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December 23, 2000
L-00-135

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Updated Inservice Testing Program, Issue 3, Revision 4

The purpose of this submittal is to provide the Nuclear Regulatory Commission (NRC) with an informational copy of revisions to the Beaver Valley Power Station Unit 1 (BVPS-1) Inservice Testing (IST) Program.

Enclosure 1 provides a summary of the IST program changes which have been incorporated into Issue 3, Revision 4.

Enclosure 2 is Issue 3, Revision 4 of the BVPS-1 IST Program. It has been determined that the Revision 4 IST program changes do not require NRC approval prior to implementation. This determination was made because all of the changes are either:

- in accordance with the ASME/ANSI Operations and Maintenance Standard Parts 6 and 10 (OM-6 and OM-10), or
- in compliance with the positions delineated in Attachment 1 and Supplement 1 of Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," or
- editorial in nature.

A047

If you have any questions regarding this submittal, please contact Mr. Thomas S. Cosgrove, Manager, Licensing at 724-682-5203.

Sincerely,

Lew W. Myers

c: Mr. L. J. Burkhart, Project Manager
Mr. D. M. Kern, Sr. Resident Inspector
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ENCLOSURE 1

SUMMARY OF CHANGES TO THE BVPS-1 IST PROGRAM (ISSUE 3, REV 4)

I. The following changes made to the Unit 1 IST Program are in accordance with ASME/ANSI Operations and Maintenance Standards, Parts 6 and 10 (OM-6 and OM-10) and Generic Letter 89-04, including Supplement 1, NUREG-1482:

A. Incorporated the new MOP curves for the Reactor Plant River Water Pumps, per TER 13249. The MOP point was lowered as a result of incorporating the test data from the thirteenth refueling outage full flow river water tests. (pg. 81, 82, 83)

B. Revised the "Valve Testing Requirements" section which discusses check valve testing requirements to state "*As an alternative to the testing described above, a check valve may be* disassembled and inspected per the requirements of Generic Letter No. 89-04." This wording is taken directly from OM-10, Section 4.3.2.4.c. (pg. 89)

C. Deleted [TV-1CC-128, 130, 132], the CCR Inlet Isolation Valves for the Fuel Pool, Non-regenerative and Seal Water Heat Exchangers. These valves had previously been classified as Passive valves. They are normally open and remain open in the event of an accident. They do not meet the scoping requirements of ASME OM-10 to be included in the IST Program. (pg. 126)

D. Deleted [1RW-95, 96, 97], Seal Water to RP River Water Pump Check Valves, from the IST Program. The seal water alignment for the river water pumps has been changed such that these valves are isolated from the flow path. Therefore, these valves no longer perform a safety function. (pg. 141)

E. Deleted Valve Cold Shutdown Justification # 13 (pg. 173) and added Valve Refueling Outage Justification # 34 (pg. 236). Weighted arm check valves, [1QS-3, 4] and [1RS-100, 101] require scaffolding to be built in containment in order to stroke them using the mechanical exerciser. Since building and removing the scaffolding could extend the length of a cold shutdown, these valves were moved to refueling frequency testing only. Also revised the Valve Outline Sheet for these valves to reference VROJ 34. (pg. 116, 117)

II. The following changes made to the Unit 1 IST Program are editorial in nature:

A. Revised the "Pump Testing Requirements" section to state that "Records of the results of inservice tests and corrective actions as required by Paragraph of OM-6 are *maintained in computerized or* tabular form." (pg. 7)

B. Added to the Remarks section of the Pump Outline Sheet for [1CH-P-1A, 1B, 1C], [1CH-P-2A, 2B], [1SI-P-1A, 1B] and [1FW-P-2, 3A, 3B] a statement that the full, or substantial, flow test may be performed in lieu of the quarterly recirculation flow test. The 1989 edition of the ASME XI Code, Operations and

Maintenance Standard, Part 6 (OM-6) for pumps, does not provide any guidance on this subject. However, the 1995 ASME OM Code, Subsection ISTB for pumps, states that a biennial (or refueling frequency) comprehensive test at ±20% of design flow may be substituted in place of a quarterly pump test. (pg. 10, 11, 12, 13, 14, 17, 18, 32, 33, 34)

C. Added statements to the Remarks section of the Pump Outline Sheets detailing the flow path used for testing. (pg. 10 – 41)

D. Revised the Pump Type for [1RH-P-1A, 1B] to "Vertically-mounted Centrifugal" (pg. 15, 16) and for [1SI-P-1A, 1B], [1RS-P-1A, 1B, 2A, 2B] and [1WR-P-1A, 1B, 1C] to "Vertical Line Shaft." (pg. 17, 18, 25, 26, 27, 28, 35, 36, 37)

E. Revised the "Valve Testing Requirements" section to state that "Records of the results of inservice tests and corrective actions as required by Paragraph of OM-10 are maintained *in computerized or* tabular form." (pg. 90)

F. Revised the NSA for [TV-1DA-100A] to S(A). This is to match the NSA listed in the Operating Manual, which is "S" with a Note that "Valve is controlled in Automatic and administratively controlled in OM Chapter 9." (pg. 102)

G. Revised the OST numbers to 1OST-30.6A and 6B for various River Water System valves that are tested during the performance of the test for 1C River Water Pump. (pg. 141, 142, 144)

H. Revised the Corrective Maintenance Procedure number listed for the disassembly and inspection of [1WT-383, 388] to 1/2CMP-75-WEST CHECK-1M and of [1WT-387] to 1/2CMP-M-75-006. These are the procedure numbers listed in the Station Asset Equipment List. (pg. 145)

III. The following changes were made in Partial Revisions 3A, 3B and 3C and are in accordance with ASME/ANSI Operations and Maintenance Standards, Parts 6 and 10 (OM-6 and OM-10) and Generic Letter 89-04, including Supplement 1, NUREG-1482:

A. Rev 3A added a closed stroke and time test requirement for [MOV-1CH-115B and D], the RWST Outlet to Charging Pump Suction Header Isolation Valves. (pg. 98)

B. Rev 3B added a note to Pump Cold Shutdown Justification (PCSJ) #2 to state that 1OST-24.8, 9 may be performed in lieu of the quarterly tests,1OST-24.2, 3, 4. This would allow only one test to be performed during Cold Shutdowns and Refueling outages instead of requiring both. All of the requirements of the quarterly test are met by the full flow test. (pg. 44)

C. Rev 3B incorporated the new MOP curve for the HHSI pumps, per TER 13157. The MOP was able to be lowered because the allowance for frequency variation in the Emergency Diesel Generator was removed. (pg. 64)

D. Rev 3B incorporated new MOP curve for [1RH-P-1A]. A new pump performance curve was developed on 3/16/00 after the 1A Residual Heat Removal Pump was replaced. (pg. 67)

E. Rev 3B incorporated a new MOP curve for [1WR-P-1C]. A new pump performance curve was developed on 11/11/99 after the 1C Reactor Plant River Water Pump was replaced. (pg. 83)

F. Rev 3B deleted the partial stroke test for [1CH-152, 153, 154], Charging Pump Mini Flow Check Valves and Valve Cold Shutdown Justification (VCSJ) #7. DCP 2355 installed a flow element in the common recirculation flow line for the charging pumps. With this new flow element, full stroke exercising in the forward direction will be performed quarterly, consistent with the requirements of the Code. Also deleted reference to VCSJ7 from the valve outline sheet. (pgs. 99, 166)

G. Rev 3B added River Water Pump Seal water supply manual isolation valves [1RW-65, 66, 67 and 829, 830, 831] to the IST Program. DCP 2400 added a bypass line and separator to this seal water line. Because of this DCP, the NSA for these valves will be changed to shut. They may have to be opened during an accident if the new separator was clogged shut. (pg. 144)

H. Rev 3C added a desassembly and inspection as an alternate means of verifying the closure capability of [1RW-106 and 107], the River Water Supply Header Check Valves. (pg. 142)

ENCLOSURE 2

BVPS-1 IST Program (Revision 4)

BEAVER VALLEY POWER STATION

Unit 1

Inservice Testing (IST) Program For Pumps And Valves

Revision 4

Preparer Joann N. West	Date: 6-23-00
OSC Meeting # BV-OSC-39-00	Date: 7-5-00
Owner Approval Richard D Heckt	Date: 08/14/00
Approval Authority C. P. Yu	Date: 8-15-00

Effective Date of Procedure 8-22-00

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SECTION I: PUMP TESTING REQUIREMENTS

The Inservice Testing (IST) Program for pumps at Beaver Valley Power Station (BVPS), Unit 1, is based on the following:

- American Society of Mechanical Engineers (ASME)/American National Standards Institute (ANSI) Operational and Maintenance (OM) Standard, Part 6, "Inservice Testing of Pumps in Light Water Reactor Power Plants" (OM-6), OMa-1988 addenda, to the OM-1987 edition, in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1989 edition (the Code).

- Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"

- NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"

The pumps included in this program are all ASME Class 1, 2, or 3 centrifugal and positive displacement pumps that are provided with an emergency power source, which are required in shutting down a reactor to the cold shutdown condition, maintaining the cold shutdown condition, or mitigating the consequences of an accident, at BVPS, Unit 1. Unit 1, however, was designed with Hot Shutdown as its Safe Shutdown condition. (Per NUREG-1482, Section 2.2, "If the plant was licensed for a safe shutdown condition of hot standby or hot shutdown rather than cold shutdown, the IST program document will stipulate that the plant was not designed and licensed for a safe shutdown of cold shutdown.")

The requirements of the Code and Generic Letter No. 89-04 including Supplement 1 (NUREG-1482) 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 2 of OM-6, below, is required for all pumps in the IST Program.

TABLE 2
INSERVICE TEST PARAMETERS

Quantity	Remarks
Speed: N	If variable speed
Differential pressure ΔP	Centrifugal Pumps, including vertical line shaft pumps
Discharge Pressure: P	Positive Displacement Pumps
Flow Rate: Q	
Vibration: Velocity, V_v	Peak

Table 3b of OM-6, below, shows the allowable ranges for test results that will be used to determine if corrective action is required following performance of BVPS-1 Surveillance Tests. The test data will be compared to the ranges applied to the reference values for each test quantity.

