSS*SV105B	2	C	6x10	Relief		21-1	C-3	SPT		2BVT 1.21.1(2)-(R)
2MSS*SV105C	2	C	6x10	Relief		21-1	A-3	SPT		2BVT 1.21.1(2)-(R)
2MSS*196	3	C	3	Check		21-2	D-3	QS	RR16	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS		2OST-24.4-FS,FD (Q)
2MSS*199	3	C	3	Check		21-2	C-3	QS	RR16	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS		2OST-24.4-FS,FD (Q)
2MSS*352	3	C	3	Check		21-2	A-2	QS	RR16	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS		2OST-24.4-FS,FD (Q)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Main Steam (Drains) **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.			
2SDS*AOV111A1	2	B	1½	Globe	O	21-3	B-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV111A2	2	B	1½	Globe	O	21-3	B-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV111B1	2	B	1½	Globe	O	21-3	B-6	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV111B2	2	B	1½	Globe	O	21-3	B-6	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV111C1	2	B	1½	Globe	O	21-3	B-8	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV111C2	2	B	1½	Globe	O	21-3	B-8	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV129A	2	B	1	Globe	O	21-3	C-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SDS*AOV129B	2	B	1	Globe	O	21-3	B-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Main Steam (Vents) **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.			
2SVS*80	2	C	8	Check		21-2	F-8	QS	RR17	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS	CSJ36	2OM-51.4C-FS,FD (CSD)
2SVS*81	2	C	8	Check		21-2	F-9	QS	RR17	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS	CSJ36	2OM-51.4C-FS,FD (CSD)
2SVS*82	2	C	8	Check		21-2	F-10	QS	RR17	2BVT 1.60.6-FS,RD By Leak Test (R)
								QS	CSJ36	2OM-51.4C-FS,FD (CSD)
2SVS*PCV101A	2	B	10	Globe	S	21-1	F-4	QST	CSJ37	2OST-1.10-Stroke & Time Open/Closed & Fail Closed (CSD),(RPV)
2SVS*PCV101B	2	B	10	Globe	S	21-1	D-4	QST	CSJ37	2OST-1.10-Stroke & Time Open/Closed & Fail Closed (CSD),(RPV)
2SVS*PCV101C	2	B	10	Globe	S	21-1	B-4	QST	CSJ37	2OST-1.10-Stroke & Time Open/Closed & Fail Closed (CSD),(RPV)
2SVS*HCV104	2	B	10	Globe	S	21-1	F-7	QST	CSJ38	2OST-1.10-Stroke & Time Open/Closed & Fail Closed (CSD),(RPV)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Main 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.			
2FWS*28	2	C	16	Check		24-2A	F-7	QS	RR18	2OST-24.8-FS,RD By Leak Test (R)
2FWS*29	2	C	16	Check		24-2A	D-7	QS	RR18	2OST-24.8-FS,RD By Leak Test (R)
2FWS*30	2	C	16	Check		24-2A	B-7	QS	RR18	2OST-24.8-FS,RD By Leak Test (R)
2FWS*HYV157A	2	B	16	Gate	O	24-2A	F-6	QST	CSJ39	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*HYV157B	2	B	16	Gate	O	24-2A	D-6	QST	CSJ39	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*HYV157C	2	B	16	Gate	O	24-2A	B-6	QST	CSJ39	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*FCV478	2	B	16	Globe	T	24-2A	F-3	QST	CSJ55	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*FCV479	2	B	6	Globe	T	24-2A	E-3	QST	CSJ56	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*FCV488	2	B	16	Globe	T	24-2A	D-3	QST	CSJ55	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*FCV489	2	B	6	Globe	T	24-2A	C-3	QST	CSJ56	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*FCV498	2	B	16	Globe	T	24-2A	B-3	QST	CSJ55	2OST-1.10-Stroke & Time Closed (CSD),(RPV)
2FWS*FCV499	2	B	6	Globe	T	24-2A	A-3	QST	CSJ56	2OST-1.10-Stroke & Time Closed (CSD),(RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Auxiliary 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.			
2FWE*42A	2	C	4	Check		24-3	A-8	QS	CSJ40	2OST-24.6-FS,FD (CSD)
								QS	CSJ40	2OST-24.6-FS,RD (CSD) and 2OST-24.1 pipe temperature monitored to verify check valve closed (M)
2FWE*42B	2	C	4	Check		24-3	B-8	QS	CSJ40	2OST-24.6-FS,FD (CSD)
								QS	CSJ40	2OST-24.6-FS,RD (CSD) and 2OST-24.1 pipe temperature monitored to verify check valve closed (M)
2FWE*43A	2	C	4	Check		24-3	C-8	QS	CSJ40	2OST-24.6-FS,FD (CSD)
								QS	CSJ40	2OST-24.6-FS,RD (CSD) and 2OST-24.1 pipe temperature monitored to verify check valve closed (M)
2FWE*43B	2	C	4	Check		24-3	C-8	QS	CSJ40	2OST-24.6-FS,FD (CSD)
								QS	CSJ40	2OST-24.6-FS,RD (CSD) and 2OST-24.1 pipe temperature monitored to verify check valve closed (M)
2FWE*44A	2	C	4	Check		24-3	D-8	QS	CSJ40	2OST-24.6-FS,FD (CSD)
								QS	CSJ40	2OST-24.6-FS,RD (CSD) and 2OST-24.1 pipe temperature monitored to verify check valve closed (M)
2FWE*44B	2	C	4	Check		24-3	E-8	QS	CSJ40	2OST-24.6-FS,FD (CSD)
								QS	CSJ40	2OST-24.6-FS,RD (CSD) and 2OST-24.1 pipe temperature monitored to verify check valve closed (M)
2FWE*90	3	B	6	Butterfly	LS	24-3	D-2	QS		2OST-24.1 Stroke Only Open (M)
2FWE*91	3	B	4	Butterfly	LS	24-3	E-2	QS		2OST-24.1 Stroke Only Open (M)
2FWE*92	3	B	4	Butterfly	LS	24-3	F-2	QS		2OST-24.1 Stroke Only Open (M)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Auxiliary 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.			
2FWE*99	2	C	4	Check		24-3	B-10	QS	RR19	2CST-24.8A.FS.RD By Leak Test (R) and 2OST-24.1 upstream pipe temperature monitored to verify check valve closed (M)
								QS	CSJ41	2OST-24.6.FS.FD (CSD)
2FWE*100	2	C	4	Check		24-3	C-10	QS	RR19	2OST-24.8A.FS.RD By Leak Test (R) and 2OST-24.1 upstream pipe temperature monitored to verify check valve closed (M)
								QS	CSJ41	2OST-24.6.FS.FD (CSD)
2FWE*HCV100A	2	B	3	Globe	O	24-3	D-7	QST		2OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
2FWE*HCV100B	2	B	3	Globe	O	24-3	E-7	QST		2OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
2FWE*HCV100C	2	B	3	Globe	O	24-3	C-7	QST		2OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
2FWE*HCV100D	2	B	3	Globe	O	24-3	C-7	QST		2OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
2FWE*HCV100E	2	B	3	Globe	O	24-3	A-7	QST		2OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
2FWE*HCV100F	2	B	3	Globe	O	24-3	B-7	QST		2OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
2FWE*SOV100A	3	B/P	2	Globe	S	24-3	D-2	POS		2OST-47.3B (RPV)
2FWE*SOV100B	3	B/P	2	Globe	S	24-3	D-2	POS		2OST-47.3B (RPV)
2FWE*101	2	C	4	Check		24-3	E-10	QS	RR19	2OST-24.8A.FS.RD By Leak Test (R) and 2OST-24.1 upstream pipe temperature monitored to verify check valve closed (M)
								QS	CSJ41	2OST-24.6.FS.FD (CSD)
2FWE*RV101	3	C	3x4	Relief		24-3	D-5	SPT		2BVT 1.60.5 (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Auxiliary 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.			
2FWE*FCV122	3	B	6	(NOTE 1)		24-3	E-5	QS		2OST-24.4 Stroke Only Open (M)
								QS	CSJ42	2OST-24.4 Stroke Only Closed (CSD)
	3	C	6	Check		24-3	E-5	QS	CSJ42	2OST-24.4-FS,FD (CSD)
								QS	CSJ42	2OST-24.6-FS,RD (CSD)
2FWE*FCV123A	3	B	4	(NOTE 1)		24-3	F-6	QS		2OST-24.2 Stroke Only Open (M)
								QS	CSJ42	2OST-24.6 Stroke Only Closed (CSD)
	3	C	4	Check		24-3	F-6	QS	CSJ42	2OST-24.6-FS,FD (CSD)
								QS	CSJ42	2OST-24.6-FS,RD (CSD)
2FWE*FCV123B	3	B	4	(NOTE 1)		24-3	G-6	QS		2OST-24.3 Stroke Only Open (M)
								QS	CSJ42	2OST-24.6 Stroke Only Closed (CSD)
	3	C	4	Check		24-3	G-6	QS	CSJ42	2OST-24.6-FS,FD (CSD)
								QS	CSJ42	2OST-24.6-FS,RD (CSD)

NOTE 1 Yarway automatic recirculation control valve acts as both a flow control valve and check valve

BVPS-2 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.			
2BDG*AOV100A1	2	B	3	Globe	O	25-1	G-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV100B1	2	B	3	Globe	O	25-1	E-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV100C1	2	B	3	Globe	O	25-1	B-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV101A1	2	B	3	Globe	O	25-1	G-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV101A2	2	B	3	Globe	O	25-1	G-3	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV101B1	2	B	3	Globe	O	25-1	E-3	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV101B2	2	B	3	Globe	O	25-1	E-3	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV101C1	2	B	3	Globe	O	25-1	B-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2BDG*AOV101C2	2	B	3	Globe	O	25-1	C-3	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)

BVPS-2 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.			
2ASS*AOV130A	3	B	8	Globe	O	27A-1	F-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2ASS*AOV130B	3	B	8	Globe	O	27A-1	F-4	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Service 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.			
2SWS*57	3	C	30	Check		30-1	C-3	QS		2OST-30.2-PS,FD (Q)
								QS	CSJ3	2OST-30.2-FS,FD (CSD) 2OST-30.13A-FS,FD (R)
								QS	CSJ43	2OST-30.6-FS,RD (Q or CSD)
2SWS*58	3	C	30	Check		30-1	D-4	QS		2OST-30.3-PS,FD (Q)
								QS	CSJ3	2OST-30.3-FS,FD (CSD) 2OST-30.13B-FS,FD (R)
								QS	CSJ43	2OST-30.6-FS,RD (Q or CSD)
2SWS*58	3	C	30	Check		30-1	G-3	QS		2OST-30.6-PS,FD (Q)
								QS	CSJ3	2OST-30.6-FS,FD (CSD) 2OST-30.13A(B)-FS,FD (R)
								QS	CSJ43	2OST-30.6-FS,RD (Q or CSD)
2SWS*MOV102A	3	B	30	Butterfly	O	30-1	C-4	QST	CSJ44	2OST-30.6-Stroke & Time Open (Q or CSD),(RPV)
2SWS*MOV102B	3	B	30	Butterfly	O	30-1	D-4	QST	CSJ44	2OST-30.6-Stroke & Time Open (Q or CSD),(RPV)
2SWS*MOV102C1	3	B	30	Butterfly	S	30-1	G-4	QST	CSJ44	2OST-30.6-Stroke & Time Open (Q or CSD),(RPV)
2SWS*MOV102C2	3	B	30	Butterfly	S	30-1	G-4	QST	CSJ44	2OST-30.6-Stroke & Time Open (Q or CSD),(RPV)
2SWS*MOV103A	3	B	24	Butterfly	S	30-1	C-7	QST	RR20	2OST-30.13A-Stroke & Time Open (R),(RPV)
2SWS*MOV103B	3	B	24	Butterfly	S	30-1	C-6	QST	RR20	2OST-30.13B-Stroke & Time Open (R),(RPV)
2SWS*MOV104A	3	B	16	Gate	O	30-3	A-1	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
2SWS*MOV104B	3	B	16	Gate	O	30-3	E-1	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Service 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.			
2SWS*MOV104C	3	B	16	Gate	O	30-3	C-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2SWS*MOV104D	3	B	16	Gate	O	30-3	D-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2SWS*MOV105A	3	B	16	Gate	O	30-3	A-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2SWS*MOV105B	3	B	16	Gate	O	30-3	E-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2SWS*MOV104C	3	B	16	Gate	O	30-3	C-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2SWS*MOV105D	3	B	16	Gate	O	30-3	D-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2SWS*106	3	C	30	Check		30-1	A-6	QS		2OST-30.2(6) PS,FD (Q)
								QS	CSJ3	2OST-30.2(6) FS,FD (CSD) 2OST-30.13A FS,FD (R)
								QS	CSJ45	2OST-30.8 FS,RD (CSD)
2SWS*MOV106A	3	B	30	Butterfly	O	30-1	C-7	QST	CSJ46	2OST-1.10 Stroke & Time Closed (CSD),(RPV) 2OST-30.13A Stroke & Time Closed (R),(RPV)
2SWS*MOV106B	3	B	30	Butterfly	O	30-1	C-6	QST	CSJ46	2OST-1.10 Stroke & Time Closed (CSD),(RPV) 2OST-30.13B Stroke & Time Closed (R),(RPV)
2SWS*107	3	C	30	Check		30-1	A-7	QS		2OST-30.3(6) PS,FD (Q)
								QS	CSJ3	2OST-30.3(6) FS,FD (CSD) 2OST-30.13B FS,FD (R)
								QS	CSJ45	2OST-30.8 FS,RD (CSD)
2SWS*MOV107A	3	B	24	Butterfly	O	30-1	F-7	QST	CSJ47	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2SWS*MOV107B	3	B	24	Butterfly	O	30-1	F-7	QST	CSJ47	2OST-1.10 Stroke & Time Closed (CSD),(RPV)
2SWS*MOV107C	3	B	24	Butterfly	O	30-1	F-6	QST	CSJ47	2OST-1.10 Stroke & Time Closed (CSD),(RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Service 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.			
2SWS*MOV107D	3	B	24	Butterfly	O	30-1	F-6	QST	CSJ47	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
2SWS*110	3	C/P	6	Check		30-2	C-8	NA		*(Internal Inspection per CMP (5 years))
2SWS*111	3	C	6	Check		30-2	C-8	QS		2OST-36.1-FS,FD (M) *(Internal Inspection per CMP (5 years))
2SWS*112	3	C	6	Check		30-2	E-8	QS		2OST-36.2-FS,FD (M) *(Internal Inspection per CMP (5 years))
2SWS*113	3	C/P	6	Check		30-2	E-8	NA		*(Internal Inspection per CMP (5 years))
2SWS*MOV113A	3	B	6	Gate	S	30-2	C-8	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2SWS*MOV113B	3	B/P	6	Gate	S	30-2	E-8	POS		2OST-47.3A(3B) (RPV)
2SWS*MOV113C	3	B/P	6	Gate	S	30-2	C-8	POS		2OST-47.3A(3B) (RPV)
2SWS*MOV113D	3	B	6	Gate	S	30-2	E-8	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2SWS*AOV118A	3	B	2	Globe	O	30-1	B-1	QST		2OST-30.17A Stroke & Time Closed (Q) (RPV)
2SWS*AOV118B	3	B	2	Globe	O	30-1	E-1	QST		2OST-30.17B Stroke & Time Closed (Q) (RPV)
2SWS*FCV120A	3	B/P	3	Globe	O	30-2	A-6	POS		2OST-30.4 (M)
2SWS*FCV120B	3	B/P	3	Globe	O	30-2	G-6	POS		2OST-30.5 (M)
2SWS*SOV130A	3	B	2	Globe	A	30-1	A-4	QST		2OST-30.17A Stroke & Time Open (Q)
2SWS*SOV130B	3	B	2	Globe	A	30-1	E-4	QST		2OST-30.17B Stroke & Time Open (Q)
2SWS*142	3	B	3	Gate	S	30-2	A-1	QS		2OST-47.3A(3B) Stroke Only Open (Q)

*Not required by ASME. Performed by 1/2CMP-75 WAFER CHECK-1M to verify valve integrity per IE Bulletin 83-03.