TABLE 3b
RANGES FOR TEST PARAMETERS (PRESSURES AND FLOWS)

Test Parameter	Acceptable Range	Alert Range		Required Action Range	
		Low	High	Low	High
P (Positive displacement pumps)	0.93 to 1.10P_r	0.90 to < .93P_r	—	<0.90P_r	>1.10P_r
ΔP (Vertical line shaft pumps)	0.95 to 1.10ΔP_r	0.93 to <.95ΔP_r	—	<0.93ΔP_r	>1.10ΔP_r
Q (Positive displacement vertical line shaft pumps)	0.95 to 1.10Q_r	0.93 to <.95Q_r	—	<0.93Q_r	>1.10Q_r
ΔP (Centrifugal pumps)	0.90 to 1.10ΔP_r	—	—	<0.90ΔP_r	>1.10ΔP_r
Q (Centrifugal pumps)	0.90 to 1.10Q_r	—	—	<0.90Q_r	>1.10Q_r

GENERAL NOTE: The subscript r denotes reference value.

The limits for vibration readings are taken from Table 3a of OM-6, below.

TABLE 3a[1]
RANGES FOR TEST PARAMETERS (VIBRATIONS)

Pump Type	Pump Speed	Test Parameter	Acceptable Range	Alert Range	Required Action Range
Centrifugal and vertical line shaft	≥600 rpm	V_v	≤2.5 V_r	>2.5 V_r to 6 V_r or >0.325 in./sec.	>6 V_r or >0.70 in./sec.
Reciprocating		V_v	≤2.5 V_r	>2.5 V_r to 6 V_r	>6 V_r

NOTES:
(1) Vibration parameter per Table 2. V_r is vibration reference value in in./sec.

Corrective action shall be taken if necessary using the following:

1. If deviations fall within the "Alert Range" of Tables 3a and 3b of OM-6, the frequency of testing shall be doubled until the cause of the deviation is determined and the condition corrected.

2. If the deviations fall within the "Required Action Range" of Tables 3a and 3b of OM-6, the pump shall be declared inoperable immediately until the cause of the deviation has been determined and the condition corrected. An evaluation of the pump's condition with respect to system operability and technical specifications shall also be made as follows:

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

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

c. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any technical specification.

3. When tests show deviations outside the acceptable range of Table 3a or 3b of OM-6, 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 Paragraph 4.4 of OM-6.

Per Paragraph 5.6 of OM-6 each pump shall run at least 2 minutes under conditions as stable as the system permits prior to measurement of the specified parameters.

Utilization of a pump curve in the BVPS-1 IST Program for performing testing and establishing acceptance criteria requires specific relief approved by the NRC prior to usage. The following guidance provided by NUREG-1482, Section 5.2 relating to the use of a pump curve shall be followed:

1. A pump curve shall be developed, or manufacturer's pump curve validated, when the pump is known to be operating acceptably.

2. The reference points used to develop or validate a pump curve shall be measured using instruments at least as accurate (accuracy and range) as required by OM-6, Paragraphs 4.6.1.1 and 4.6.1.2.

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 shall not conflict with technical specifications or UFSAR operability criteria (minimum operating point/curve) for flow rate and differential pressure, for the affected pump.

6. If vibration levels vary significantly over the range of pump conditions, a method of assigning appropriate vibration acceptance criteria should be developed for regions of the pump curve.

7. When the reference pump curve may have been affected by repair, replacement, or routine servicing, a new reference pump curve shall be determined or the previous pump curve revalidated by an inservice test.

Manufacturer supplied skid-mounted pumps which are integral sub-components of, and are required to support operation of a parent pump or other component, are often times not designed to be tested in accordance with the ASME XI Code, regardless of their ASME Code class. Therefore, ASME Code class manufacturer supplied skid-mounted pumps are not included in the BVPS Unit 1 IST Program because it has been recognized by the NRC in NUREG-1482, Section 3.4, that the test of the parent pump or other component itself challenges the operability of the sub-components. This ensures that the skid-mounted pumps

operate acceptably commensurate with their safety functions provided satisfactory performance of the parent pump or other component is demonstrated by an applicable surveillance test.

Records of the results of inservice tests and corrective actions as required by Paragraph 7 of OM-6 are maintained in computerized or in tabular form. Pump performance characteristics will be examined for trends.

The following five sections of this document are the "Pump Outlines", "Pump Cold Shutdown Justifications", "Pump Refueling Outage Justifications", "Pump Relief Requests", and "Pump Minimum Operating Point (MOP) Curves" sections.

The "Pump Outlines" section is a listing of all the pumps in the IST Program, their testing requirements, and their specific pump cold shutdown justification, refueling outage justification, and/or 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 Outlines and throughout the IST Program for pumps:

N	- Speed
P	- Discharge Pressure
ΔP	- Differential Pressure
Q	- Flowrate
V	- Vibration
1BVT	- Unit 1 Beaver Valley Test
1OST	- Unit 1 Operating Surveillance Test
Q	- Quarterly Test Frequency
CSD	- Cold Shutdown Frequency
R	- Refueling Test Frequency
2 YR	- Required every 2 years, but normally done at refueling outages
PRR	- Pump Relief Request
PCSJ	- Pump Cold Shutdown Justification
PROJ	- Pump Refueling Outage Justification
X	- Meets or exceeds OM-6 requirements
NA	- Not Applicable

The "Pump Cold Shutdown Justifications" section contains the detailed technical description of conditions prohibiting the required testing of safety-related pumps and an alternate test method to be performed during cold shutdowns. Beaver Valley Unit 1 reactor containment is maintained subatmospheric as required by technical specifications. The subatmospheric

condition presents a hazardous working environment for station personnel and is considered inaccessible for surveillance testing. Surveillance testing that requires a reactor containment entry will be performed at cold shutdown and refueling. The pump cold shutdown justification(s) for a specific pump are referenced by the number(s) listed on the pump's outline sheets.

The "Pump Refueling Outage Justifications" section contains the detailed technical description of conditions prohibiting the required testing of safety-related pumps and an alternate test method to be performed during refueling outages. The pump refueling outage justification(s) for a specific pump are referenced by the number(s) listed on the pump's outline sheets.

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.

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

SECTION II: PUMP OUTLINES

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A Charging Pump	**Pump Number:** 1CH-P-1A	**Code Class:** 2	**System:** 7-Chemical and Volume Control	
Function: To provide normal RCS inventory and high head safety injection.			**Type:** Centrifugal	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** C-4
Remarks: Pump is tested quarterly on recirculation flow with the VCT via the normal charging header and/or via the miniflow recirc path, and at substantial flow from the RWST to the RCS during refueling outages. The substantial flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	7.4 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-151] (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
	11.14B (R)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-151] or temporary test gauge (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
Q	7.4 (Q)	X	Summation of flow rates from Flow Indicators [FI-1CH-130], [FI-1CH-127], [FI-1CH-124] and [FI-1CH-122A] (Control Room) or Flow Indicator [FI-1CH-160] (Control Room) and assumed flow through mini flow line.
	11.14B (R)	X	Flow Indicator [FI-1SI-943] (Control Room).
V	7.4 (Q)	X	Portable monitoring equipment using velocity units.
	11.14B (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE			
Pump Name: 1B Charging Pump	**Pump Number:** 1CH-P-1B	**Code Class:** 2	**System:** 7-Chemical and Volume Control
Function: To provide normal RCS inventory and high head safety injection.		**Type:** Centrifugal	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** D-4
Remarks: Pump is tested quarterly on recirculation flow with the VCT via the normal charging header and/or via the miniflow recirc path, and at substantial flow from the RWST to the RCS during refueling outages. The substantial flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	7.5 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-152] (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
	11.14B (R)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-152] or temporary test gauge (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
Q	7.5 (Q)	X	Summation of flow rates from Flow Indicators [FI-1CH-130], [FI-1CH-127], [FI-1CH-124] and [FI-1CH-122A] (Control Room) or Flow Indicator [FI-1CH-160] (Control Room) and assumed flow through mini flow line.
	11.14B (R)	X	Flow Indicator [FI-1SI-943] (Control Room).
V	7.5 (Q)	X	Portable monitoring equipment using velocity units.
	11.14B (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

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

Function:	To provide normal RCS inventory and high head safety injection.	**Type:** Centrifugal	**Dwg. OM No.:** 7-1 **Dwg. Coord.:** E-4
Remarks:	Pump is tested quarterly on recirculation flow with the VCT via the normal charging header and/or via the miniflow recirc path, and at substantial flow from the RWST to the RCS during refueling outages. The substantial flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1.		

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	7.6 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-153] (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
	11.14 (R)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-153] or temporary test gauge (local) and Pump Suction Pressure from either the installed instrument or the temporary test gauge (local).
Q	7.6 (Q)	X	Summation of flow rates from Flow Indicators [FI-1CH-130], [FI-1CH-127], [FI-1CH-124] and [FI-1CH-122A] (Control Room) or Flow Indicator [FI-1CH-160] (Control Room) and assumed flow through mini flow line.
	11.14 (R)	X	Flow Indicator [FI-1SI-943] (Control Room).
V	7.6 (Q)	X	Portable monitoring equipment using velocity units.
	11.14 (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