BVPS 2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Service 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.			
2SWS*143	3	B	3	Gate	S	30-2	F-1	QS		2OST-47.3A(3B)-Stroke Only Open (Q)
2SWS*RV152	2	A/C	¾x1	Relief		29-4	A-2	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV152-1	2	A	8	Butterfly	O	29-4	A-2	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV152-2	2	A	8	Butterfly	O	29-4	A-2	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2SWS*RV153	2	A/C	¾x1	Relief		29-4	C-2	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV153-1	2	A/P	8	Butterfly	S	29-4	C-2	LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV153-2	2	A/P	8	Butterfly	S	29-4	C-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2SWS*RV154	2	A/C	¾x1	Relief		29-4	D-2	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV154-1	2	A/P	8	Butterfly	S	29-4	D-2	LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV154-2	2	A/P	8	Butterfly	S	29-4	D-2	LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2SWS*RV155	2	A/C	¾x1	Relief		29-4	G-2	SPT		2BVT 1.60.5-(R)
								LT	RR1,RR2, RR28	2BVT 1.47.5-Leak Test (R)

BVPS 2 :ST
VALVE TESTING OUTLINE

SYSTEM NAME: Service 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.			
2SWS*MOV155-1	2	A	8	Butterfly	O	29-4	G-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR2 RR28	2BVT 1.47.5-Leak Test (R)
2SWS*MOV155-2	2	A	8	Butterfly	O	29-4	G-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2SWS*486	3	C	3	Check		30-1	C-3	QS	CSJ48	2OST-30.2-FS,RD (Q or CSD)
								QS	CSJ48	2OST-30.2(6)-FS,FD (Q or CSD)
2SWS*487	3	C	3	Check		30-1	D-3	QS	CSJ48	2OST-30.3-FS,RD (Q or CSD)
								QS	CSJ48	2OST-30.3(6)-FS,FD (Q or CSD)
2SWS*488	3	C	3	Check		30-1	G-3	QS	CSJ48	2OST-30.6-FS,FD,RD (Q or CSD)
2SWS*1103	3	C	4	Check		30-2	A-4	QS		2OM-54, Log L4.40, Discharge air temp in Main Steam Valve Area maintained verifying check valve open (IWV-3414)
								QS	RR21	2BVT 1.60.6-FS,RD By Leak Test (R)
2SWS*1104	3	C	4	Check		30-2	G-4	QS		2OM-54, Log L4.40, Discharge air temp in Main Steam Valve Area maintained verifying check valve open (IWV-3414)
								QS	RR21	2BVT 1.60.6-FS,RD By Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Service Water (Chlorine Injection) 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.			
2SWM*MOV562	3	B	3	Plug	O	30-1	B-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SWM*MOV563	3	B	3	Plug	O	30-1	B-6	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SWM*MOV564	3	B	3	Plug	O	30-1	A-6	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SWM*MOV565	3	B	3	Plug	O	30-1	B-7	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Standby Service Water | SYSTEM NUMBER: 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing OM No.	Drawing Coord.	Test Requirement	CSJ or Relief Requests	Comments
2SWE*MOV116A	3	B	30	Butterfly	S	30-1	A-7	QST		2OST-30.1A-Stroke & Time Open (Q) (RPV)
2SWE*MOV116B	3	B	30	Butterfly	S	30-1	A-6	QST		2OST-30.1B-Stroke & Time Open (Q) (RPV)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Fire Procection 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.			
2FPW*AOV204	2	A	2	Globe	S	33-1D	C-4	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2FPW*AOV205	2	A	4	Globe	S	33-1D	F-4	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2FPW*AOV206	2	A	6	Globe	S	33-1D	D-4	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)
2FPW*AOV221	2	A	2	Globe	S	33-1D	A-4	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2FPW*382	2	A/C	2½	Check		33-1D	C-4	QS	CSJ49	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2FPW*388	2	A/C	2½	Check		33-1D	A-4	QS	CSJ49	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2FPW*753	2	A/C	4	Check		33-1D	F-4	QS	CSJ49	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2FPW*761	2	A/C	6	Check		33-1D	D-5	QS	CSJ49	2OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LT	RR1,RR2	2BVT 1.47.5-Leak Test (R)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: Compressed Air (Containment 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.			
2IAC*22	2	A/C	3	Check		34-3	C-10	QS	CSJ50	2OST-1.10-FS,RD by Mechanical Exerciser (CSD)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2IAC*MOV130	2	A	3	Plug	O	34-3	C-10	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2IAC*MOV133	2	A	4	Plug	O	34-3	C-1	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2IAC*MOV134	2	A	4	Plug	O	34-3	C-1	QST		2OST-47.3A(3B)-Stroke & Time Closed (Q),(RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)

BVPS 2 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 OM No.	Drawing Coord.	Test Requirement	CSJ or Relief Requests	Comments
2SAS*14	2	A/P	2	Globe	LS	34-1B	C-6	LT	RR1	2BVT 1.47.5-Leak Test (R)
2SAS*15	2	A/P	2	Globe	LS	34-1B	C-6	LT	RR1	2BVT 1.47.5-Leak Test (R)

BVPS-2 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.			
2EGA*100	3	C	¾	Check		36-3	E-4	QS		2OM-54, Log L4-29, D/G start air header pressure maintained verifying check valve open (IWV-3414)
2EGA*101	3	C	¾	Check		36-3	F-4	QS		2OM-54, Log L4-29, D/G start air header pressure maintained verifying check valve open (IWV-3414)
2EGA*130	3	C	¾	Check		36-3	E-9	QS		2OM-54, Log L4-31, D/G start air header pressure maintained verifying check valve open (IWV-3414)
2EGA*131	3	C	¾	Check		36-3	F-9	QS		2OM-54, Log L4-31, D/G start air header pressure maintained verifying check valve open (IWV-3414)
2EGA*SOV202-1	3	B	2	Three-way		36-3	A-5	QST	RR22	2OST-36.1 Stroke & Time Open (Q)
2EGA*SOV202-2	3	B	2	Three-way		36-3	B-5	QST	RR22	2OST-36.1 Stroke & Time Open (Q)
2EGA*SOV203-1	3	B	2	Three-way		36-3	A-10	QST	RR22	2OST-36.2 Stroke & Time Open (Q)
2EGA*SOV203-2	3	B	2	Three-way		36-3	B-10	QST	RR22	2OST-36.2 Stroke & Time Open (Q)
2EGA*RV205	3	C	½	Relief		36-3	E-4	SPT		2BVT 1.60.5-(R)
2EGA*RV206	3	C	½	Relief		36-3	E-9	SPT		2BVT 1.60.5-(R)
2EGA*RV207	3	C	½	Relief		36-3	F-4	SPT		2BVT 1.60.5-(R)
2EGA*RV208	3	C	½	Relief		36-3	F-9	SPT		2BVT 1.60.5-(R)

BVPS-2 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	KSA	Drawing		Test Requiremant	CSJ or Relief Requests	Comments
						OM No.	Coord.			
2EGF*7	3	C	3	Check		36-1	F-1	QS		2OST-36.1-FS,FD,RD (bi-monthly)
2EGF*8	3	C	3	Check		36-1	E-6	QS		2OST-36.2-FS,FD,RD (bi-monthly)
2EGF*9	3	C	3	Check		36-1	E-1	QS		2OST-36.1-FS,FD,RD (bi-monthly)
2EGF*10	3	C	3	Check		36-1	E-7	QS		2OST-36.2-FS,FD,RD (bi-monthly)

BVPS-2 IST
VALVE TESTING OUTLINE

SYSTEM NAME: 4KV Station Service (Diesel Lube 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.			
2EGO*106	3	B	4	Gate	LO	36-5B	F-8	QS		2OST-47.3A(3B) Stroke Only Closed (Q)
2EGO*107	3	B	4	Gate	LO	36-5A	F-8	QS		2OST-47.3A(3B) Stroke Only Closed (Q)
2EGO*108	3	B	4	Gate	LO	36-5B	E-8	QS		2OST-47.3A(3B) Stroke Only Closed (Q)
2EGO*109	3	B	4	Gate	LO	36-5A	E-8	QS		2OST-47.3A(3B) Stroke Only Closed (Q)
2EGO*114	3	B	4	Gate	S	36-5B	F-7	QS		2OST-47.3A(3B) Stroke Only Open (Q)
2EGO*115	3	B	4	Gate	S	36-5A	F-7	QS		2OST-47.3A(3B) Stroke Only Open (Q)
2EGO*116	3	B	4	Gate	S	36-5B	E-7	QS		2OST-47.3A(3B) Stroke Only Open (Q)
2EGO*117	3	B	4	Gate	S	36-5A	E-7	QS		2OST-47.3A(3B) Stroke Only Open (Q)

BVPS-2 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.			
2HVC*MOD201A	3	B	36	Butterfly	O	44A-2	D-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2HVC*MOD201B	3	B	36	Butterfly	O	44A-2	D-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2HVC*MOD201C	3	B	36	Butterfly	S	44A-2	C-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2HVC*MOD201D	3	B	36	Butterfly	S	44A-2	C-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
2HVC*MOD204A	3	B	8	Butterfly	S	44A-2	F-2	QST		2OST-47.3A(3B) Stroke & Time Open (Q),(RPV)
2HVC*MOD204B	3	B	8	Butterfly	S	44A-2	G-2	QST		2OST-47.3A(3B) Stroke & Time Open (Q),(RPV)

BVPS-2 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.			
2HVR*MOD23A	2	A	42	Butterfly	LS	44C-2	B-5	QST	CSJ51	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR2, RR25	2BVT 1.47.5 Leak Test (R)
2HVR*MOD23B	2	A	42	Butterfly	LS	44C-2	B-7	QST	CSJ51	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR2, RR25	2BVT 1.47.5 Leak Test (R)
2HVR*MOD25A	2	A	42	Butterfly	LS	44C-2	C-5	QST	CSJ51	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR2, RR26	2BVT 1.47.5 Leak Test (R)
2HVR*MOD25B	2	A	42	Butterfly	LS	44C-2	C-7	QST	CSJ51	2OST-1.10 Stroke & Time Closed (CSD) (RPV)
								LT	RR1,RR2, RR26	2BVT 1.47.5 Leak Test (R)
2HVR*DMP206	2	A/P	8	Butterfly	LS	44C-2	D-6	LT	RR1,RR2 RR26	2BVT 1.47.5 Leak Test (R),(RPV)

BVPS-2 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.			
2HCS*110	2	A	2	Ball	LS	46-1	D-2	QS		2OST-47.3A(3B) Stroke Only Open (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2HCS*111	2	A	2	Ball	LS	46-1	G-2	QS		2OST-47.3A(3B) Stroke Only Open (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)
2HCS*MOV112A	2	B	2	Ball	S	46-1	C-6	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2HCS*MOV112B	2	B	2	Ball	S	46-1	F-6	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2HCS*SOV114A	2	A	2	Globe	S	46-1	B-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)
2HCS*SOV114B	2	A	2	Globe	S	46-1	F-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)
2HCS*SOV115A	2	A	2	Globe	S	46-1	G-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)
2HCS*SOV115B	2	A	2	Globe	S	46-1	F-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)
2HCS*MOV116	2	A	2	Ball	S	46-1	D-1	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5 Leak Test (R)

BVPS 2 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.			
2HCS*MOV117	2	A	2	Ball	S	46-1	G-1	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT	RR1	2BVT 1.47.5-Leak Test (R)
2HCS*MOV120A	2	B	2	Plug	S	46-1	D-7	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2HCS*MOV120B	2	B	2	Plug	S	46-1	G-6	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2HCS*SOV133A	2	A	¼	Globe	S	46-1	A-1	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R) (RPV)
2HCS*SOV133B	2	A	¼	Globe	S	46-1	E-1	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R) (RPV)
2HCS*SOV134A	2	A	¼	Globe	S	46-1	A-3	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R) (RPV)
2HCS*SOV134B	2	A	¼	Globe	S	46-1	D-3	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R) (RPV)
2HCS*SOV135A	2	A	¼	Globe	S	46-1	E-1	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R) (RPV)
2HCS*SOV135B	2	A	¼	Globe	S	46-1	E-2	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5-Leak Test (R) (RPV)

BVPS-2 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.			
2HCS*SOV136A	2	A	⅛	Globe	S	46-1	B-1	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)
2HCS*SOV136B	2	A	⅛	Globe	S	46-1	B-3	QST	RR30	2OST-47.3A(3B) Stroke & Time Open/Closed (Q)
								LT	RR1	2BVT 1.47.5 Leak Test (R) (RPV)

BVPS 2 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.			
2PHS*100	2	A/P	1 ½	Gate	S	47-1	F-4	LT	RR31	2BVT 1.47.8-Type B Leak Test (SA)
2PHS*101	2	A/P	1 ½	Gate	S	47-1	F-2	LT	RR31	2BVT 1.47.8-Type B Leak Test (SA)
2PHS*110	2	A/P	1 ½	Ball	S	47-1	E-4	LT	RR31	2BVT 1.47.8-Type B Leak Test (SA)
2PHS*111	2	A/P	1 ½	Ball	S	47-1	E-4	LT	RR31	2BVT 1.47.8-Type B Leak Test (SA)
2PHS*112	2	A/P	1 ½	Ball	S	47-1	E-2	LT	RR31	2BVT 1.47.8-Type B Leak Test (SA)
2PHS*113	2	A/P	1 ½	Ball	S	47-1	E-2	LT	RR31	2BVT 1.47.8-Type B Leak Test (SA)
2PHS*201	2	A/P	2	Gate	S	47-1	B-9	LT	RR32	2BVT 1.47.10-Type B Leak Test (SA)
2PHS*202	2	A/P	2	Gate	S	47-1	B-8	LT	RR32	2BVT 1.47.10-Type B Leak Test (SA)

SECTION VII: VALVE TESTING COLD SHUTDOWN JUSTIFICATIONS

COLD SHUTDOWN JUSTIFICATION 1

Valve No.:

2RCS*68

Category A/C **Class** 2

Function: Inside containment isolation check valve on the nitrogen supply to the Pressurizer Relief Tank [2RCS-TK22].

Test Requirement: Quarterly full stroke

Basis for CSJ: Valve is normally closed and is opened during nitrogen makeup to the Pressurizer Relief Tank. Safety position is closed for containment isolation. Full stroking can only be verified by cycling the weight loaded arm or by leak testing. Because this valve is located inside containment, it is not accessible during normal operation.

Alternate Test: Full stroke exercised closed by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 2

Valve No.:

2RCS*72

Category A/C **Class** 2

Function: Inside containment isolation check valve on the primary grade water supply to the Pressurizer Relief Tank [2RCS-TK22]

Test Requirement: Quarterly full stroke

Basis for CSJ: Valve is normally closed and is opened during primary grade water makeup to the Pressurizer Relief Tank. Safety position is closed for containment isolation. Full stroking can only be verified by cycling the weight loaded arm or by leak testing. Because this valve is located inside containment, it is not accessible during normal operation.

Alternate Test: Full stroke exercised closed by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 3

Valve No.:

2SWS*57
2SWS*58
2SWS*59
2SWS*106
2SWS*107

Category C **Class** 3

Function: Service water pumps discharge and header check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: These valves are open during normal plant operation, but full stroke excerising them in the forward direction cannot always be performed because normal plant operating loads do not always support enough service water system flow to develop the required accident flowrate needed to full stroke exercise the check valves in the open direction. Full stroking of these check valves may be possible during warm summer months when additional flowpaths and heat exchangers are in service, but can normally only be accomplished by aligning the service water system through additional flowpaths which are only used for accident conditions and through additional heat exchangers not normally in service. The additional flowpaths and heat exchangers are maintained isolated for biota control to prevent fouling. Placing flow through these additional flowpaths and heat exchangers unnecessarily during quarterly testing could increase the potential for fouling thereby degrading this part of the service water system and reducing its reliability in meeting the required flowrates during an accident.

Alternate Test: Partial stroke exercised open quarterly per 2OST-30.2(3)(6). Full stroke exercised open during warm summer months when additional flowpaths and heat exchangers are normally in service or at least at cold shutdown per 2OST-30.2(3)(6). If cold shutdown coincides with refueling, then some of the valves may also be full stroke exercised at refueling per 2OST-30.13A(B).

COLD SHUTDOWN JUSTIFICATION 4

Valve No.:

2RCS*PCV455C
2RCS*PCV455D
2RCS*PCV456

Category B **Class** 1

Function: Pressurizer Power Operated Relief Valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally closed. The safety function is to provide overpressure protection for the Reactor Coolant System. Since these valves have shown a high probability of failing open, cycling during normal operation is not practical. In addition, safety grade over pressure protection at power is provided by the pressurizer code safety valves.

Alternate Test: Full stroke exercised and timed open at cold shutdown per 2OST-6.8.

COLD SHUTDOWN JUSTIFICATION 5

Valve No.:

2CHS*31

Category A/C **Class** 2

Function: Charging header inside containment isolation check valve

Test Requirement: Quarterly full stroke

Basis for CSJ: This valve is normally open, but is required to be closed for containment isolation. Full stroking can only be verified by cycling the weight loaded arm. Since the valve is located inside containment, it is not accessible during normal operation.

Alternate Test: Full stroke exercised closed by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 6

Valve No.:

2CHS*LCV115C
2CHS*LCV115E

Category B **Class** 2

Function: Volume Control Tank [2CHS*TK22] outlet isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: These valves are normally open during power operation. Safety function is to isolate the VCT from the High Head Safety Injection System. Closing this valve during normal operation would isolate the suction of the charging pumps, causing pump damage and loss of pressurizer level control.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 7

Valve No.:

2CHS*84
2CHS*136
2CHS*141

Category C **Class** 2,3

Function: Emergency and alternate boration line check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: These valves are normally closed during power operation, and are required to open for emergency and alternate emergency boration. Exercising these valves during normal operation would result in concentrated Boric Acid being injected into the RCS, causing an undesired negative reactivity addition resulting in a reduction in plant power.

Alternate Test: Full stroke exercised open during cold shutdown per 2OST-7.13.

COLD SHUTDOWN JUSTIFICATION 8

Valve No.:

2CHS*AOV204

Category A **Class** 2

Function: Letdown isolation outside containment isolation valve

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valve is normally open. Safety function is to close for containment isolation on a receipt of a CIA signal. Stroking this valve at power will result in a thermal shock to the Regenerative Heat Exchanger and associated component piping resulting in an increased probability of system and component failure. In addition, failure of this valve in the closed position will cause loss of pressurizer level control which will result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 9

Valve No.:

2CHS*MOV289

Category A **Class** 2

Function: Normal charging system makeup outside containment isolation valve

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valve is normally open. Safety function is to close on receipt of an SI signal. Stroking this valve at power will result in a thermal shock to the Regenerative Heat Exchanger and associated component piping resulting in an increased probability of system and component failure. In addition, failure of this valve in the closed position will cause loss of pressurizer level control which will result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 10

Valve No.:

2CHS*MOV308A
2CHS*MOV308B
2CHS*MOV308C

Category A **Class** 2

Function: Reactor Coolant Pumps seal water supply outside containment isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: These valves are open during normal plant operation, but are required to be closed for containment penetration isolation. Exercising these valves at power would secure RCP seal injection and cause seal damage. Failure in the closed position during testing will result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 11

Valve No.:

2CHS*MOV310

Category B **Class** 2

Function: Regenerative Heat Exchanger outlet isolation valve

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valve is normally open. Safety function is to close on receipt of an SI signal. Stroking this valve during normal operation will result in a thermal shock to the Regenerative Heat Exchanger and associated piping resulting in an increased probability of system and component failure. In addition, failure of this valve in the closed position will cause loss of pressurizer level control which will result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 12

DELETED

COLD SHUTDOWN JUSTIFICATION 13

Valve No.:

2CHS*MOV378
2CHS*MOV381

Category A **Class** 2

Function: Reactor Coolant Pumps seal water return inside and outside containment isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally open. Safety function is to close for containment isolation on receipt of a CIA signal. Exercising these valves at power would secure RCP seal return which could cause seal damage. Failure of these valves in the closed position will result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 14

Valve No.:

2CHS*LCV460A
2CHS*LCV460B

Category B **Class** 1

Function: Letdown inside containment isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally open. Stroking these valves during normal operation will result in a thermal shock to the Regenerative Heat Exchanger and associated piping resulting in an increased probability of system and component failure. In addition, failure of these valves in the closed position will cause loss of pressurizer level control which will result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 15

Valve No.:

2CHS*473

Category A/C **Class** 2

Function: Seal water return containment penetration X-19 thermal relief check valve (Bypasses 2CHS*MOV378)

Test Requirement: Quarterly full stroke

Basis for CSJ: This valve is closed during normal plant operation and is to remain closed for containment isolation. However, it will momentarily open if required to relieve pressure due to thermal expansion. Full stroke testing can only be performed by manually cycling the weight loaded arm. Since this valve is located inside containment, it is not accessible during normal operation.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 16

Valve No.:

2CHS*474
2CHS*475
2CHS*476

Category A/C **Class** 2

Function: Reactor Coolant Pumps seal water supply inside containment isolation check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: These valves are open during normal plant operation, but are required to be closed for containment isolation. Exercising these weight loaded arm check valves in the closed direction at power would secure RCP seal injection which would result in seal damage.

Alternate Test: Full stroke exercised closed by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 17

Valve No.:

2CHS*MOV8130A
2CHS*MOV8130B
2CHS*MOV8131A
2CHS*MOV8131B
2CHS*MOV8132A
2CHS*MOV8132B
2CHS*MOV8133A
2CHS*MOV8133B

Category B **Class** 2

Function: Charging pumps suction and discharge cross connect valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: The function of these valves is for Safety Injection train separation during cold leg recirculation. One valve in suction and discharge is required to close for train separation. Full stroking of the discharge cross connects cannot be performed during normal operation because these valves are required to be open and de-energized by technical specifications. Failure in the closed position under certain pump operating configurations would render the HHSI system inoperable. In addition, BV-2 has committed to de-energizing the power supply to the charging pump suction cross connects to prevent loss of charging pump suction in certain fire scenarios. The potential risk in damage to a HHSI pump does not justify the gain in cycling these valves during normal operation.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 18

Valve No.:

2RHS*3
2RHS*4

Category C **Class** 2

Function: Residual Heat Removal Pumps check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Valves open for Residual Heat Removal system operation and close to prevent reverse flow through the standby pump. During normal power operation, RHS is isolated from the RCS and Residual Heat Removal pumps are not required for operation. Verification of forward and reverse stroking requires pump operation and non-rotation of the idle pump respectively. Checking reverse stroke requires local observation. Since these valves are in containment they are inaccessible during normal operation.

Alternate Test: Full stroke exercised open during cold shutdown per 2OST-10.1(2) Full stroke exercised closed during cold shutdown per 2OST-10.3(4)

COLD SHUTDOWN JUSTIFICATION 19

Valve No.:

2RHS*FCV605A
2RHS*FCV605B

Category B **Class** 2

Function: Residual Heat Removal Heat Exchangers bypass flow control valves.

Test Requirement: Quarterly full stroke, time, and fail safe

Basis for CSJ: The safety related function of these valves is to fail closed on loss of power. Local observation is required to determine valve stroking. Valves are located inside reactor containment and are inaccessible during power operation.

Alternate Test: Full stroke exercised, timed and failed closed at cold shutdown per 2OST-10.3(4)

COLD SHUTDOWN JUSTIFICATION 20

Valve No.:

2RHS*MOV701A
2RHS*MOV701B
2RHS*MOV702A
2RHS*MOV702B
2RHS*MOV720A
2RHS*MOV720B

Category A **Class** 1

Function: Reactor Coolant System to Residual Heat Removal System isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: These valves are normally closed. The safety function is to open for initiation of the RHR system to attain cold shutdown and closed to isolate the RCS from the RHR system during normal operation. Full stroking these valves during normal operation cannot be performed because they are interlocked closed during normal operation to prevent overpressurization of RHR system piping.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-10.3(4).

COLD SHUTDOWN JUSTIFICATION 21

Valve No.:

2RHS*HCV758A
2RHS*HCV758B

Category B **Class** 2

Function: Residual Heat Removal Heat Exchangers flow control valves.

Test Requirement: Quarterly full stroke, time , and fail safe

Basis for CSJ: The safety related function of these valves is to fail open on loss of power. Local observation is required to determine valve stroking. Valves are located inside reactor containment and are inaccessible during power operation.

Alternate Test: Full stroke exercised, timed and failed open at cold shutdown per 2OST-10.3(4).

COLD SHUTDOWN JUSTIFICATION 22

Valve No.:

2SIS*42

Category A/C **Class** 2

Function: Safety Injection Accumulator fill inside containment isolation check valve

Test Requirement: Quarterly full stroke

Basis for CSJ: Valve is normally closed during power operation. Safety function is to be closed for containment isolation. Valve is opened during accumulator fill operation. Full stroke testing is verified by observing weight loaded arm movement. Since this valve is located inside containment, it is not accessible during normal operation.

Alternate Test: Full stroke exercised closed by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 23

Valve No.:

2SIS*83
2SIS*84
2SIS*94
2SIS*95

Category A/C **Class** 2

Function: HHSI to hot and cold legs inside containment isolation check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Normal position for these valves is closed. These valves are to remain closed for containment isolation and are opened for hot leg recirculation. Full stroking requires use of the weighted arm on the valves. Since these valves are located inside the containment they are not accessible during normal operation.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 24

Valve No.:

2SIS*130
2SIS*132
2SIS*133

Category A/C **Class** 2

Function: LHSI to hot and cold legs inside containment isolation valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Normal position is closed. These valves are to remain closed for containment isolation and reactor coolant pressure boundary isolation, and open for LHSI. Valves cannot be cycled during power operation because the LHSI pump can not develop enough head to overcome reactor coolant system pressure. In addition, cycling using the weighted arms is not possible since these valves are located inside containment and are not accessible during normal operation.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 25

Valve No.:

2SIS*MOV836

Category A **Class** 2

Function: HHSI to cold leg header isolation valve

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valve is normally closed and is opened by the operator to achieve a redundant flowpath to the cold legs during the recirculation mode. Full stroking during normal operation would inject relatively cold water into the RCS cold leg resulting in thermal shock to system piping and components which can lead to their premature failure.

Alternate Test: Full stroke exercised and timed open and closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 26

Valve No.:

2SIS*MOV869A
2SIS*MOV869B

Category A **Class** 2

Function: HHSI to hot leg [illegible]olation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally closed and are opened by the operator for hot leg recirculation. Full stroking these valves during normal operation would inject relatively cold water into the RCS hot legs resulting in thermal shock to system piping and components which can lead to their premature failure.

Alternate Test: Full stroke exercised and timed open and closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 27

Valve No.:

2SIS*MOV8889

Category A **Class** 2

Function: LHSI to RCS hot leg outside containment isolation valve

Test Requirement: Quarterly full stoke and time

Basis for CSJ: Valve is normally closed. Valve is required to be opened during hot leg recirculation mode. This valve is required to be closed and deenergized during normal operation in accordance with technical specifications. Full stroking during normal operation could result in overpressurization of the low pressure portion of LHSI piping if simultaneous check valve failure occurred.

Alternate Test: Full stroke exercised and timed open and closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 28

Valve No.:

2QSS*3
2QSS*4

Category A/C **Class** 2

Function: Quench spray header inside containment isolation check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Valves are normally closed. Safety position is open for QSS flow and closed for containment isolation. Exercising can only be performed by manually cycling the weight loaded arm on the check valve. Since these valves are located inside reactor containment, they are not accessible during normal operation.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 29

Valve No.:

2QSS*SOV100A
2QSS*SOV100B

Category A **Class** 2

Function: Chemical injection to containment sump outside containment isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Failure of these valves in the open position would cause loss of NaOH injection for the Quench Spray System. Also since these valves are located at the containment penetration, failure in the ope i position would require closing both chemical injection pump discharge valves to comply with technical specifications rendering chemical injection inoperable. This would require plant shutdown.