Pump Name: 2A Boric Acid Transfer Pump	**Pump Number:** 1CH-P-2A	**Code Class:** 3	**System:** 7-Chemical and Volume Control
Function: Chemical shim and emergency boration supply.		**Type:** Centrifugal	**Dwg. OM No.:** 7-3 **Dwg. Coord.:** C-3
Remarks: Pump tested by recirculating the Boric Acid Tank quarterly using a fixed-resistance line and at full flow during refueling outages. The full-flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1 and PROJ1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	7.1 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-110] (local) and the calculated suction pressure from the level in the Boric Acid Storage Tank [LI-CH-106(161)], in accordance with Section 5.5.3 of NUREG-1482 (Control Room).
	7.13 (R)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-110] (local) and the calculated suction pressure from the level in the Boric Acid Storage Tank [LI-CH-106(161)], in accordance with Section 5.5.3 of NUREG-1482 (Control Room).
Q	7.1 (Q)	X (PROJ1)	No installed instrumentation to measure flow rate quarterly. Pump tested on a fixed-resistance recirculation line with the flow assumed to be constant.
	7.13 (R)	X (PROJ1)	Flow rate measurement using portable ultrasonic flow meter (local) at refueling.
V	7.1 (Q)	X	Portable monitoring equipment using velocity units.
	7.13 (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 2B Boric Acid Transfer Pump	**Pump Number:** 1CH-P-2B	**Code Class:** 3	**System:** 7-Chemical and Volume Control	
Function:	Chemical shim and emergency boration supply.		**Type:** Centrifugal	**Dwg. OM No.:** 7-3 **Dwg. Coord.:** G-3
Remarks:	Pump tested by recirculating the Boric Acid Tank quarterly using a fixed-resistance minimum flow line and at full flow during refueling outages. The full-flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1 and PROJ1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	7.2 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-105A] (local) and the calculated suction pressure from the level in the Boric Acid Storage Tank [LI-1CH-108(163)], in accordance with Section 5.5.3 of NUREG-1482 (Control Room).
	7.14 (R)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1CH-105A] (local) and the calculated suction pressure from the level in the Boric Acid Storage Tank [LI-1CH-108(163)], in accordance with Section 5.5.3 of NUREG-1482 (Control Room).
Q	7.2 (Q)	X (PROJ1)	No installed instrumentation to measure flow rate quarterly. Pump is tested on a fixed-resistance minimum flow recirculation line with the flow assumed to be a constant.
	7.14 (R)	X (PROJ1)	Flow rate measurement using portable ultrasonic flow meter (local) at refuelings.
V	7.2 (Q)	X	Portable monitoring equipment using velocity units.
	7.14 (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A Residual Heat Removal Pump	**Pump Number:** 1RH-P-1A	**Code Class:** 2	**System:** 10-Residual Heat Removal	
Function: Long term decay heat removal.			**Type:** Vertically-mounted Centrifugal	**Dwg. OM No.:** 10-1 **Dwg. Coord.:** E-3
Remarks: Per PCSJ1, pump is tested at full flow quarterly during cold shutdowns and refueling outages by recirculating the RCS. Also see PRR1 and PRR2.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	10.1 (CSD,R)	X (PRR2)	Calculated using Pump Discharge Pressure Indicator [PI-1RH-600] (local) and pump suction pressure gauge on [1RH-200] (local) or from temporary ΔP gauge installed between [1RH-200] and [1RH-213] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator, [PI-1RH-600].
Q	10.1 (CSD,R)	X	Flow indicator [FI-1RH-605] (Control Room).
V	10.1 (CSD,R)	X	Portable monitoring equipment using velocity units. (Motor bearing vibration readings will be obtained because the pump bearings are in the driver.)

BVPS-1 IST
PUMP OUTLINE

Pump Name: 1B Residual Heat Removal Pump	**Pump Number:** 1RH-P-1B	**Code Class:** 2	**System:** 10-Residual Heat Removal
Function: Long term decay heat removal.		**Type:** Vertically-mounted Centrifugal	**Dwg. OM No.:** 10-1 **Dwg. Coord.:** F-3
Remarks: Per PCSJ1, pump is tested at full flow quarterly during cold shutdowns and refueling outages by recirculating the RCS. Also see PRR1 and PRR2.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	10.1 (CSD,R)	X (PRR2)	Calculated using Pump Discharge Pressure Indicator [PI-1RH-601] (local) and pump suction pressure gauge on [1RH-200] (local) or from temporary ΔP gauge installed between [1RH-200] and [1RH-213] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator, [PI-1RH-601].
Q	10.1 (CSD,R)	X	Flow indicator [FI-1RH-605] (Control Room).
V	10.1 (CSD,R)	X	Portable monitoring equipment using velocity units. (Motor bearing vibration readings will be obtained because the pump bearings are in the driver.)

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A Low Head Safety Injection Pump	**Pump Number:** 1SI-P-1A	**Code Class:** 2	**System:** 11-Safety Injection	
Function:	Low pressure - high volume safety injection and long term recirculation.		**Type:** Vertical line shaft	**Dwg. OM No.:** 11-1 **Dwg. Coord.:** F-2
Remarks:	Pump is tested quarterly on recirculation flow with the RWST and at full flow from the RWST to the RCS during refueling outages. The full flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1 and PRR2.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	11.1 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1SI-943] (local) and the calculated suction pressure using RWST level indicators [LI-QS-100A-D], in accordance with Section 5.5.3 of NUREG-1482 (Control Room).
	11.14A (R)	X (PRR2)	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1SI-943] (local) and the calculated suction pressure using RWST level indicators [LI-QS-100A-D], in accordance with Section 5.5.3 of NUREG-1482 (Control Room). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1SI-943].
Q	11.1 (Q)	X	Flow indicator [FI-1SI-941] (local). (Mini flow and test line flow indicator).
	11.14A (R)	X	Flow indicator [FI-1SI-941] (local) and [FI-1SI-945] (Control Room).
V	11.1 (Q)	X	Portable monitoring equipment using velocity units.
	11.14A (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1B Low Head Safety Injection Pump	**Pump Number:** 1SI-P-1B	**Code Class:** 2	**System:** 11-Safety Injection	
Function: Low pressure - high volume safety injection and long term recirculation.			**Type:** Vertical line shaft	**Dwg. OM No.:** 11-1 **Dwg. Coord.:** F-4
Remarks: Pump is tested quarterly on recirculation flow with the RWST and at full flow from the RWST to the RCS during refueling outages. The full flow test may be performed in lieu of the quarterly recirculation flow test. Also see PRR1 and PRR2.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	11.2 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1SI-944] (local) and the calculated suction pressure using RWST level indicators [LI-1QS-100A-D], in accordance with Section 5.5.3 of NUREG-1482 (Control Room).
	11.14A (R)	X (PRR2)	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1SI-944] (local) and the calculated suction pressure using RWST level indicators [LI-1QS-100A-D], in accordance with Section 5.5.3 of NUREG-1482 (Control Room). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1SI-944].
Q	11.2 (Q)	X	Flow indicator [FI-1SI-941] (local). (Mini flow and testline flow indicator).
	11.14A (R)	X	Flow indicator [FI-1SI-941] (local) and [FI-1SI-946] (Control Room).
V	11.2 (Q)	X	Portable monitoring equipment using velocity units.
	11.14A (R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A Quench Spray Pump	**Pump Number:** 1QS-P-1A	**Code Class:** 2	**System:** 13-Containment Depressurization	
Function: To provide a flow of borated water for containment depressurization following a DBA.			**Type:** Centrifugal	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** C-5
Remarks: Pump is tested quarterly by recirculating the RWST on recirculation flow. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	13.1 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1QS-101A] (local) and the pump inlet pressure from either the installed instrument or the temporary test gauge (local).
Q	13.1 (Q)	X	Total flow rates from recirculation line Flow Indicators [FI-1QS-103] and [FI-1QS-104] (local).
V	13.1 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1B Quench Spray Pump	**Pump Number:** 1QS-P-1B	**Code Class:** 2	**System:** 13-Containment Depressurization	
Function: To provide a flow of borated water for containment depressurization following a DBA.			**Type:** Centrifugal	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** D-5
Remarks: Pump is tested quarterly by recirculating the RWST on recirculation flow. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	13.2 (Q)	X	ΔP is calculated using the Pump Discharge Pressure Indicator [PI-1QS-101B] (local) and the pump inlet pressure from either the installed instrument or the temporary test gauge (local).
Q	13.2 (Q)	X	Total flow rates from recirculation line Flow Indicator [FI-1QS-103] and [FI-1QS-104] (local).
V	13.2 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 4A Chemical Injection Pump	**Pump Number:** 1QS-P-4A	**Code Class:** 2	**System:** 13-Containment Depressurization	
Function: Chemical injection during containment depressurization.			**Type:** Positive Displacement	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-3
Remarks: Pump is tested quarterly at full flow by recirculating the Chemical Addition Tank. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	13.10A (Q)	X	Pump Discharge Pressure Indicator [PI-1QS-400A] (local).
Q	13.10A (Q)	X	Recirculation line Flow Indicator [FI-1QS-108] (local).
V	13.10A (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 4B Chemical Injection Pump	**Pump Number:** 1QS-P-4B	**Code Class:** 2	**System:** 13-Containment Depressurization	
Function: Chemical injection during containment depressurization.			**Type:** Positive Displacement	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-5
Remarks: Pump is tested quarterly at full flow by recirculating the Chemical Addition Tank. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	13.10B (Q)	X	Pump Discharge Pressure Indicator [PI-1QS-400B] (local).
Q	13.10B (Q)	X	Recirculation line Flow Indicator [FI-1QS-108] (local).
V	13.10B (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE			
Pump Name: 4C Chemical Injection Pump	**Pump Number:** 1QS-P-4C	**Code Class:** 2	**System:** 13-Containment Depressurization
Function: Chemical injection during containment depressurization.		**Type:** Positive Displacement	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-3
Remarks: Pump is tested quarterly at full flow by recirculating the Chemical Addition Tank. Also see PRR1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	13.10A (Q)	X	Pump Discharge Pressure Indicator [PI-1QS-400A] (local).
Q	13.10A (Q)	X	Recirculation line Flow Indicator [FI-1QS-108] (local).
V	13.10A (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

Pump Name: 4D Chemical Injection Pump	**Pump Number:** 1QS-P-4D	**Code Class:** 2	**System:** 13-Containment Depressurization
Function: Chemical injection during containment depressurization.		**Type:** Positive Displacement	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** G-5
Remarks: Pump is tested quarterly at full flow by recirculating the Chemical Addition Tank. Also see PRR1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	13.10B (Q)	X	Pump Discharge Pressure Indicator [PI-1QS-400B] (local).
Q	13.10B (Q)	X	Recirculation line flow indicator [FI-1QS-108] (local).
V	13.10B (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

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

Function:	Circulate containment sump water for long term containment depressurization.	**Type:** Vertical line shaft	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-2
Remarks:	Per PROJ2, pump is tested by recirculating water from a temporary dike built around the containment sump area through a test loop on recirculation flow during refueling outages only. Also see PRR1.		