Alternate Test: Full stroke exercised and timed open and closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 30

Valve No.:

2QSS*267

Category A/C **Class** 2

Function: QSS chemical injection inside containment isolation check valve

Test Requirement: Quarterly full stroke

Basis for CSJ: Valve is normally closed. Safety function is open during chemical injection to containment sump and closed for containment isolation. Exercising can only be performed by cycling weight loaded arm. Since the valve is located inside the reactor containment, exercising cannot be performed during normal operation.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 31

Valve No.:

2RSS*29
2RSS*30
2RSS*31
2RSS*32

Category C **Class** 2

Function: RSS discharge headers to spray nozzle inside containment isolation valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Valves are normally closed. Safety function is open for RSS operation. Because RSS is normally maintained dry cycling can only be done using the weighted arm on the valve. These valves are located in the containment and are inaccessible during normal operation.

Alternate Test: Full stroke exercised open by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 32

Valve No.:

2CCP*AOV107A
2CCP*AOV107B
2CCP*AOV107C

Category B **Class** 3

Function: Reactor Coolant Pump Thermal Barrier Heat Exchanger CCP ou /et isolation valves

Test Requirement: Quarterly full stroke, time, and fail safe.

Basis for CSJ: Valves are normally open, and are required to close in the event of a primary loop to CCP leak in the reactor coolant pump seal thermal barrier. Closing the valves during normal operation would interrupt flow of cooling water to the reactor coolant pump seals. This could result in damage to the reactor coolant pump seals. Failure in the closed position would result in plant shutdown.

Alternate Test: Full stroke exercised, timed and failed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 33

Valve No.:

2CCP*MOV150-1
2CCP*MOV150-2
2CCP*MOV151-1
2CCP*MOV151-2
2CCP*MOV156-1
2CCP*MOV156-2
2CCP*MOV157-1
2CCP*MOV157-2

Category A **Class** 2

Function: CCP supply and return headers to reactor containment outside and inside isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally open; Safety position is closed for containment isolation. Closing the valves during normal operation would interrupt flow of cooling water to the reactor coolant pump seals. This could result in damage to the reactor coolant pump seals. Failure in the closed position would result in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 34

Valve No.:

2QSS*303
2QSS*304

Category A **Class** 2

Function: Chemical Injection Pump Discharge Header Check Valves to the Quench Spray Pumps

Test Requirement: Quarterly full stroke

Basis for CSJ: These check valves are normally closed. Their safety functions are to open to provide 23% NaOH from the Chemical Injection System to the Quench Spray System upon a CIB signal and to close during the Recirculation Phase. Check valve closure can be verified by opening an upstream vent and collecting a timed leak rate sample, but only after draining the discharge header first. If tested quarterly or at cold shutdown, the amount of radioactive water (borated RWST water used for testing) drained from the system would create additional liquid waste for disposal. An alternate method would require opening Chemical Injection Pump Discharge to Containment Sump Valves [2QSS*SOV100A or B] which can only be opened during Cold Shutdown (Reference: CSJ No. 29). Backleakage through the check valves would open Chemical Injection Pump Discharge to Quench Spray Pump Target Rock SOV's [2QSS*SOV101A(B)] or [2QSS*SOV102A(B)] due to a delta-p created by RWST head to the containment sump when [2QSS*SOV100A or B] is opened.

Alternate Test: Full stroke exercised in the open direction quarterly per 2OST-13.10A(B). Full stroke exercised in the closed direction during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 35

Valve No.:

2MSS*AOV101A
2MSS*AOV101B
2MSS*AOV101C

Category B **Class** 2

Function: Main Steam isolation valves for Steam Generators

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally open; safety position is closed for High Energy Line Break isolation. Closure of these valves during normal operation would result in plant shutdown.

Alternate Test: Partial stroke exercised closed quarterly per 2OST-21.1(2)(3). Full stroke exercised and timed closed per 2OST-21.7 at shutdown with TAVG ≥515F.

COLD SHUTDOWN JUSTIFICATION 36

Valve No.:

2SVS*80
2SVS*81
2SVS*82

Category C **Class** 2

Function: Steam Generators residual heat release check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Full stroking open these valves during normal operation cannot be performed because a reduction in plant power would be required in order to prevent exceeding full power limitations.

Alternate Test: Full stroke exercised open during unit shutdown per 2OM-51.4.C.

COLD SHUTDOWN JUSTIFICATION 37

Valve No.:

2SVS*PCV101A
2SVS*PCV101B
2SVS*PCV101C

Category B **Class** 2

Function: Steam Generators atmospheric dump valves

Test Requirement: Quarterly full stroke, time, and fail safe

Basis for CSJ: These valves are normally closed. The safety function is to open to control S/G pressure after a reactor trip. Full or partial stroking open these valves during normal operation cannot be performed because a reduction in plant power would be required in order to prevent exceeding full power limitations. Closing the manual isolation valves so that these valves can be cycled presents an unacceptable risk to plant personnel due to their location in the plant.

Alternate Test: Full stroke exercised and timed open and closed and failed closed per 2OST-1.10 at cold shutdown.

COLD SHUTDOWN JUSTIFICATION 38

Valve No.:

2SVS*HCV104

Category B **Class** 2

Function: Combined Main Steam atmospheric dump valve

Test Requirement: Quarterly full stroke, time, and fail safe

Basis for CSJ: Valve is normally closed. Opened as necessary by operator during cooldown from the control room or Emergency Shutdown Panel. Full or partial stroking open this valve during normal operation cannot be performed because a reduction in plant power would be required in order to prevent exceeding full power limitations. Closing the manual isolation valve so that this valve can be cycled presents an unacceptable risk to plant personnel due to its location in plant.

Alternate Test: Full stroke exercised and timed open and closed and failed closed per 2OST-1.10 at cold shutdown.

COLD SHUTDOWN JUSTIFICATION 39

Valve No.:

2FWS*HYV157A
2FWS*HYV157B
2FWS*HYV157C

Category B **Class** 2

Function: Main Feedwater Headers Isolation Valves to Steam Generators

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally open. Safety position is closed for Feedwater isolation in the event of a high energy line break or Safety Injection System actuation. Full stroking closed during normal operation cannot be performed since this would stop feedwater flow to the steam generators resulting in plant shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 40

Valve No.:

2FWE*42A
2FWE*42B
2FWE*43A
2FWE*43B
2FWE*44A
2FWE*44B

Category C **Class** 2

Function: Auxiliary Feedwater headers check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Valves are normally closed. Safety position is opened for Auxiliary Feed System injection and closed to provide header separation in the event of a line break. Full stroking these valves during normal operation cannot be performed because the test method requires design flow to the steam generator for both forward and reverse stroking. injection of relatively cold auxiliary feedwater would result in a thermal shock to the auxiliary feedwater piping which could lead to premature failure.

Alternate Test: Full stroke exercised in both directions during cold shutdown per 2OST-24.6. In addition, reverse direction testing will be performed by monitoring pipe temperatures at least monthly by 2OST-24.1.

COLD SHUTDOWN JUSTIFICATION 41

Valve No.:

2FWE*99
2FWE*100
2FWE*101

Category C **Class** 2

Function: Auxiliary Feedwater header check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Full stroking these valves open during normal operation cannot be performed because the test method requires design flow to the steam generator. Injection of relatively cold auxiliary feedwater would result in a thermal shock to the auxiliary feedwater piping which could lead to premature failure.

Alternate Test: Full stroke exercised open during cold shutdown per 2OST-24.6.

COLD SHUTDOWN JUSTIFICATION 42

Valve No.:

2FWE*FCV122
2FWE*FCV123A
2FWE*FCV123B

Category B/C **Class** 3

Function: Auxiliary Feed Pumps discharge flow control/check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: These valves function as a pump discharge check valve (normally closed) and as an Auxiliary feed pump mini-flow control valve (normally open). Exercising of the check valves in the open position (and the mini-flow control valve closed) requires design flow to the steam generators, that would result in a thermal shock to the auxiliary feedwater piping which could lead to premature failure.

Alternate Test: Full stroke exercised open and closed at cold shutdown per 2OST-24.4 and 24.6.

COLD SHUTDOWN JUSTIFICATION 43

Valve No.:

2SWS*57
2SWS*58
2SWS*59

Category C **Class** 3

Function: Service water pumps discharge check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Due to system design flow requirements at power, exercising of these valves in the closed direction requires use of the idle SWS pump. Relief is requested in the event the idle SWS pump is out of service for maintenance. Exercising can be accomplished upon return of the idle SWS pump to service.

Alternate Test: Full stroke exercised closed per 2OST-30.6 quarterly or when the idle SWS pump is returned to service or at least at cold shutdown.

COLD SHUTDOWN JUSTIFICATION 44

Valve No.:

2SWS*MOV102A
2SWS*MOV102B
2SWS*MOV102C1
2SWS*MOV102C2

Category B **Class** 3

Function: Service water pumps discharge valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Due to system design flow requirements at power, exercising of these valves requires use of the idle SWS pump. Relief is requested in the event the idle SWS pump is out of service for maintenance. Exercising can be accomplished upon return of the idle SWS pump to service.

Alternate Test: Full stroke exercised and timed open per 2OST-30.6 quarterly or when the idle SWS pump is returned to service or at least at cold shutdown.

COLD SHUTDOWN JUSTIFICATION NO. 45

Valve No.:

2SWS*106
2SWS*107

Category C **Class** 3

Function: Service water header check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Full stroking these valves in the reverse direction is accomplished using a standby service water pump and cannot be performed during normal operation. Testing requires all SW pumps to be shutdown and the headers cross connected at the pumps in order to provide an upstream vent path of sufficient capacity to identify valve deterioration.

Alternate Test: Full stroke exercised closed during cold shutdown per 2OST-30.8.

COLD SHUTDOWN JUSTIFICATION 46

Valve No.:

2SWS*MOV106A
2SWS*MOV106B

Category B **Class** 3

Function: Service Water headers isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: These valves are normally open. The safety function is to close to ensure sufficient SWS supply to the RSS Heat exchangers. Closing these valves during normal operation would reduce service water supply to Turbine Building and CCP heat exchangers below acceptable limits for full power operation. Failure of the valves to reopen after closure could lead to equipment damage and plant shutdown.

Alternate Test: Full stroke exercised and timed closed per 2OST-1.10 at cold shutdown and per 2OST-30.13A(B) at refueling.

COLD SHUTDOWN JUSTIFICATION 47

Valve No.:

2SWS*MOV107A
2SWS*MOV107B
2SWS*MOV107C
2SWS*MOV107D

Category B **Class** 3

Function: CCS HX from service water headers isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: These valves are normally open. The safety function is to close to isolate the NNS portion of the service water system. Stroking of these valves closed during normal operation could result in a thermal transient and potential plant trip. The thermal transients created by isolating Service Water System flow to the turbine plant cooling loads raises operational concerns of stability problems. Changes in oil temperature from the turbine generator lube oil system create vibration problems. Changes in the Hydrogen gas cooler temperatures could imply problems or mask real problems with the generator. Chiller unit heat exchanger flow disturbances often result in a trip of the chiller unit causing reactor containment temperature risks of exceeding the technical specification limit.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 48

Valve No.:

2SWS*486
2SWS*487
2SWS*488

Category C **Class** 3

Function: Service water pumps vacuum breaker check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: Due to system design flow requirements at power, exercising of these valves requires use of the idle SWS pump. Relief is requested in the event the idle SWS pump is out of service for maintenance. Exercising can be accomplished upon return of the idle SWS pump to service.

Alternate Test: Full stroke exercised open and closed per 2OST-30.2(3)(6) quarterly or when the idle SWS pump is returned to service or at least cold shutdown.

COLD SHUTDOWN JUSTIFICATION 49

Valve No.:

2FPW*382
2FPW*388
2FPW*753
2FPW*761

Category A/C **Class** 2

Function: Fire protection headers inside containment isolation check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: These valves are normally closed. They would be opened in the event of a fire in containment. The safety position is closed for containment isolation. Full stroke testing can only be performed by cycling the weight loaded arm or leak testing. Since these valves are located inside containment, they are not accessible during normal operation.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 50

Valve No.:

2IAC*22

Category A/C **Class** 2

Function: Instrument Air header inside containment isolation check valve

Test Requirement: Quarterly full stroke

Basis for CSJ: This valve is normally closed and is opened as required to supply instrument air to the containment. The safety position is closed for containment isolation. Full stroke testing can only be performed by cycling the weight loaded arm or leak testing. Since this valve is located inside containment, it is not accessible during normal operation.

Alternate Test: Full stroke exercised closed by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 51

Valve No.:

2HVR*MOD23A
2HVR*MOD23B
2HVR*MOD25A
2HVR*MOD25B

Category A **Class** 2

Function: Containment purge discharge and supply outside and inside isolation dampers

Test Requirement: Quarterly full stroke and time

Basis for CSJ: These dampers are closed during power operation and opened for refueling operation. Safety functions are during power operation to remain closed for containment isolation and during refueling to close in the event of a refueling accident. These dampers cannot be cycled during normal operation because Technical Specifications require the dampers to be locked shut during normal operations.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 52

Valve No.:

2CVS*SOV102
2CVS*SOV153A
2CVS*SOV153B

Category A **Class** 2

Function: Containment Airborne Activity Radiation Monitor [2RMR*RQ303] containment isolation valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: In order to stroke and time these valves, the Containment Airborne Activity Radiation Monitor [2RMR*RQ303] must be shutdown. When this occurs, both the containment gaseous and particulate airborne activity monitors are temporarily inoperable and places the plant in a twelve hour action per Tech. Spec. 3.4.6.1 with additional requirements to verify the containment sump discharge flow measurement system operable and to perform a RCS water inventory balance in four hours. Without these additional provisions a forced shutdown is required in six hours.

Alternate Test: Each valve is full stroke exercised and timed closed at cold shutdown per 2OST-1.10. [2CVS*SOV102] is also full stroke exercised and timed open at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 53

Valve No.:

2SIS*46
2SIS*47

Category C **Class** 2

Function: Recirculation Spray Pump discharge to LHSI Pump discharge weighted arm check valves

Test Requirement: Quarterly full stroke

Basis for CSJ: These check valves are normally closed. Their safety function is to open during the Recirculation Phase. Full stroke testing can only be done by cycling the weight loaded arm of each check valve. Exercising these weighted arm check valves in the open direction during normal operation requires excessive forces due to the head of water from the Refueling Water Storage Tank (RWST) against the check valve disk. Engineering does not recommend applying the excessive forces required to cycle the check valves open. The pressure created by the head of water from the RWST could be bled off by isolating one LHSI System train at a time and draining radioactive water from a drain valve into a sump. However, isolating one train of an Emergency Core Cooling System during plant operation would place the plant into a Technical Specification Action Statement. If tested quarterly, the amount of radioactive water drained from the system to bleed off pressure would create additional liquid waste for disposal.

Alternate Test: Full stroke exercised in both directions by mechanical exerciser during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 54

Valve No.:

2CCP*27A
2CCP*27B
2CCP*354
2CCP*355

Category B **Class** 3

Function: Component Cooling discharge header cross-connect manual isolation valves

Test Requirement: Quarterly full stroke

Basis for CSJ: The Component Cooling System operates in a cross-connected condition with all the above manual valves open and any two of three Component Cooling Pumps supplying any two of three Component Cooling Heat Exchangers through a Train A or Train B flow path. With one of the heat exchangers out of service for cleaning, closure of these manual valves during normal operation would interrupt flow of cooling water to Train A or Train B cooling loads resulting in a thermal transient and potential plant trip. In addition, the idle heat exchanger is normally held in reserve following cleaning to improve plant reliability until one of the inservice heat exchangers becomes fouled. Exercising of these valves in conjunction with the quarterly pump tests with the "C" Heat Exchanger in service would require placing the clean heat exchanger into service prematurely in order to prevent isolation of the Train A or Train B cooling loads.

Alternate Test: Full stroke exercised closed during cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 55

Valve No.:

2FWS*FCV478
2FWS*FCV488
2FWS*FCV498

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 in the event of a high energy line break or Safety Injection System actuation. Full stroking closed during normal operation cannot be performed since this would isolate feedwater flow to the steam generators resulting in a plant trip and shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 56

Valve No.:

2FWS*FCV479
2FWS*FCV489
2FWS*FCV499

Category B **Class** 2

Function: Steam generator bypass feedwater control valves

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Valves are normally set at approximately 10% open during power operation. Their safety position is closed for feedwater isolation in the event of a high energy line break or Safety Injection System actuation. Full stroking closed may cause an unnecessary challenge to the plant during normal operation since this will cause the main feed regulating valves to reposition to compensate for the loss of flow. The resulting transient on the steam generators may result in a plant trip and shutdown.

Alternate Test: Full stroke exercised and timed closed at cold shutdown per 2OST-1.10.

COLD SHUTDOWN JUSTIFICATION 57

Valve No.:

2QSS*MOV102A
2QSS*MOV102B

Category B **Class** 2

Function: Quench Spray Chemical Addition Tank discharge isolation valves to Chemical Injection Pumps

Test Requirement: Quarterly full stroke and time

Basis for CSJ: Stroking these valves introduces 23% NaOH from the Chemical Addition Tank into the piping downstream of these valves. Attempts to purge the downstream piping using a backflush of RWST water to the Safeguards sump after valve stroking has proven ineffective. Subsequent testing of the Chemical Injection Pumps on recirculation with the RWST results in sodium contamination of the RWST. During refueling outages the RCS, fuel pool and RWST are all in direct communication, therefore any sodium intrusion into the RWST will eventually spread to the RCS, a highly undesirable situation.

Removal of sodium from the RWST is a difficult process which involves recirculation of the RWST through the Fuel Pool Ion Exchangers. This process can degrade RWST cooling (RWST temperature is limited by Technical Specifications), and can take months to reduce the concentration to the desired level. In order to prevent any sodium introduction into the RWST, a more effective flush after valve stroking could be performed, but it involves a much longer period of system inoperability. Performance at Cold Shutdown would allow a more thorough backflush while in a Mode where the system is not required by Technical Specifications.

Alternate Test: Full stroke exercised and timed open at cold shutdown per 2OST-1.10.

SECTION VIII: VALVE TESTING RELIEF REQUESTS

RELIEF REQUEST 1

Valve No.:

See next page

Category A and 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 testing is more limiting than ASME Section XI, additional leak testing in accordance with ASME Section XI would be redundant.

Alternate Test: Leak test at refueling in accordance with 10CFR50, Appendix J, IWV-3426, and IWV-3427(a) per 2BVT 1.47.5. As a special test, after maintenance has been performed on any Type C relief valves, 2BVT 2.47.2 may be performed to leak test the applicable relief valves in lieu of 2BVT 1.47.5.

RELIEF REQUEST 1

CONTAINMENT ISOLATION VALVES

2RCS*68
2RCS*72
2RCS*RV100
2RCS*AOV101
2RCS*AOV519
2CHS*HCV142
2CHS*AOV200A
2CHS*AOV200B
2CHS*AOV200C
2CHS*RV203
2CHS*AOV204
2CHS*MOV378
2CHS*MOV381
2CHS*473
2DAS*AOV100A
2DAS*AOV100B
2DAS*RV110
2DGS*AOV108A
2DGS*AOV108B
2DGS*RV115
2VRS*AOV109A1
2VRS*AOV109A2
2RHS*15
2RHS*RV100
2RHS*107
2SIS*41
2SIS*42
2SIS*RV130
2SIS*RV175
2SIS*MOV842
2SIS*AOV889
2GNS*AOV101-1
2GNS*AOV101-2
2CVS*93
2CVS*SOV102
2CVS*151
2CVS*151-1
2CVS*SOV151A
2CVS*SOV151B
2CVS*SOV152A
2CVS*SOV152B
2CVS*SOV153A
2CVS*SOV153B
2LMS*51
2LMS*52
2QSS*3
2QSS*4
2QSS*SOV100A
2QSS*SOV100B
2QSS*MOV101A
2QSS*MOV101B
2QSS*RV101A
2QSS*RV101B
2QSS*267
2SSR*AOV100A1
2SSR*AOV100A2
2SSR*AOV102A1
2SSR*AOV102A2
2SSR*AOV109A1
2SSR*AOV109A2
2SSR*AOV112A1
2SSR*AOV112A2
2SSR*RV117
2SSR*RV118
2SSR*RV119
2SSR*RV120
2SSR*RV121
2SSR*RV122
2SSR*SOV128A1
2SSR*SOV128A2
2SSR*SOV129A1
2SSR*SOV129A2
2SSR*SOV130A1
2SSR*SOV130A2
2PAS*SOV105A1
2PAS*SOV105A2
2CCP*RV102
2CCP*RV103
2CCP*RV104
2CCP*RV105
2CCP*MOV150-1
2CCP*MOV150-2
2CCP*MOV151-1
2CCP*MOV151-2
2CCP*MOV156-1
2CCP*MOV156-2
2CCP*MOV157-1
2CCP*MOV157-2
2FNC*9
2FNC*38
2FNC*121
2FNC*122
2SWS*RV152
2SWS*MOV152-1
2SWS*MOV152-2
2SWS*RV153
2SWS*MOV153-1
2SWS*MOV153-2
2SWS*RV154
2SWS*MOV154-1
2SWS*MOV154-2
2SWS*RV155
2SWS*MOV155-1
2SWS*MOV155-2
2FPW*AOV204
2FPW*AOV205
2FPW*AOV206
2FPW*AOV221
2FPW*382
2FPW*388
2FPW*753
2FPW*761
2SAS*14
2SAS*15
2IAC*22
2IAC*MOV130
2IAC*MOV133
2IAC*MOV134
2HVR*MOD23A
2HVR*MOD23B
2HVR*MOD25A
2HVR*MOD25B
2HVR*DMP206
2HCS*110
2HCS*111
2HCS*SOV114A
2HCS*SOV114B
2HCS*SOV115A
2HCS*SOV115B
2HCS*MOV116
2HCS*MOV117
2HCS*SOV133A
2HCS*SOV133B
2HCS*SOV134A
2HCS*SOV134B
2HCS*SOV135A
2HCS*SOV135B
2HCS*SOV136A
2HCS*SOV136B

RELIEF REQUEST 2

Valve No.:

See below

Category A and A/C **Class** 2

Function: Containment Isolation

Test Requirement: Corrective action following leak testing per IWV-3427(b)

Basis for Relief: IWV-3427(b) specifies additional requirements on increased test frequencies for valve sizes of six inches and larger and repairs or replacement over the requirements of IWV-3427(a). 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.

Alternate Test: For valves (6 inch diameter or larger) in 2BVT 1.47.5, if the measured leak rate exceeds the rate determined, the valve shall be replaced or repaired.

CONTAINMENT ISOLATION VALVES

2CHS*AOV200A	2QSS*MOV101A	2CCP*MOV151-1	2FNC*122	2SWS*MOV154-2
2CHS*AOV200B	2QSS*MOV101B	2CCP*MOV151-2	2SWS*RV152	2SWS*RV155
2CHS*AOV200C	2QSS*RV101A	2CCP*MOV156-1	2SWS*MOV152-1	2SWS*MOV155-1
2RHS*15	2QSS*RV101B	2CCP*MOV156-2	2SWS*MOV152-2	2SWS*MOV155-2
2RHS*RV100	2CCP*RV102	2CCP*MOV157-1	2SWS*RV153	2FPW*AOV206
2RHS*107	2CCP*RV103	2CCP*MOV157-2	2SWS*MOV153-1	2FPW*761
2CVS*151	2CCP*RV104	2FNC*9	2SWS*MOV153-2	2HVR*MOD23A
2CVS*151-1	2CCP*RV105	2FNC*38	2SWS*RV154	2HVR*MOD23B
2QSS*3	2CCP*MOV150-1	2FNC*121	2SWS*MOV154-1	2HVR*MOD25A
2QSS*4	2CCP*MOV150-2			2HVR*MOD25B
				2HVR*DMP206

RELIEF REQUEST 3

Valve No.:

2CHS*22
2CHS*23
2CHS*24

Category C **Class** 2

Function: Charging pumps discharge check valves

Test Requirement: Quarterly full stroke

Basis for Relief: When the RCS is at normal operating pressure, full stroking the discharge check valves cannot be performed because the charging pump will not develop the required flow. In addition, injection of relatively cold water will cause a thermal cycle or shock resulting in an increased probability of system failure. At cold shutdown full stroking cannot be performed because full flow testing could result in low-temperature overpressurization of the RCS.

Alternate Test: Partial stroke exercised open quarterly per 2OST-7.4(5)(6). Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 4

Valve No.:

2SIS*6
2SIS*7

Category C **Class** 2

Function: LHSI pumps discharge check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Normal position is closed. Safety function is to open for LHSI. When the RCS is at normal operating pressure, full stroking the discharge check valves cannot be performed because the LHSI pump will not develop the required flow to open the valve. At cold shutdown full stroking cannot be performed because testing would require full flow injection to the RCS where there is not sufficient volume to receive the additional inventory.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14

RELIEF REQUEST 5

Valve No.:

2SIS*27

Category C **Class** 2

Function: RWST to HHSI pump suction check valve

Test Requirement: Quarterly full stroke

Basis for Relief: When the RCS is at normal operating pressure, full stroking the suction check valve cannot be performed because the charging pump will not develop the required flow. In addition, partial stroking cannot be performed because injection of relatively cold water will cause a thermal cycle or shock resulting in an increased probability of system failure. At cold shutdown full stroking cannot be performed because full flow testing could result in low-temperature overpressurization of the RCS.

Alternate Test: Part-stroke exercised open at cold shutdown per 2OST-1.10. Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 6

Valve No.:

2SIS*107
2SIS*108
2SIS*109

Category A/C **Class** 1

Function: LHSI header check valves to RCS cold legs

Test Requirement: Quarterly full stroke

Basis for Relief: Normal position is closed. Safety function is to open for LHSI and closed to isolate the LHSI system piping from the RCS during normal operation. When the RCS is at normal operating pressure, full stroking the header check valves cannot be performed because the LHSI pump will not develop the required flow to open the valve. At cold shutdown full stroking cannot be performed because testing would require full flow injection to the RCS where there is not sufficient volume to receive the additional inventory.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 7

Valve No.:

2SIS*122
2SIS*123
2SIS*124
2SIS*125
2SIS*126
2SIS*127

Category C **Class** 1

Function: HHSI header check valves to RCS hot legs

Test Requirement: Quarterly full stroke

Basis for Relief: Normal position is closed. Safety function is to open for HHSI. When the RCS is at normal operating pressure, full stroking the header check valves cannot be performed because the charging pump will not develop the required flow. In addition, injection of relatively cold water will cause a thermal cycle or shock resulting in an increased probability of system failure. At cold shutdown full stroking cannot be performed because full flow testing could result in low-temperature overpressurization of the RCS.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 8

Valve No.:

2SIS*128
2SIS*129

Category A/C **Class** 1

Function: LHSI header check valves to RCS hot legs

Test Requirement: Quarterly full stroke

Basis for Relief: Normal position is closed. Safety function is to open for LHSI and closed to isolate the LHSI system piping from the RCS during normal operation. When the RCS is at normal operating pressure, full stroking the header check valves cannot be performed because the LHSI pump will not develop the required flow to open the valve. At cold shutdown full stroking cannot be performed because testing would require full flow injection to the RCS where there is not sufficient volume to receive the additional inventory.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 9

Valve No.:

2SIS*134
2SIS*135
2SIS*136
2SIS*137
2SIS*138
2SIS*139

Category C **Class** 1

Function: HHSI header check valves to RCS cold legs

Test Requirement: Quarterly full stroke

Basis for Relief: When the RCS is at normal operating pressure, full stroking the header check valves cannot be performed because the charging pump will not develop the required flow. In addition injection of relatively cold water will cause a thermal cycle or shock resulting in an increased probability of system failure. At cold shutdown full stroking cannot be performed because full flow testing could result in low-temperature overpressurization of the RCS.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 10

Valve No.:

2SIS*141
2SIS*142
2SIS*145
2SIS*147
2SIS*148
2SIS*151

Category A/C **Class** 1

Function: Safety Injection Accumulators discharge check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Normal position is closed. Safety function is to open for passive low pressure injection to the RCS. When the RCS is at normal operating pressure, full stroking accumulator discharge check valves cannot be performed because the RCS is at a higher pressure than the accumulators. Full stroking may not be performed during cold shutdown because the reduced pressure which is required to perform this test may not be obtainable. In addition, stroke testing if attempted at cold shutdown could extend the length of a plant shutdown due to extensive preparatory work in establishing the proper reactor coolant system conditions.

Alternate Test: Full stroke exercised open at refueling per 28VT 1.11.3. As a special test, after maintenance has been performed on any of these valves, 20ST-11.15 may be performed to partial stroke exercise the applicable check valve.