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	1BVT 1.13.5 (2 YR)	X	ΔP is calculated using the installed discharge pressure test gauge and the calculated suction pressure using the level in the sump (local) in accordance with Section 5.5.3 of NUREG-1482.
Q	1BVT 1.13.5 (2 YR)	X	Recirculation test line flow measured by differential pressure across local flow orifice.
V	1BVT 1.13.5 (2 YR)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE			
Pump Name: 1B Inside Recirc. Spray Pump	**Pump Number:** 1RS-P-1B	**Code Class:** 2	**System:** 13-Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization.		**Type:** Vertical line shaft	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-4
Remarks: Per PROJ2, pump is tested by recirculating water from a temporary dike built around the containment sump area through a test loop on recirculation flow during refueling outages only. Also see PRR1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	1BVT 1.13.5 (2 YR)	X	ΔP is calculated using the installed discharge pressure test gauge and the calculated suction pressure using the level in the sump (local) in accordance with Section 5.5.3 of NUREG-1482.
Q	1BVT 1.13.5 (2 YR)	X	Recirculation test line flow measured by differential pressure across local flow orifice.
V	1BVT 1.13.5 (2 YR)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 2A Outside Recirc. Spray Pump	**Pump Number:** 1RS-P-2A	**Code Class:** 2	**System:** 13-Containment Depressurization	
Function: Circulate containment sump water for long term containment depressurization.			**Type:** Vertical line shaft	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-7
Remarks: Per PROJ3, pump is tested by recirculating water from the pump casing through a test loop on recirculation flow during refueling outages only. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	13.7 (2 YR)	X	ΔP is calculated using the installed Discharge Pressure Indicator [PI-1RS-156A] (local) and local pressure gauge at pump suction.
Q	13.7 (2 YR)	X	Flow Indicator [FI-1RS-157A] (local).
V	13.7 (2 YR)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

Pump Name: 2B Outside Recirc. Spray Pump	**Pump Number:** 1RS-P-2B	**Code Class:** 2	**System:** 13-Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization.		**Type:** Vertical line shaft	**Dwg. OM No.:** 13-2 **Dwg. Coord.:** E-9
Remarks: Per PROJ3, pump is tested by recirculating water from the pump casing through a test loop on recirculation flow during refueling outages only. Also see PRR1.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	13.7 (2 YR)	X	ΔP is calculated using the installed Discharge Pressure Indicator [PI-1RS-156B] (local) and local pressure gauge at pump suction.
Q	13.7 (2 YR)	X	Flow Indicator [FI-1RS-157B] (local).
V	13.7 (2 YR)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A Component Cooling Water Pump	**Pump Number:** 1CC-P-1A	**Code Class:** 3	**System:** 15-Reactor Plant Component Cooling Water	
Function: To provide cooling water to RX plant components.			**Type:** Centrifugal	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** E-6
Remarks: Pump is tested quarterly through various heat exchangers using a pump curve per PRR3. Also see PRR1 and PRR2.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	15.1 (Q)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1CC-100A] and Pump Suction Pressure Indicator [PI-1CC-181] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1CC-100A].
Q	15.1 (Q)	X (PRR2)	Summation from Flow Indicators [PDI-1CC-117], [PDI-1CC-118] and [PDI-1CC-119], local gages or control room indicators, [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119]. See PRR2 for range and accuracy of pump Flow Indicators [FI-1CC-117], [FI-1CC-118], [FI-1CC-119] and [PDI-1CC-119].
V	15.1 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE

Pump Name: 1B Component Cooling Water Pump	**Pump Number:** 1CC-P-1B	**Code Class:** 3	**System:** 15-Reactor Plant Component Cooling Water
Function: To provide cooling water to RX plant components.		**Type:** Centrifugal	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** E-7
Remarks: Pump is tested quarterly through various heat exchangers using a pump curve per PRR3. Also see PRR1 and PRR2.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	15.2 (Q)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1CC-100B] and Pump Suction Pressure Indicator [PI-1CC-183] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1CC-100B].
Q	15.2 (Q)	X (PRR2)	Summation from Flow Indicators [PDI-1CC-117], [PDI-1CC-118] and [PDI-1CC-119], local gages or control room indicators, [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119]. See PRR2 for range and accuracy of pump Flow Indicators [FI-1CC-117], [FI-1CC-118], [FI-1CC-119] and [PDI-1CC-119].
V	15.2 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1C Component Cooling Water Pump	**Pump Number:** 1CC-P-1C	**Code Class:** 3	**System:** 15-Reactor Plant Component Cooling Water	
Function: To provide cooling water to RX plant components.			**Type:** Centrifugal	**Dwg. OM No.:** 15-1 **Dwg. Coord.:** E-8
Remarks: Pump is tested quarterly through various heat exchangers using a pump curve per PRR3. Also see PRR1 and PRR2.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	15.3 (Q)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1CC-100C] and Pump Suction Pressure Indicator [PI-1CC-185] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1CC-100C].
Q	15.3 (Q)	X (PRR2)	Summation from Flow Indicators [PDI-1CC-117], [PDI-1CC-118] and [PDI-1CC-119], local gages or control room indicators, [FI-1CC-117], [FI-1CC-118] and [FI-1CC-119]. See PRR2 for range and accuracy of pump Flow Indicators [FI-1CC-117], [FI-1CC-118], [FI-1CC-119] and [PDI-1CC-119].
V	15.3 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

Pump Name: Steam Driven Auxiliary Feed Pump	**Pump Number:** 1FW-P-2	**Code Class:** 3	**System:** 24-Auxiliary Feedwater
Function: Provide emergency make-up during any loss of normal feedwater.		**Type:** Centrifugal	**Dwg. OM No.:** 24-2 **Dwg. Coord.:** F-7
Remarks: Per PCSJ2, pump is tested quarterly (on a staggered test basis with the other AFW pumps) on recirculation flow by recirculating the PPDWST and at full flow from the PPDWST to the Steam Generators when in Mode 3 during startup from cold shutdowns and refueling outages. The full flow test may be performed in lieu of the quarterly recirculating flow test. Also see PRR1 and PRR2.			

Parameter	1OST (Frequency)	Req'd	Comments
N	24.4 (Q)	X	No installed rpm indication. Use portable monitoring equipment-Stroboscope.
	24.9 (CSD,R)	X	No installed rpm indication. Use portable monitoring equipment-Stroboscope.
ΔP	24.4 (Q)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1FW-155] and Pump Suction Pressure Indicator [PI-1FW-156] (local). See PRR2 for range and accuracy of Pump Suction Pressure Indicator [PI-1FW-156].
	24.9 (CSD,R)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1FW-155] and Pump Suction Pressure Indicator [PI-1FW-156] (local). See PRR2 for range and accuracy of Pump Suction Pressure Indicator [PI-1FW-156].
Q	24.4 (Q)	X (PCSJ2)	Flow measurement performed at cold shutdowns and refueling outages.
	24.9 (CSD,R)	X (PRR2)	Summation of flow to Steam Generators through Flow Indicators [FI-1FW-100A, B and C] (Control Room). See PRR2 for range and accuracy of pump Flow Indicators [FI-1FW-100A, B and C].
V	24.4 (Q)	X	Portable monitoring equipment using velocity units.
	24.9 (CSD,R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST
PUMP OUTLINE

Pump Name: 3A Motor Driven Auxiliary Feed Pump	**Pump Number:** 1FW-P-3A	**Code Class:** 3	**System:** 24-Auxiliary Feedwater

Function:	Provide emergency make-up during any loss of normal feedwater.	**Type:** Centrifugal	**Dwg. OM No.:** 24-2 **Dwg. Coord.:** F-2
Remarks:	Per PCSJ2, pump is tested quarterly (on a staggered test basis with the other AFW pumps) on recirculation flow by recirculating the PPDWST and at full flow from the PPDWST to the Steam Generators during cold shutdowns and refueling outages. The full flow test may be performed in lieu of the quarterly recirculating flow test. Also see PRR1 and PRR2.		

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	24.2 (Q)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1FW-155A] and Pump Suction Pressure Indicator [PI-1FW-156A] (local). See PRR2 for range and accuracy of Pump Suction Pressure Indicator [PI-1FW-156A].
	24.8 (CSD,R)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1FW-155A] and Pump Suction Pressure Indicator [PI-1FW-156A] (local). See PRR2 for range and accuracy of Pump Suction Pressure Indicator [PI-1FW-156A].
Q	24.2 (Q)	X (PCSJ2)	Flow measurement performed at cold shutdowns and refueling outages.
	24.8 (CSD,R)	X (PRR2)	Summation of flow to Steam Generators through Flow Indicators [FI-1FW-100A, B and C] (Control Room). See PRR2 for range and accuracy of pump Flow Indicators [FI-1FW-100A, B and C].
V	24.2 (Q)	X	Portable monitoring equipment using velocity units.
	24.8 (CSD,R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 3B Motor Driven Auxiliary Feed Pump	**Pump Number:** 1FW-P-3B	**Code Class:** 3	**System:** 24-Auxiliary Feedwater	
Function: Provide emergency make-up during any loss of normal feedwater.			**Type:** Centrifugal	**Dwg. OM No.:** 24-2 **Dwg. Coord.:** F-5
Remarks: Per PCSJ2, pump is tested quarterly (on a staggered test basis with the other AFW pumps) on recirculation flow by recirculating the PPDWST and at full flow from the PPDWST to the Steam Generators during cold shutdowns and refueling outages. The full flow test may be performed in lieu of the quarterly recirculating flow test. Also see PRR1 and PRR2.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	24.3 (Q)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1FW-155B] and Pump Suction Pressure Indicator [PI-1FW-156B] (local). See PRR2 for range and accuracy of Pump Suction Pressure Indicator [PI-1FW-156B].
	24.8 (CSD,R)	X (PRR2)	Calculated using Discharge Pressure Indicator [PI-1FW-155B] and Pump Suction Pressure Indicator [PI-1FW-156B] (local). See PRR2 for range and accuracy of Pump Suction Pressure Indicator [PI-1FW-156B].
Q	24.3 (Q)	X (PCSJ2)	Flow measurement performed at cold shutdowns and refueling outages.
	24.8 (CSD,R)	X (PRR2)	Summation of flow to Steam Generators through Flow Indicators [FI-1FW-100A, B and C] (Control Room). See PRR2 for range and accuracy of pump Flow Indicators [FI-1FW-100A, B and C].
V	24.3 (Q)	X	Portable monitoring equipment using velocity units.
	24.8 (CSD,R)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A River Water Pump	**Pump Number:** 1WR-P-1A	**Code Class:** 3	**System:** 30-River Water	
Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.			**Type:** Vertical line shaft	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** B-1
Remarks: Pump is tested quarterly at full flow through the River Water flush line. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	30.2 (Q)	X	Calculated using the Pump Discharge Pressure Indicator [PI-1RW-101A] and the calculated suction pressure using the Ohio River Level Recorder [LR-1CW-101] in accordance with Section 5.5.3 of NUREG-1482 (local).
Q	30.2 (Q)	X	Flow indicator [FI-1RW-102A] (Control Room).
V	30.2 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1B River Water Pump	**Pump Number:** 1WR-P-1B	**Code Class:** 3	**System:** 30-River Water	
Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.			**Type:** Vertical line shaft	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** C-1
Remarks: Pump is tested quarterly at full flow through the River Water flush line. Also see PRR1.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	30.3 (Q)	X	Calculated using the Pump Discharge Pressure Indicator [PI-1RW-101B] and the calculated suction pressure using the Ohio River Level Recorder [LR-1CW-101], in accordance with Section 5.5.3 of NUREG-1482 (local).
Q	30.3 (Q)	X	Flow indicator [FI-1RW-102B] (Control Room).
V	30.3 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1C River Water Pump	**Pump Number:** 1WR-P-1C	**Code Class:** 3	**System:** 30-River Water	
Function: To provide a source of water during normal and emergency conditions to primary plant heat exchangers and equipment.			**Type:** Vertical line shaft	**Dwg. OM No.:** 30-1 **Dwg. Coord.:** D-1
Remarks: Pump is tested quarterly at full flow through the River Water flush line. Also see PRR1.				

Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	30.6 (Q)	X	Calculated using the Pump Discharge Pressure Indicator [PI-1RW-101C] and the calculated suction pressure using the Ohio River Level Recorder [LR-1CW-101], in accordance with Section 5.5.3 of NUREG-1482 (local).
Q	30.6 (Q)	X	Flow indicator [FI-1RW-102A or B] (Control Room).
V	30.6 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1A DG #1 Fuel Transfer Pump	**Pump Number:** 1EE-P-1A	**Code Class:** 3	**System:** 36-Station Service 4KV	
Function: Transfer fuel from the underground tank to the day tank.			**Type:** Positive Displacement	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** B-4
Remarks: Pump is normally tested monthly at full flow from the fuel oil storage tank to the day tank. Also see PRR1, PRR2, PRR4 and PRR5.				

Parameter	10ST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	36.1 (Q)	X (PRR2) (PRR5)	Positive displacement pump. Pump Discharge Pressure Indicator [PI-1EE-101A] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1EE-101A]. Expanded Ranges used per Pump Relief Request 5.
Q	36.1 (Q)	X (PRR4) (PRR5)	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate, per PRR4. Expanded Ranges used per Pump Relief Request 5.
V	36.1 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1B DG #1 Fuel Transfer Pump	**Pump Number:** 1EE-P-1B	**Code Class:** 3	**System:** 36-Station Service 4KV	
Function: Transfer fuel from the underground tank to the day tank.			**Type:** Positive Displacement	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** A-4
Remarks: Pump is normally tested monthly at full flow from the fuel oil storage tank to the day tank. Also see PRR1, PRR2, PRR4 and PRR5.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	36.1 (Q)	X (PRR2) (PRR5)	Positive displacement pump. Pump Discharge Pressure Indicator [PI-1EE-101A] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1EE-101A]. Expanded Ranges used per Pump Relief Request 5.
Q	36.1 (Q)	X (PRR4) (PRR5)	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate, per PRR4. Expanded Ranges used per Pump Relief Request 5.
V	36.1 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE			
Pump Name: 1C DG #2 Fuel Transfer Pump	**Pump Number:** 1EE-P-1C	**Code Class:** 3	**System:** 36-Station Service 4KV
Function: Transfer fuel from the underground tank to the day tank.		**Type:** Positive Displacement	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** F-4
Remarks: Pump is normally tested monthly at full flow from the fuel oil storage tank to the day tank. Also see PRR1, PRR2, PRR4 and PRR5.			

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	36.2 (Q)	X (PRR2) (PRR5)	Positive displacement pump. Pump Discharge Pressure Indicator [PI-1EE-102A] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1EE-102A]. Expanded Ranges used per Pump Relief Request 5.
Q	36.2 (Q)	X (PRR4) (PRR5)	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate, per PRR4. Expanded Ranges used per Pump Relief Request 5.
V	36.2 (Q)	X	Portable monitoring equipment using velocity units.

BVPS-1 IST PUMP OUTLINE				
Pump Name: 1D DG #2 Fuel Transfer Pump	**Pump Number:** 1EE-P-1D	**Code Class:** 3	**System:** 36-Station Service 4KV	
Function: Transfer fuel from the underground tank to the day tank.			**Type:** Positive Displacement	**Dwg. OM No.:** 36-2 **Dwg. Coord.:** E-4
Remarks: Pump is normally tested monthly at full flow from the fuel oil storage tank to the day tank. Also see PRR1, PRR2, PRR4 and PRR5.				

Parameter	1OST (Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
P	36.2 (Q)	X (PRR2) (PRR5)	Positive displacement pump. Pump Discharge Pressure Indicator [PI-1EE-102A] (local). See PRR2 for range and accuracy of Pump Discharge Pressure Indicator [PI-1EE-102A]. Expanded Ranges used per Pump Relief Request 5.
Q	36.2 (Q)	X (PRR4) (PRR5)	No instrumentation provided - Level change over time in the day tank will be measured and converted to flowrate, per PRR4. Expanded Ranges used per Pump Relief Request 5.
V	36.2 (Q)	X	Portable monitoring equipment using velocity units.

SECTION III: PUMP COLD SHUTDOWN JUSTIFICATIONS

PUMP COLD SHUTDOWN JUSTIFICATION 1

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

Code Class: 2

System: 10 - Residual Heat Removal

Function: To provide long term removal of decay heat from the reactor core and sensible heat from the RCS in order to achieve and maintain the plant in a cold shutdown condition.

Test Requirement: Per OM-6, Paragraph 5.1, "Frequency of Inservice Tests", an inservice test shall be run on each pump, nominally every 3 months.

Basis for CSJ: These pumps are not required to be run at power and are considered out of service. They are not returned to service until RCS temperature is ≤350F and RCS pressure is ≤430 psig. Per OM-6, Paragraph 5.4, "Pumps in Systems Out of Service", the test schedule need not be followed for pumps in a system not required to be operable.

In addition, these pumps are located inside containment. If tested at power, test personnel would have to make a containment entry to properly monitor pump operation. However, Beaver Valley Unit 1 reactor containment is maintained subatmospheric as required by technical specifications. The subatmospheric condition presents a hazardous working environment for station personnel and is considered inaccessible for surveillance testing.

Alternate Test: These pumps will be tested quarterly at full flow only during cold shutdowns and refueling outages per 1OST-10.1, "Residual Heat Removal Pumps Performance Test".

References: OM-6, Paragraphs 5.1 and 5.4.

PUMP COLD SHUTDOWN JUSTIFICATION 2

Pump Mark No(s): 1FW-P-2
1FW-P-3A
1FW-P-3B

Code Class: 2

System: 24 - Auxiliary Feedwater

Function: To provide an emergency source of feedwater to the Steam Generators.

Test Requirement: Per OM-6, Paragraph 5.2, "Test Procedure" and Table 2, "Inservice Test Parameters," flow rate shall be determined and recorded.

Basis for CSJ: These pumps are tested quarterly in a fixed resistance recirculation line without installed flow instrumentation. The flow is therefore, assumed to be fixed and at its reference value. The ΔP value is then measured and compared to the acceptance criteria. In accordance with Position 9 of GL 89-04, the pumps are also tested through the full-flow path to the Steam Generators at a cold shutdown frequency.

Alternate Test: These pumps will be tested quarterly on the fixed resistance recirculation line while measuring ΔP per 1OST-24.2, 3 & 4, "The Motor-Driven and Steam Turbine-Driven Auxiliary Feed Pump Tests". They will also be tested during cold shutdown and refueling outages when plant conditions permit directing flow to the steam generators. Flow will be measured using the flow instrumentation in the S/G supply header and ΔP calculated from the local suction and discharge pressure indicators, per 1OST-24.8, "Motor-Driven Auxiliary Feed Pumps Check Valves and Flow Test", and 1OST-24.9, "Turbine-Driven AFW Pump [1FW-P-2] Operability Test".

Note: The Auxiliary Feed Water Full Flow tests, 1OST-24.8 or 24.9, may be performed in lieu of the quarterly tests, 1OST-24.2, 3 and 4.

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

References: OM-6, Paragraph 5.2 and Table 2.
Generic Letter 89-04, Position 9.

SECTION IV: PUMP REFUELING OUTAGE JUSTIFICATIONS

PUMP REFUELING OUTAGE JUSTIFICATION 1

Pump Mark No(s): 1CH-P-2A
1CH-P-2B

Code Class: 2

System: 7 - Chemical and Volume Control

Function: To supply borated water to the suction of the Charging HHSI pumps for injection into the RCS.

Test Requirement: Per OM-6, Paragraph 5.2, "Test Procedure" and Table 2, "Inservice Test Parameters," flow rate shall be determined and recorded.

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

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

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

PUMP ROJ 1

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

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

Alternate Test:

Test quarterly through a fixed-resistance minimum flow recirculation line: assuming flow to be constant and measuring delta-P in 1OST-7.1, 2, "Boric Acid Transfer Pump Operational Tests".