RELIEF REQUEST 11

Valve No.:

2SIS*545
2SIS*546
2SIS*547

Category C **Class** 1

Function: HHSI/LHSI header to RCS hot legs check valves

Test Requirement: Quarterly full stroke

Basis for Relief: When the RCS is at normal operating pressure, full stroking the header check valves cannot be performed because the charging pump will not develop the required flow. In addition, injection of relatively cold water will cause a thermal cycle or shock resulting in an increased probability of system failure. At cold shutdown full stroking cannot be performed for [2SIS*547] because full flow testing could result in low-temperature overpressurization of the RCS. Additionally, full stroking of [2SIS*545 and 546] cannot be performed because testing would require full flow injection from LHSI to the RCS where there is not sufficient volume to receive the additional inventory.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 12

Valve No.:

2SIS*548
2SIS*550
2SIS*552

Category C **Class** 1

Function: HHSI/LHSI header to RCS cold legs check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Normal position is closed. Safety function is to open for HHSI/LHSI. When the RCS is at normal operating pressure, full stroking the header check valves cannot be performed because the LHSI pumps will not develop the required flow. At cold shutdown full stroking cannot be performed because testing would require full flow injection to the RCS where there is not sufficient volume to receive the additional inventory.

Alternate Test: Full stroke exercised open at refueling per 2OST-11.14.

RELIEF REQUEST 13

Valve No.:

2CVS*93

Category A/C **Class** 2

Function: Containment Vacuum Radiation Monitor Pump discharge header inside containment isolation check valve

Test Requirement: Quarterly full stroke

Basis for Relief: Valve is normally open. Safety function is closed for containment isolation. Full stroking closed cannot be performed during normal operation because this valve is located inside containment and is inaccessible. In addition, leak testing is required to verify closure of this valve, and if attempted at cold shutdown could delay plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2BVT 1.47.5.

RELIEF REQUEST 14

Valve No.:

2CCP*289
2CCP*290
2CCP*291

Category A/C **Class** 3

Function: CCP to Reactor Coolant Pump Thermal Barrier Heat Exchanger supply check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Valves are normally open. Safety function is to close to isolate CCP from reactor coolant if a leak develops in the RCP thermal barrier heat exchanger. Valves cannot be full stroked during normal operation because the valves are located inside the containment and leak testing is required to verify closure. In addition, leak testing if attempted at cold shutdown could result in a delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2BVT 1.60.6.

RELIEF REQUEST 15

Valve No.:

2CCP*352

Category C **Class** 3

Function: SC-3 to NNS boundary isolation valve

Test Requirement: Quarterly full stroke

Basis for Relief: Valve is normally open. Safety function is closed to isolate NNS from SC-3 component cooling piping. Testing during normal operation cannot be performed because leak testing is required to verify valve closure, which would cause extended interruption of cooling water to the instrument air compressors. In addition, leak testing if attempted at cold shutdown could result in a delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2BVT 1.60.6.

RELIEF REQUEST 16

Valve No.:

2MSS*18
2MSS*19
2MSS*20
2MSS*196
2MSS*199
2MSS*352

Category C **Class** 3

Function: Main Steam to Auxiliary Feed Pumps check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Valves are normally closed. Safety function is to open for operation of the steam driven auxiliary feed pump and closed to prevent steam generator cross-connection during a high energy line break. Full stroking closed for these valves cannot be performed during normal operation because leak testing is required to verify full closure. In addition, leak testing if attempted at cold shutdown could result in a delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2BVT 1.60.6.

RELIEF REQUEST 17

Valve No.:

2SVS*80
2SVS*81
2SVS*82

Category C **Class** 2

Function: Steam Generators residual heat release reverse flow check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Valves are normally closed. Safety position is closed to prevent cross-connection of steam generators during a high energy line break. Full stroking closed for these valves cannot be performed during normal operation because leak testing is required to verify full closure. In addition, leak testing if attempted at cold shutdown could result in a delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2BVT 1.60.6.

RELIEF REQUEST 18

Valve No.:

2FWS*28
2FWS*29
2FWS*30

Category C **Class** 2

Function: Main Feedwater header isolation check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Valves are normally open. Safety position is closed for Feedwater isolation in the event of a high energy line break. Exercising during power operation is not possible since this would require stopping feedwater flow to the Steam Generators, resulting in a plant shutdown. Leak testing to be performed with steam generator level $\geq$ 85% is required to verify the valves are full closed because they have no position indication or weighted arms. Leak testing if attempted at cold shutdown could result in delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2OST-24.8.

RELIEF REQUEST 19

Valve No.:

2FWE*99
2FWE*100
2FWE*101

Category C **Class** 2

Function: Auxiliary Feedwater header to Steam Generators check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Valves are normally closed. Safety function is to open during Auxiliary Feed System operation. Verification of full stroke closed is not possible during power operation because this involves a leak test to be performed with steam generator level ≥ 85%. Leak testing if attempted at cold shutdown could result in a delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2OST-24.8A. In addition, reverse direction testing will be performed by monitoring upstream pipe temperatures at least monthly by 2OST-24.1.

RELIEF REQUEST 20

Valve No.:

2SWS*MOV103A
2SWS*MOV103B

Category B **Class** 3

Function: RSS heat exchangers service water supply isolation valves.

Test Requirement: Quarterly full stroke and time

Basis for Relief: Valves are normally closed. Safety function is to open to supply cooling water to the RSS heat exchangers. Valve is not cycled during plant operation as failure of the valve in the open position would require plant shutdown. Failure of the valve in the open position at cold shutdown would delay plant startup. (The Service Water System cannot simultaneously support normal plant operation and the RSS heat exchangers)

Alternate Test: Full stroke exercised and timed open at refueling per 2OST-30.13A(B).

RELIEF REQUEST 21

Valve No.:

2SWS*1103
2SWS*1104

Category C **Class** 3

Function: Service water to main steam valve house cooling headers check valves

Test Requirement: Quarterly full stroke

Basis for Relief: Valves are normally open. Safety position is open to supply cooling water to main steam valve house cooling coils, and closed to prevent draining the inlet lines to the MSVH cooling coils during a service water pump trip on a loss of power. Full stroking in the closed position cannot be performed during normal operation because isolation of the service water supply header in conjunction with a leak test is required to verify full closure. Isolation of the header is not acceptable because both SW headers are normally in service. In addition, leak testing if attempted at cold shutdown could result in a delayed plant startup.

Alternate Test: Valve closure is verified by a leak test at refueling per 2BVT 1.60.6.

RELIEF REQUEST 22

Valve No.:

2EGF*SOV202-1
2EGF*SOV202-2
2EGF*SOV203-1
2EGF*SOV203-2

Category B **Class** 3

Function: Emergency Diesel Generator Air Starting Solenoid Valves

Test Requirement: Quarterly stroke and time/verify remote position indication bi-annually.

Basis for Relief: These valves are quick acting and do not have position indication. Operation of these valves will be monitored by timing the starting time to rated speed for each EDG. Individual valves will be tested by isolating one bank of air prior to starting on an alternating frequency. This will insure each bank is capable of starting the EDG in the required time and that the air starting solenoids are not degrading.

Alternate Test: Stroked and indirectly timed on an alternating frequency in conjunction with monthly diesel generator 2OST-36.1 and 36.2 to ensure compliance with ASME XI requirement for stroke testing on a quarterly frequency. Assign a limiting stroke time based on EDG starting requirements for ESF response time. (EDG ready to accept load $\leq$ 10 sec.).

RELIEF REQUEST 23

Valve No.:

2CHS*MOV378
2CHS*473

Category A and A/C **Class** 2

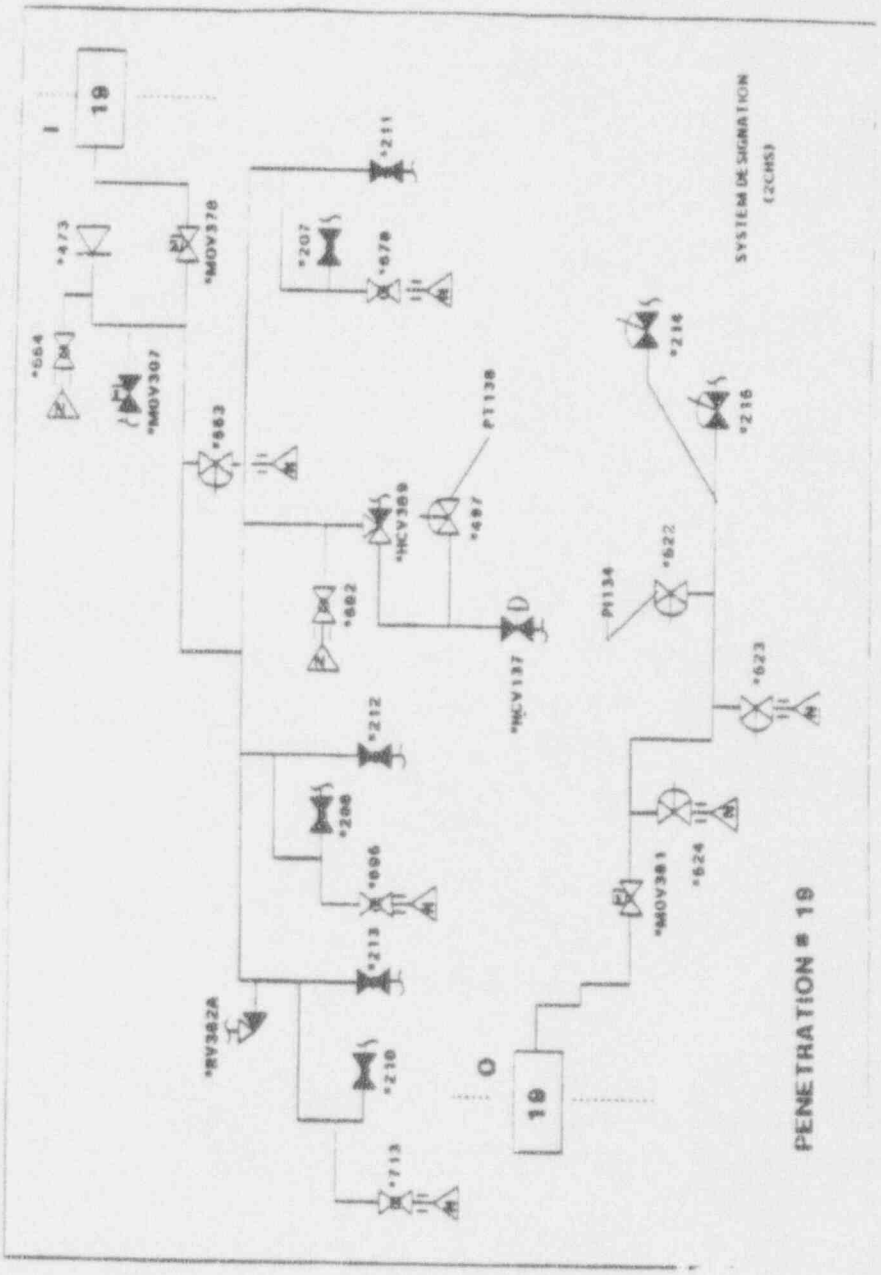
Function: RCP seal water return line inside containment isolation valves

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

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

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

RELIEF REQUEST 23



RELIEF REQUEST 24

Valve No.:

2CHS*AOV200A
2CHS*AOV200B
2CHS*AOV200C

Category A **Class** 2

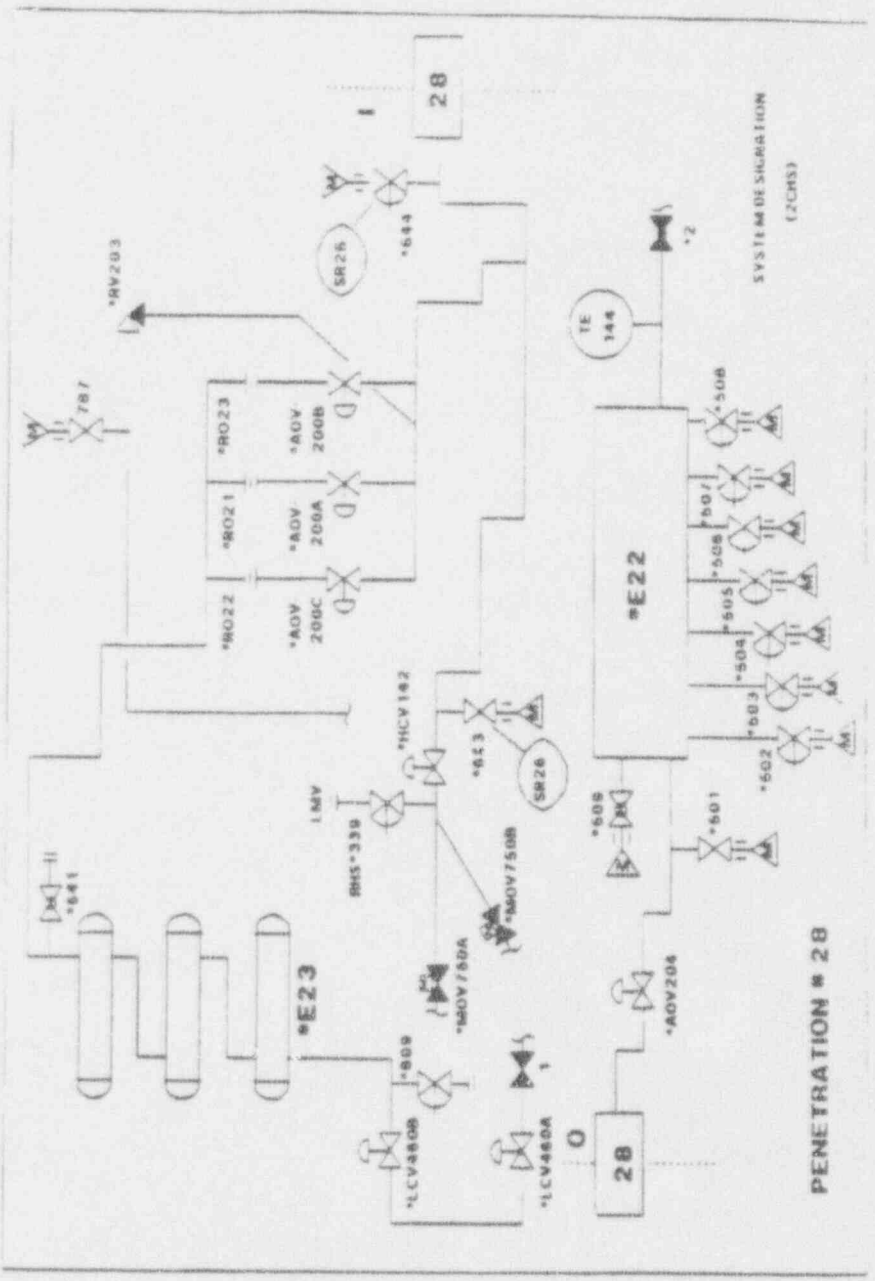
Function: Reactor coolant letdown orifice inside containment isolation valves