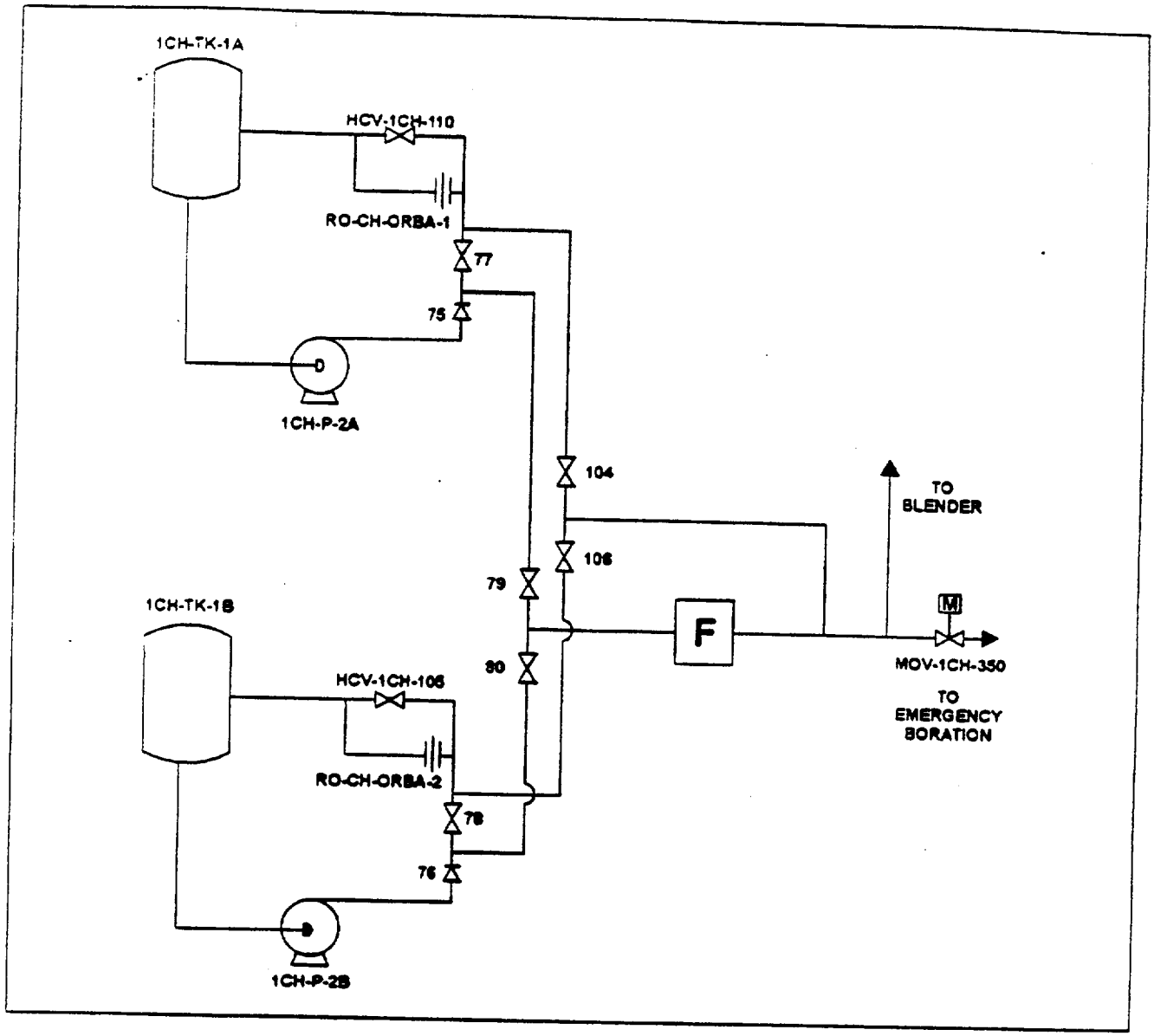
Test at a refueling frequency at "full-flow" through a larger recirculation line, using a portable ultrasonic flow meter in 1OST-7.13, 14, "Boric Acid Transfer Pump Operational Test During Refueling".

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

References:

OM-6, Paragraph 5.2 and Table 2.
Generic Letter 89-04, Position 9.

PROJ 1


1CH-TK-1A
HCV-1CH-110
RO-CH-ORBA-1
77
75
1CH-P-2A
104
TO
BLENDER
106
79
1CH-TK-1B
F
M
80
HCV-1CH-106
MOV-1CH-350
TO
EMERGENCY
BORATION
RO-CH-ORBA-2
78
76
1CH-P-2B

PUMP REFUELING OUTAGE JUSTIFICATION 2

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

Code Class: 2

System: 13 - Containment Depressurization

Function: To circulate water from the reactor containment sump to the spray rings at the top of the containment dome for the purpose of removing heat from the containment atmosphere thereby depressurizing and holding containment pressure subatmospheric for the long term following a DBA.

Test Requirement: Per OM-6, Paragraph 5.1, "Frequency of Inservice Tests", an inservice test shall be run on each pump, nominally every 3 months.

Basis for ROJ: These vertical suction well centrifugal pumps are located inside the reactor containment building and take suction from the containment sump. In order to test these pumps, a temporary dike must be installed in the containment around the sump to ensure adequate NPSH for each pump. Quarterly testing at power in this manner is a safety concern, since it would block off the sump from the containment in the event of an accident. Pump testing during cold shutdowns, while not involving the same safety concern, would increase the personnel radiation exposure, create over 2,000 gallons of additional radioactive waste, divert maintenance from high priority items, and could extend the length of a plant shutdown due to the extensive preparatory work required to properly install the dike. Per OM-6, Paragraph 5.5, "Pumps Lacking Required Fluid Inventory", pumps in dry sumps need not be tested every 3 months, however, they shall be tested at least once every 2 years with the required fluid inventory provided during the test.

Alternate Test: These pumps will be tested on recirculation flow (approximately 2000 gpm) once during each refueling outage per 1BVT 1.13.5, "Inside Recirculation Spray Pump Test".

References: OM-6, Paragraphs 5.1 and 5.5.

PUMP REFUELING OUTAGE JUSTIFICATION 3

Pump Mark No(s): 1RS-P-2A
1RS-P-2B

Code Class: 2

System: 13 - Containment Depressurization

Function: To circulate water from the reactor containment sump to the spray rings at the top of the containment dome for the purpose of removing heat from the containment atmosphere thereby depressurizing and holding containment pressure subatmospheric for the long term following a DBA.

Test Requirement: Per OM-6, Paragraph 5.1, "Frequency of Inservice Tests", an inservice test shall be run on each pump, nominally every 3 months.

Basis for ROJ: These vertical suction well centrifugal pumps are located outside the reactor containment building in the safeguards building and take suction from the safeguards sump in containment. The pumps are designed with a recirculation flow path for testing; however, in order to perform the test, the pump casing must be filled with water to provide the fluid required to run the pump. The piping arrangement and required valve lineup for post-test system restoration prevents draining the pump casing and suction lines without returning some water to the safeguards sump in the containment building. As a result, a containment entry is required to pump the sump down. Pump testing quarterly and during cold shutdowns would increase the personnel radiation exposure and create over 2,000 gallons of additional radioactive waste. Per OM-6, Paragraph 5.5, "Pumps Lacking Required Fluid Inventory", pumps in dry sumps need not be tested every 3 months, however, they shall be tested at least once every 2 years with the required fluid inventory provided during the test.

Alternate Test: These pumps will be tested on recirculation flow (approximately 2000 gpm) during each refueling outage per 1OST-13.7, "Outside Recirculation Spray Pump Test".

References: OM-6, Paragraphs 5.1 and 5.5.

SECTION V: PUMP RELIEF REQUESTS

PUMP RELIEF REQUEST 1

Pump Mark No(s): All of the pumps in the IST Program. Code Class: 2, 3

System: Various

Function: Various

Test Requirement: Per OM-6, Paragraph 6, "Analyses and Evaluation", if deviations fall within the alert range of Table 3a for vibrations, the frequency of testing specified in Paragraph 5.1, shall be doubled until the cause of the deviation is determined and the condition corrected.

Basis for Relief: In accordance with 10CFR50.55a(a)(3)(i), relief is requested on the basis that the proposed alternatives would provide an acceptable level of quality and safety.

The ASME OMc Code-1994, Subsection ISTB, Paragraph 4.6, "New Reference Values," states in cases where a pump's test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established. Paragraph 4.6 goes on the say that this analysis shall include verification of the pump's operational readiness. The analysis shall also include both a pump level and system level evaluation of operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data. The results of this analysis shall be documented in the record of tests.

Spectral analysis may be used to determine the mechanical condition of a pump. The reason for testing a pump on double frequency is to obtain additional information so that the condition of the pump may be determined. Spectral data can provide information to determine if misalignment, unbalance, resonance, looseness or a bearing problem is present. Through a review of the spectral data over a period of time, any change in condition of the pump may also be determined.

PUMP RELIEF REQUEST 1

Alternate Test:	BVPS-1 proposes to implement ASME OMc Code-1994, Subsection ISTB, Paragraph 4.6 for vibration measurements for all the pumps in the IST Program. Spectral vibration data is currently being obtained for each vibration measurement on all of the pumps. Each time a pump enters the alert range for vibration, an analysis of the spectral vibration data will be performed to determine the cause of the higher vibrations. If the analysis supports continued operation, the pump will be removed from double frequency testing and a new set of reference valves may be obtained. However, to avoid stair-stepping to failure, a new set of reference values may only be obtained once prior to performing corrective maintenance. If the cause of the higher vibrations cannot be determined, or if the data shows a continuing trend such that the condition of the pump may continue to degrade until it can no longer fulfill its function, the pump will remain on double frequency testing until the condition is corrected.
References:	OM-6, Paragraphs 5.1 and 6 and Table 3. ISTB, Paragraph 4.6.

PUMP RELIEF REQUEST 2

Pump Mark No(s): See the attached Table. Code Class: 2, 3

System: Various

Function: Various

Test Requirement: Per OM-6, Paragraph 4.6.1.2(a), "Range", the full-scale range of each analog instrument shall be not greater than three times the reference value.

Basis for Relief: In accordance with 10CFR50.55a(a)(3)(i), relief is requested on the basis that the proposed alternatives would provide an acceptable level of quality and safety.

The pumps listed on the attached table use instruments which do not meet the requirements of OM-6, Paragraph 4.6.1.2(a), however, the accuracy of the instruments used is more conservative than the requirements of OM-6, Paragraph 4.6.1.1, "Quality", and Table 1, "Acceptable Instrument Accuracy". Per the attached table, the combination of higher range and better accuracy for each instrument yields a reading at least equivalent to the reading achieved from instruments that meet OM-6, Paragraph 4.6.1.1 and Table 1 requirements. Therefore, relief is requested in accordance with NUREG-1482, Section 5.5.1, "Range and Accuracy of Analog Instruments".

Alternate Test: Use the installed instruments listed on the attached table as long as the combination of the higher range and better accuracy for each instrument yields a reading at least equivalent to the reading achieved from instruments that meet OM-6 requirements.

References: OM-6, Paragraphs 4.6.1.1 and 4.6.1.2(a), and Table 1. NUREG-1482, Section 5.5.1.