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

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

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

RELIEF REQUEST 24



RELIEF REQUEST 25

Valve No.:

2HVR*MOD23A
2HVR*MOD23B

Category A **Class** 2

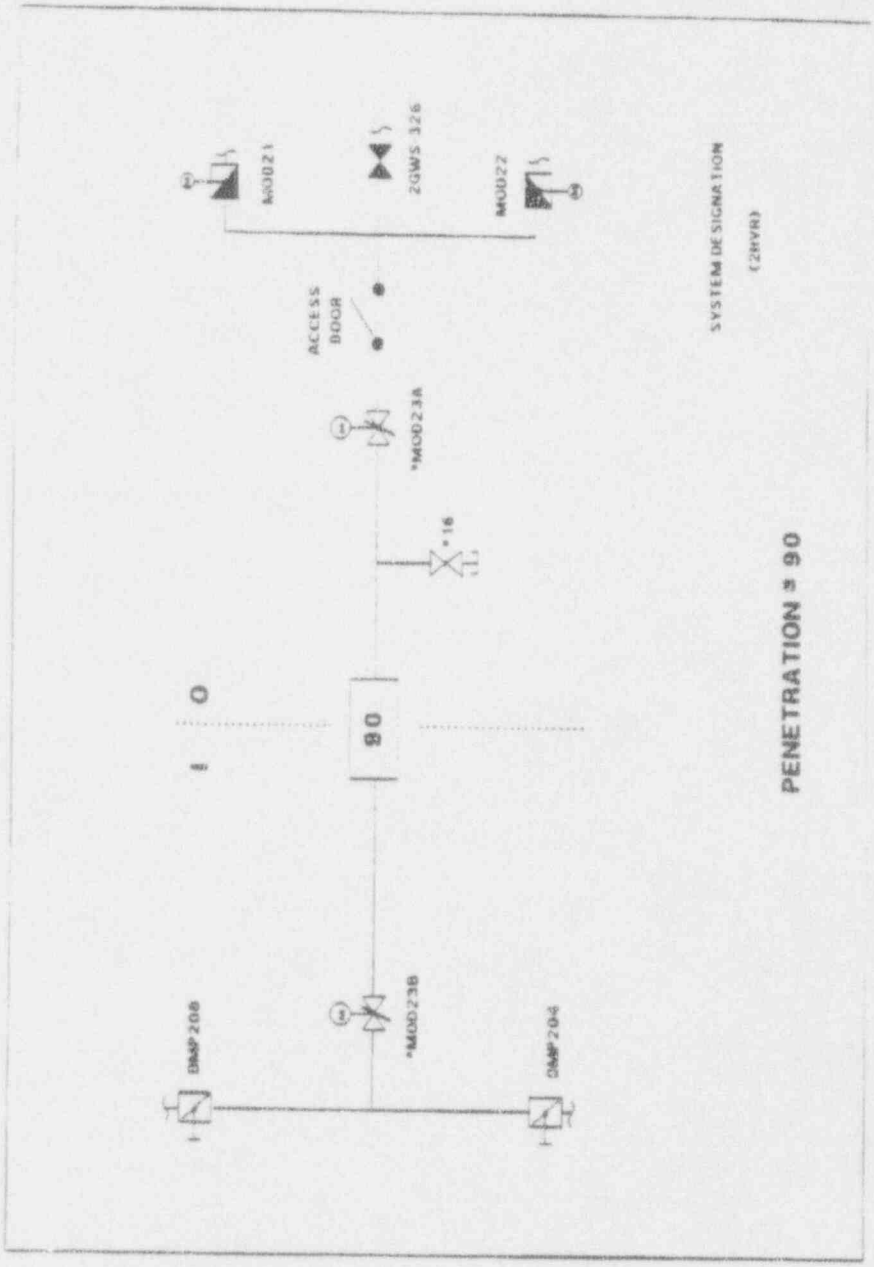
Function: Containment purge exhaust fan containment isolation dampers

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

Basis for Relief: As shown on the attached figure for Penetration #90, the configuration of this containment penetration (i.e., a single test connection located between two containment isolation dampers in series) is such that individual leakage rates for each specific damper cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each damper would not be practical.

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

RELIEF REQUEST 25



RELIEF REQUEST 26

Valve No.:

2HVR*MOD25A
2HVR*MOD25B
2HVR*DMP206

Category A **Class** 2

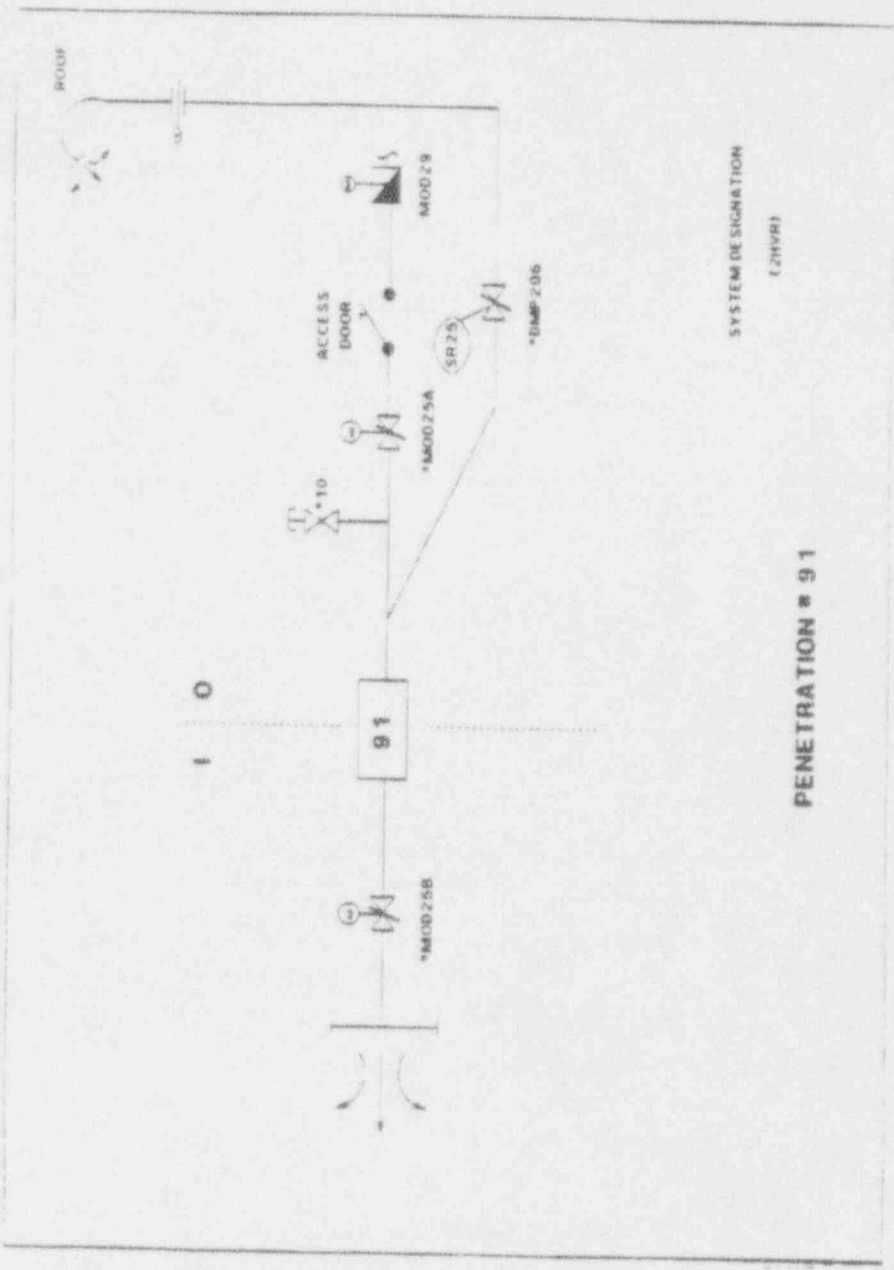
Function: Containment purge supply fan containment isolation dampers

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

Basis for Relief: As shown on the attached figure for Penetration #91, the configuration of this containment penetration (i.e., a single test connection located between the three penetration isolation dampers) is such that individual leakage rates for each specific damper cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each damper would not be practical.

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

RELIEF REQUEST 26



RELIEF REQUEST 27

Valve No.:

2QSS*SOV100A
2QSS*SOV100B

Category A **Class** 2

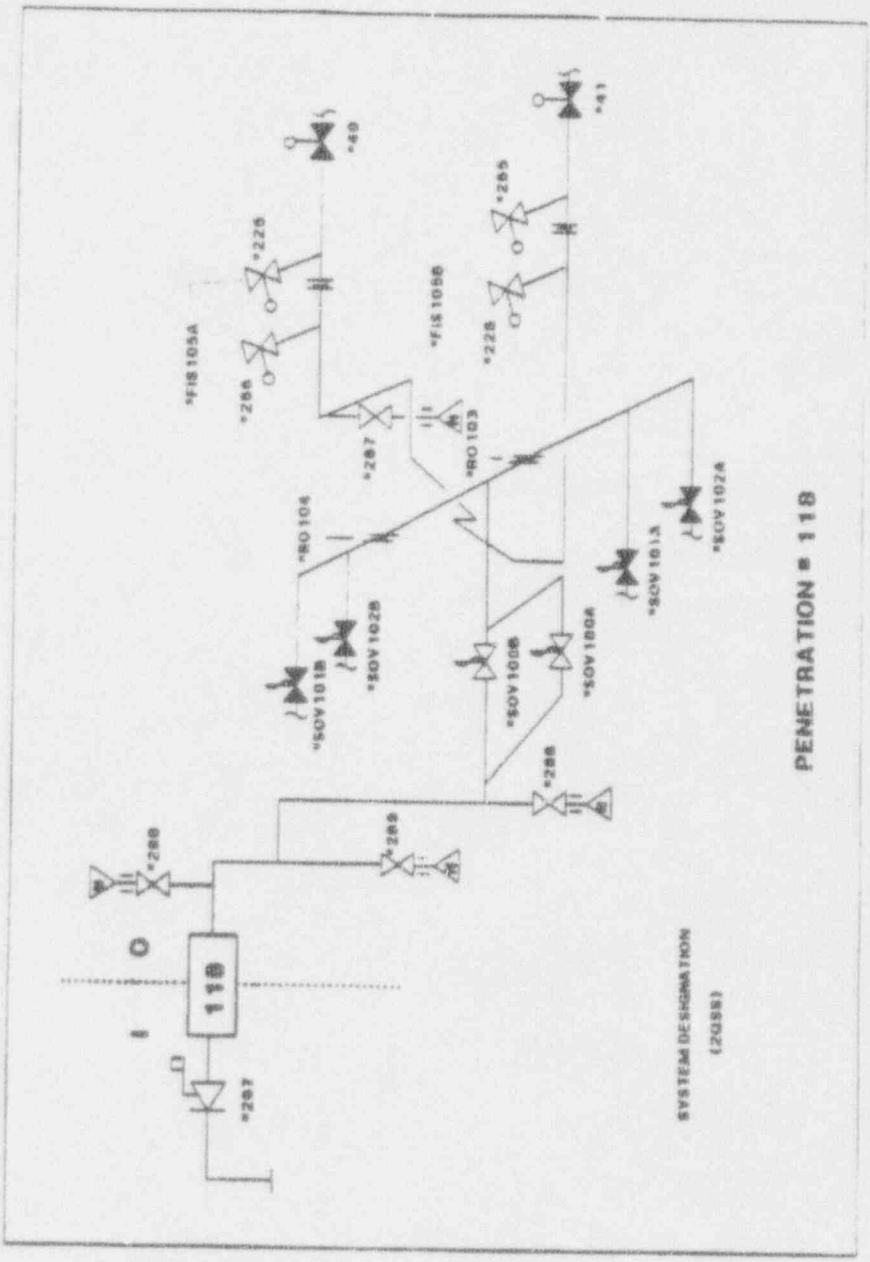
Function: Chemical Injection Pump discharge to containment sump isolation valves

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

Basis for Relief: As shown on the attached figure for Penetration #118, the configuration of this containment penetration (i.e., two outside containment isolation valves in parallel) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.

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

RELIEF REQUEST 27



RELIEF REQUEST 28

Valve No.:

See next page

Category A and A/C **Class** 2

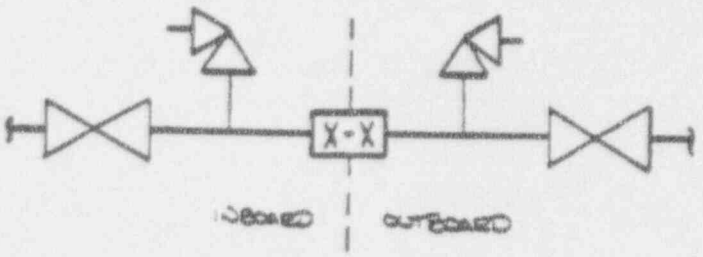
Function: Containment Isolation

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

Basis for Relief: As shown on the attached figure for the penetrations listed on the next page, the configuration of these containment penetrations (i.e. two outside or two inside containment isolation valves in parallel, one valve being a relief valve) is such that individual leakage rates for each specific valve cannot be determined using the test method of 10CFR50, Appendix J. In this case, assigning maximum permissable leakage rates for each valve would not be practical.