PUMP RELIEF REQUEST 2

IST PUMP INSTRUMENTATION

Pump ID#	Instrument ID#	Condition Requiring Relief	Basis for Relief/Alternate Test
1RH-P-1A 1RH-P-1B	PI-1RH-600 PI-1RH-601	The range of the gauges is greater than three times the reference pressure at some operating conditions.	These gauges are the discharge pressure gauges for the RHR pumps. They are sized for all modes of pump operation with a range of 0-700 psig. The RHR pumps take suction on the RCS, and the discharge pressure is dependent on the RCS pressure, varying between 96-485 psig (typically 420 psig). The calibration accuracy is 0.5%, which would yield a reading more accurate than Code requirements for any operating pressure.
1SI-P-1A 1SI-P-1B	PI-1SI-943 PI-1SI-944	The range of the gauges is greater than three times the reference pressure, at full flow conditions.	These gauges are the discharge pressure gauges for the LHSI pumps. They are sized for all modes of pump operation with a range of 0-400 psig. They meet the criteria for the quarterly test however, at higher flow rates the pressure is approx. 25% of the range. The calibration accuracy is 0.5%, which would yield a reading more accurate than Code requirements.
1CC-P-1A 1CC-P-1B 1CC-P-1C	PI-1CC-100A PI-1CC-100B PI-1CC-100C	The range of the gauges is slightly greater than three times the reference pressure.	These gauges are the discharge pressure gauges for the CCR pumps. The range of the gauges is 0-400 psig. The use of a pump curve is allowed for these pumps per PRR3, and the typical pressure readings are slightly lower than 1/3 the range, varying between 110-132 psig. The calibration accuracy is 1.0%, which would yield a reading more accurate than Code requirements.
	FI-1CC-117 FI-1CC-118 FI-1CC-119	The range of the gauges is greater than three times the reference flow.	These flow indicators are in the branch lines of the component cooling water system. They are only used if the installed PDIs are over-ranged. In that case, the typical flow expected would be enough to meet Code requirements, except for [FI-1CC-117], which could be placed in service with a flow of 4000 gpm. [FI-1CC-117] is sized for all flow conditions with a range of 0-14,000 gpm and an accuracy of 1.5%. It is in the 24" CCR header supplying the cooling loads inside containment. When the RHR System is in operation, the flow through this line is significantly higher. The calibration accuracy of this gauge would yield a reading more accurate than Code requirements.
	PDI-1CC-119	The range of the flow meter is greater than three times the reference flow for normal operations.	This flow indicator in the CCR header supplying the cooling loads in the Auxiliary Building, has a range of 0-150 inwc. Since the use of a pump curve is approved per relief, the reference flow may not be at a specific flow point. Typical test flow dP is approx. 19 inwc. The accuracy of the gauge is 0.5%, which would yield a reading more accurate than Code requirements.

PUMP RELIEF REQUEST 2

IST PUMP INSTRUMENTATION

Pump ID#	Instrument ID#	Condition Requiring Relief	Basis for Relief/Alternate Test
1FW-P-2 1FW-P-3A 1FW-P-3B	FI-1FW-100A FI-1FW-100B FI-1FW-100C	The range of the gauges is greater than three times the reference flow for the Motor-Driven AFW Pumps.	These flow indicators are in the three lines to the S/Gs from the AFW Pumps The flow indicators are sized to measure accident flow from the Turbine-Driven AFW Pump as well as the Motor-Driven Pumps, with a range of 0-400 gpm The reference value for the full-flow test is approx. 110 gpm, 27.5% of the range The calibration accuracy of the flow meters is 1.0%, which would yield a reading more accurate than Code requirements.
	PI-1FW-156 PI-1FW-156A PI-1FW-156B	The range of the gauges is greater than three times the reference pressure.	These gauges are the suction pressure gauges for the Auxiliary Feedwater Pumps. In 1991, DCP 1557 changed the existing 0-160 psig gauges to the present 0-60 psig gauges. This range was selected as a compromise between the IST Program requirements and possible accident pressures (i.e., River Water supplying the AFW Pumps). The 0-60 psig range will accommodate the accident pressure and typical test pressure of 10 psig. With a calibration accuracy of 0.5% this results in a reading more accurate than Code requirements.
1EE-P-1A 1EE-P-1B 1EE-P-1C 1EE-P-1D	PI-1EE-101A PI-1EE-102A	The range of the gauges is greater than three times the reference pressure.	These gauges are the discharge pressure gauges for the D/G Fuel Oil Transfer Pumps. The reference value is approx. 9 psig, slightly below 1/3 of the range of the gauges (0-30 psig). Their calibration accuracy is 0.5%, which would yield a reading more accurate than Code requirements.

PUMP RELIEF REQUEST 3

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

Code Class: 3

System: 15 - Reactor Plant Component Cooling Water

Function: To circulate cooling water through various reactor plant components during normal operation, and through the Residual Heat Removal Heat Exchangers following an accident in order to achieve and maintain the plant in a cold shutdown condition.

Test Requirement: Per OM-6, Paragraph 5.2, "Test Procedure", an inservice test shall be conducted with the pump operating at specified test reference conditions. Per Sub-Paragraph 5.2(b), the resistance of the system shall be varied until the flow rate equals the reference value. The pressure shall then be determined and compared to its reference value. Alternatively, the flow rate can be varied until the pressure equals the reference value and the flow rate shall be determined and compared to the reference flow rate value.

Basis for Relief: In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the code requirement is impractical for BVPS-1.

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

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

PUMP RELIEF REQUEST 3

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

OM-6, Paragraph 4.5, "To Establish an Additional Set of Reference Values", provides for multiple sets of reference values. A pump curve is merely a graphical representation of the fixed response of the pump to an infinite number of flow conditions which are based on some finite number of reference values verified by measurement. Relief is, therefore, required to use a pump curve, which should provide an equivalent level of quality and safety in trending pump performance and degradation. Flow will be permitted to vary as system conditions require. Delta-P will be calculated and converted to a developed head for which OM-6 ranges will be applied.

Alternate Test:

A pump curve (developed per the guidelines in NUREG-1482, Section 5.2, "Use of Variable Reference Values for Flow Rate and Differential Pressure During Pump Testing") will be used to compare flowrate with developed pump head at the flow conditions dictated by plant seasonal heat load requirements per Reactor Plant Component Cooling Water Pump Tests, 1OST-15.1, 1OST-15.2 and 1OST-15.3 each quarter. Since normal flow varies, the most limiting vibration acceptance criteria will be used over this range of flows based on baseline vibration data obtained at various flow points on the pump curve.

References:

OM-6, Paragraphs 4.5 and 5.2 (Including 5.2(b)).
NUREG-1482, Section 5.2.

PUMP RELIEF REQUEST 4

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

Code Class: 3

System: 36 - Diesel Fuel Oil

Function: To transfer fuel oil from the underground Emergency Diesel Generator Fuel Oil Storage Tank to the Day Tank in order to provide continuous operation of the Diesel at rated load for up to 7 days during an emergency.

Test Requirement: Per OM-6, Paragraph 4.6.5, "Flow Rate Measurement", and Table 2, "Inservice Test Parameters", flow rate shall be measured for all pumps. When measuring flow rate, use a rate or quantity meter installed in the pump test circuit. If a meter does not indicate the flow rate directly, the record shall include the method used to reduce the data.

Basis for Relief: In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the code requirement is impractical for BVPS-1.

There is no installed instrumentation provided to measure flow rate for these Emergency Diesel Generator Fuel Oil Transfer Pumps. However, a level sight glass does exist on the side of the Diesel Generator Fuel Oil Day Tank which can be used to measure a change in level over time as the pumps transfer fuel oil from the underground Storage Tank to the Day Tank. The reading scale for measuring the level change over time, and the calculational method yield an accuracy within ±2% as required by OM-6, Paragraph 4.6.1.1, "Quality", and Table 1, "Acceptable Instrument Accuracy".

Alternate Test: Flow rate will be calculated by measuring the level change over time in the Diesel Generator Fuel Oil Day Tank, and converting this data into Fuel Oil Transfer Pump flow rate at least quarterly per 1OST-36.1 and 1OST-36.2 (Emergency Diesel Generator and Fuel Oil Transfer Pump Tests).

References: OM-6, Paragraphs 4.6.1.1, 4.6.5 and 5.2, and Tables 1 and 2.

PUMP RELIEF REQUEST 5

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

Code Class: 3

System: 36 - Diesel Fuel Oil

Function: To transfer fuel oil from the underground Emergency Diesel Generator Fuel Oil Storage Tank to the Day Tank in order to provide continuous operation of the Diesel at rated load for up to 7 days during an emergency.

Test Requirement: Per OM-6, Paragraph 5.2(d), "Pressure, flow rate, and vibration (displacement or velocity) shall be determined and compared with corresponding reference values. All deviations from the reference values shall be compared with the limits given in Table 3 and corrective action taken as specified in para. 6.1."

Basis for Relief: In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the code requirement is impractical for BVPS-1.

The limits given in Table 3 for positive displacement pumps for discharge pressure are 0.93 to $1.10P_r$ for the Acceptable Range and 0.90 to $< 0.93P_r$ for the Alert Range Low, and for flow 0.95 to $1.10Q_r$ for the Acceptable Range and 0.93 to $< 0.95Q_r$ for the Alert Range Low. These limits are too restrictive for the Fuel Oil Transfer Pumps at BVPS-1. The baseline discharge pressures for these four pumps range between 7 psig and 11 psig. Applying the OM-6 limits for these values, the average allowable degradation from the reference value is only 0.8 psig. The discharge pressure indicators have graduations every 0.2 psig, however, a review of the previous data for discharge pressure since 1985 reveals that the discharge pressure has historically varied as much as 1 psig from one test to the next and between 1-3 psig over the course of a year. In addition, the allowable inaccuracy of the discharge pressure gauges would allow variations of 0.48 psig, equal to more than half of the Acceptable Ranges. The baseline flows for these four pumps range from 9 to 12 gpm. The average allowable degradation for flow is therefore only 0.7 gpm. The flow values also vary from test to test and between 1-3 gpm over the course of the year.

PUMP RELIEF REQUEST 5

The OM-6 limits are, therefore, too restrictive. Normal historic variation in discharge pressure and flow would require the pumps to enter the Alert or Required Action Ranges. Trends would not be observed because the pumps would have to be declared inoperable before enough data could be obtained to determine if the data obtained is a true indication of a degrading condition or data scatter. In addition, the ASME trending would also pick-up variations caused by fouling of the suction strainer or discharge filter or by chattering of the relief valve. An allowable variation larger than 0.8 psig or 0.7 gpm, therefore, is needed to trend pump performance.