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

RELIEF REQUEST 28



Penetration No. 1	Valves 2CCP*MOV157-1	& 2CCP*RV105
Penetration No. 2	Valves 2CCP*MOV150-1	& 2CCP*RV102
Penetration No. 4	Valves 2CCP*MOV151-1	& 2CCP*RV103
Penetration No. 5	Valves 2CCP*MOV156-1	& 2CCP*RV104
Penetration No. 14	Valves 2SWS*MOV153-1	& 2SWS*RV153
Penetration No. 20	Valves 2SIS*41	& 2SIS*RV130
Penetration No. 21	Valves 2SWS*MOV155-1	& 2SWS*RV155
Penetration No. 24	Valves 2RHS*15	& 2RHS*RV100
Penetration No. 25	Valves 2SWS*MOV154-1	& 2SWS*RV154
Penetration No. 27	Valves 2SWS*MOV152-1	& 2SWS*RV152
Penetration No. 29	Valves 2DGS*AOV108B	& 2DGS*RV115
Penetration No. 38	Valves 2DAS*AOV100B	& 2DAS*RV110
Penetration No. 45	Valves 2RCS*AOV519	& 2RCS*RV100
Penetration No. 55-1	Valves 2SSR*AOV109A2	& 2SSR*RV117
Penetration No. 56-1	Valves 2SSR*AOV102A2	& 2SSR*RV118
Penetration No. 56-2	Valves 2SSR*AOV128A2	& 2SSR*RV120
Penetration No. 56-3	Valves 2SSR*AOV100A2	& 2SSR*RV119
Penetration No. 57-1	Valves 2SSR*AOV112A2	& 2SSR*RV121
Penetration No. 63	Valves 2QSS*MOV101A	& 2QSS*RV101A
Penetration No. 64	Valves 2QSS*MOV101B	& 2QSS*RV101B
Penetration No. 97-1	Valves 2SSR*SOV129A2	& 2SSR*RV122
Penetration No. 106	Valves 2SIS*AOV889	& 2SIS*RV175

RELIEF REQUEST 29

Valve No.:

2RCS*SOV200A
2RCS*SOV200B
2RCS*SOV201A
2RCS*SOV201B
2RCS*HCV250A
2RCS*HCV250B

Category B **Class** 1,2

Function: Reactor Vessel Head Vent Valves

Test Requirement: Quarterly full stroke and time

Basis for Relief: Valves are normally closed and are only required to be opened during accident conditions to provide reactor vessel venting and reactor coolant system (RCS) letdown. Westinghouse (the valve manufacturer) does not recommend these valves be "tested" at temperatures above 200F or pressures exceeding 300 psia or "operated" to vent the reactor vessel following startup from a refueling outage at pressures exceeding 415 psig. (References: PSE-SSA-4743, dated February 8, 1985 and DLW-89-667, dated June 14, 1989). Degradation of the system can result from repeated strokes at greater than these temperatures/pressures. In addition, Westinghouse does not recommend stroking the HCV's while isolated from the RCS by the SOV's (SOV's are required to remain closed to prevent RCS leakage) unless the trapped pressure between the HCV's and SOV's is first relieved by very slowly opening the HCV's. This goes against INPO's good practice of not pre-exercising power operated valves prior to stroking and timing them. In addition, if the SOV's are leaking, there is the potential for exceeding the design pressure limit of the Pressure Relief Tank because there is no pressure indication in this piping. Also, full stroke testing may not be performed during cold shutdown because the reduced pressure which is required to perform this test may not be obtainable. In addition, stroke testing, if attempted at cold shutdown, could extend the length of a plant shutdown due to extensive prepatory work in establishing the proper reactor coolant system conditions.

Alternate Test: Full stroke exercised and timed open and closed at refueling per 2OST-6.9.

RELIEF REQUEST 30

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

2RCS*SOV200A
2RCS*SOV200B
2RCS*SOV201A
2RCS*SOV201B
2RCS*PCV455C
2RCS*PCV455D
2RCS*PCV456
2CHS*SOV206
2GNS*SOV853A
2GNS*SOV853B
2GNS*SOV853C
2GNS*SOV853D
2GNS*SOV853E
2GNS*SOV853F
2GNS*SOV854A
2GNS*SOV854B
2CVS*SOV102
2CVS*SOV151A
2CVS*SOV151B
2CVS*SOV152A
2CVS*SOV152B
2CVS*SOV153A
2CVS*SOV153B
2LMS*SOV950
2LMS*SOV951
2LMS*SOV952
2LMS*SOV953
□2QSS*SOV100A
□2QSS*SOV100B
□2QSS*SOV101A
□2QSS*SOV101B
□2QSS*SOV102A
□2QSS*SOV102B
2SSR*AOV112A2
2SSR*SOV128A1
2SSR*SOV128A2
2SSR*SOV129A1
2SSR*SOV129A2
2SSR*SOV130A1
2SSR*SOV130A2
2PAS*SOV105A1
2PAS*SOV105A2
□□2MSS*SOV105B
□□2MSS*SOV105C
2MSS*SOV105E
2MSS*SOV105F
2HCS*SOV114A
2HCS*SOV114B
2HCS*SOV115A
2HCS*SOV115B
2HCS*SOV133A
2HCS*SOV133B
2HCS*SOV134A
2HCS*SOV134B
2HCS*SOV135A
2HCS*SOV135B
2HCS*SOV136A
2HCS*SOV136B

□Stroked in both directions, but rapid-acting in open direction only.

□□Stroked in both directions, but rapid-acting in closed direction only.

RELIEF REQUEST 31

Valve No.:

2PHS*100
2PHS*101
2PHS*110
2PHS*111
2PHS*112
2PHS*113

Category A **Class** 2

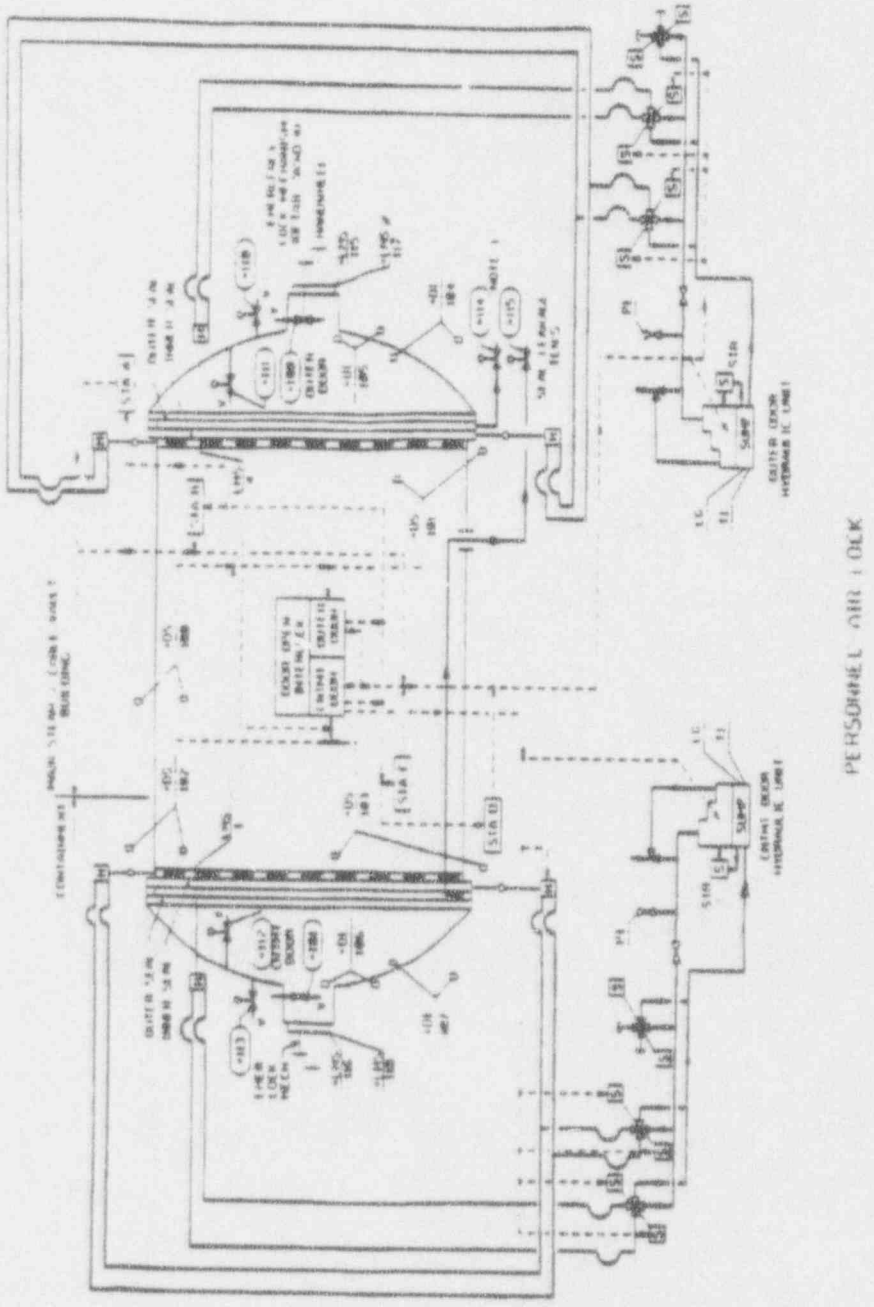
Function: Containment Isolation (Personnel Air Lock)

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

Basis for Relief: These containment isolation valves are leak tested in accordance with 10CFR50, Appendix J Type C. Since the acceptance crtieria for Appendix J, Type C 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 Personnel Air Lock, the configuration of this containment penetration (ie., a single test connection located in the airlock between six 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 permissable leakage rates for each valve would not be practical.

Alternate Test: Leak test semi-annually in accordance with Technical Specification 4.6.1.3.b.1, 10CFR50, Appendix J and IWV-3426 per 2BVT 1.47.8. In addition, assign a maximum permissable 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 31



RELIEF REQUEST 32

Valve No.:

2PHS*201
2PHS*202

Category A **Class** 2

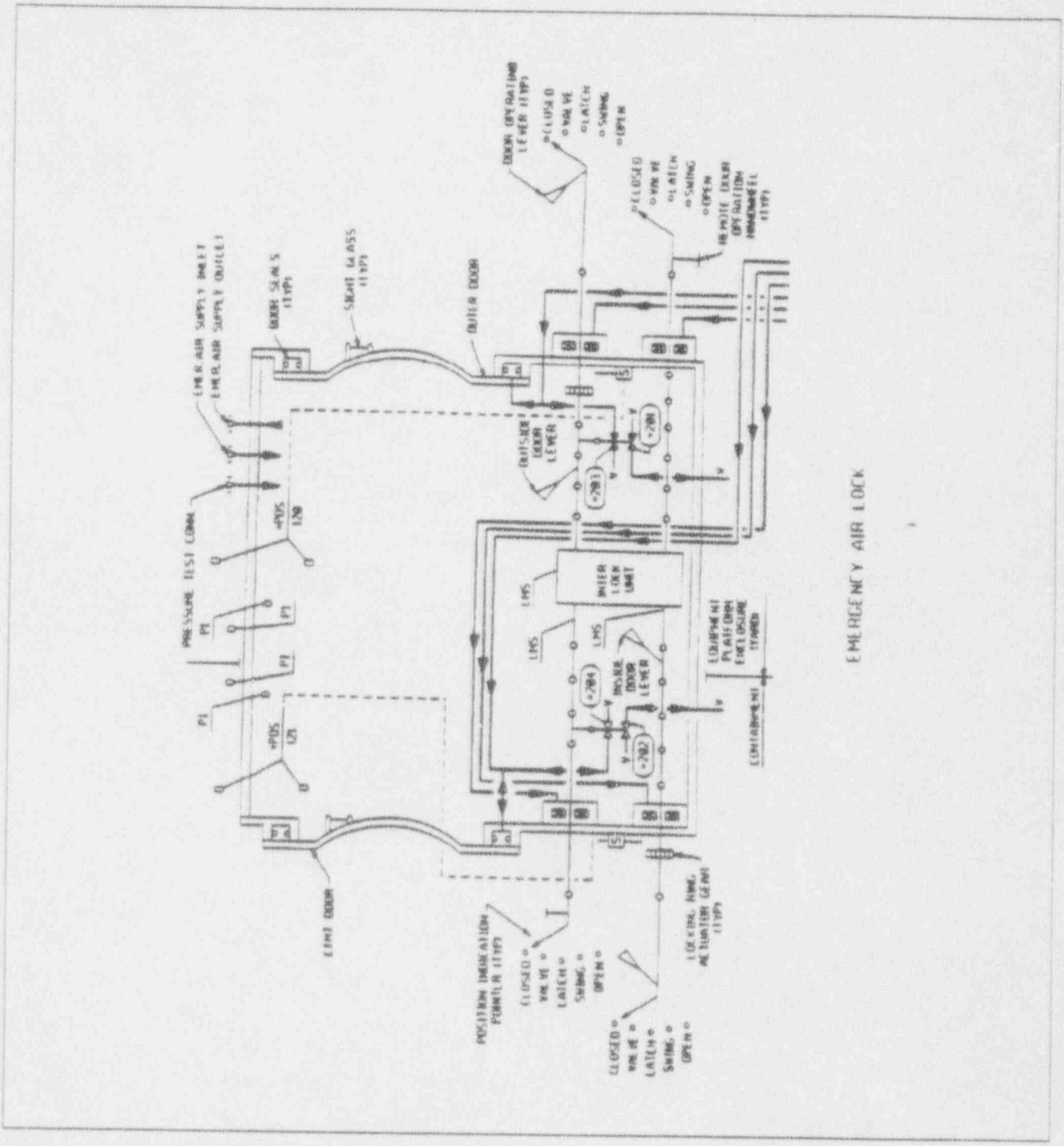
Function: Containment Isolation (Emergency Air Lock)

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

Basis for Relief: These containment isolation valves are leak tested in accordance with 10CFR50, Appendix J, Type B. Since the acceptance crtieria 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 (ie., a single test connection located in the 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 permissable leakage rates for each valve would not be practical.

Alternate Test: Leak test semi-annually in accordance with Technical Specification 4.6.1.3.b.1, 10CFR50, Appendix J and IWV-3426 per 2BVT 1.47.10. In addition, assign a maximum permissable 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 32



DUQUESNE LIGHT COMPANY
Nuclear Power Division
Maintenance Programs Unit
Maintenance Engineering and Assessment Department

As info:
Reference →

November 22, 1993
ND2MEA:0230

BVPS-2 IST Program (Issue 1, Revision 12)

J. V. Vassello:

Attached as Enclosure 2 is Issue 1, Revision 12 to the Beaver Valley Power Station Unit 2 Inservice Testing (IST) Program. It is being forwarded to you for submittal to the NRC for information as required by Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs". The changes incorporated into Revision 12 of the BVPS-2 IST Program do not require NRC approval prior to implementation.

Issue 1, Revision 12 to the BVPS-2 IST Program was reviewed by the OSC at Poll Meeting No. 2839 on November 15, 1993. Approval by the General Manager Nuclear Operations was obtained on November 18, 1993. The program changes will be reviewed by the ORC at their next meeting in December. ORC review is not required prior to implementation of the IST Program since none of the changes requires NRC approval prior to implementation.

A list of changes highlighting the revisions made to the Unit 2 IST Program can be found in Enclosure 1. The changes are in compliance with the 1983 addition through summer 1983 addenda of the ASME XI Code and the positions delineated in Attachment 1 of Generic Letter No. 89-04.

The BVPS-2 IST Program (Issue 1, Revision 12) was implemented for use on November 18, 1993. If you have any questions regarding this submittal, please contact Dave Jones at PAX 7553.

D. G. McLain

DTJ/mmg

Enclosures

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