NUREG-1482, Paragraph 5.6 "Operability Limits of Pumps," states that if expanded ranges are needed, relief must be obtained. "The request for relief must include the licensee's basis for the expanded ranges and the basis for finding that the pump performance does not demonstrate degrading conditions. The basis for acceptable pump performance pertains to the pump and not the system, though pump performance must meet system requirements to remain in an analyzed condition."

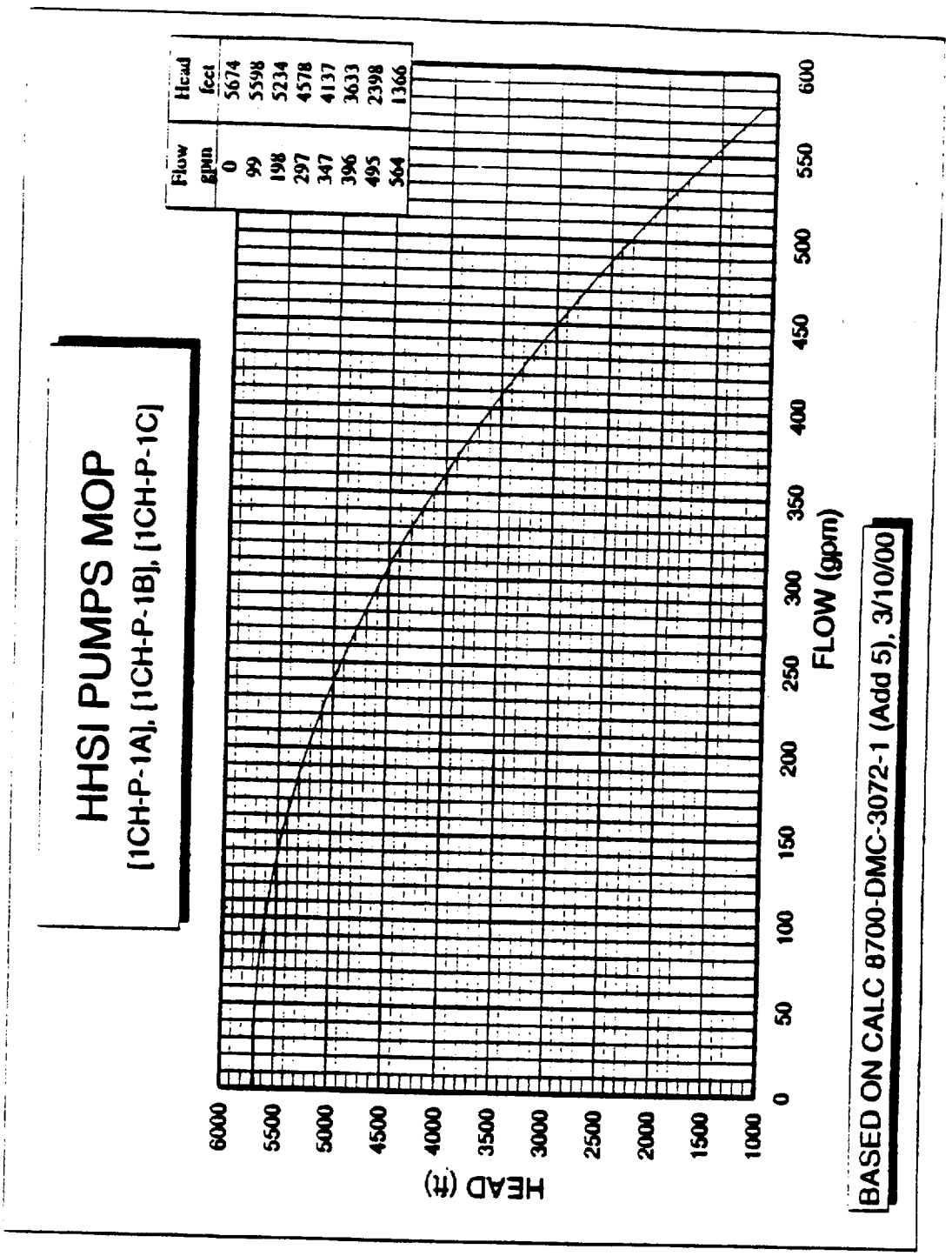
Therefore, BVPS-1 requests relief to use expanded ranges for discharge pressure and flow for the Fuel Oil Transfer Pumps. The ranges proposed for discharge pressure would be 0.80 to 1.20P_r for the acceptable range and 0.70 to < 0.80P_r for the Alert Range. The function of these pumps is to be able to deliver fuel to the day tank to supply the Diesel Generator under full load. The amount of fuel that is required to be delivered is 3.6 gpm, significantly lower than the reference values for all of the pumps. In addition, due to the nature of positive displacement pumps, flow should be the more consistent parameter. Therefore, the proposed range for flow is 0.90 to 1.15Q_r for the Acceptable Range and 0.80 to < 0.90Q_r for the Alert Range. The proposed range for the flow value is more restrictive because the flow rate is the more critical parameter for the system. The high flow limit is based on approximately half of the allowable variation expected in pumps with this rated flow rate, from the Hydraulic Institute Test Standard for Rotary Pumps, 14th edition.

PUMP RELIEF REQUEST 5	These ranges would only result in an average allowed variation of -2.5 psig and +1.7 psig for pressure and -2.1 gpm and +1.5 gpm for flow. In addition, during discussions with Ingersoll-Dresser Pumps, the pump manufacturer, when questioned about a limiting value for pump performance, the pump manufacturer has stated that as the pump wears and the clearances open, the performance will gradually change. No limiting value for either flow or discharge pressure was provided and sudden performance degradation is not expected. These expanded ranges will allow degrading conditions to be identified and provide assurance that the Fuel Oil Transfer Pumps will be capable of fulfilling their safety function.
Alternate Test:	Test per 1OST-36.1 and 2, "Diesel Generator Monthly Tests" using expanded ranges for flow and discharge pressure.
References:	OM-6, Paragraphs 5.2(d), NUREG-1482, Paragraph 5.6

SECTION VI: PUMP MINIMUM OPERATING POINT (MOP) CURVES

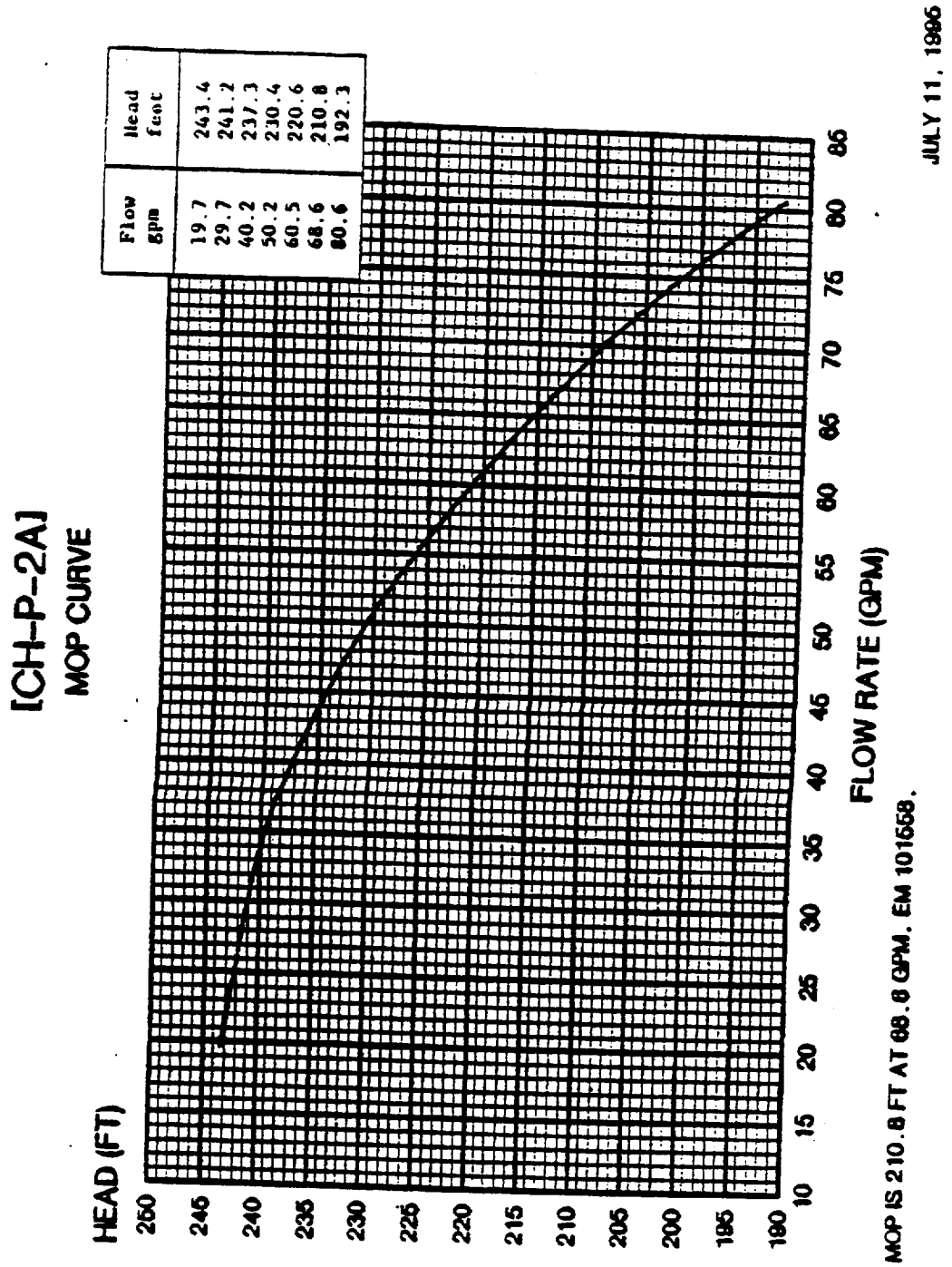
Pump Name: Charging High Head Safety Injection Pumps

Pump Number: [1CH-P-1A]
[1CH-P-1B]
[1CH-P-1C]



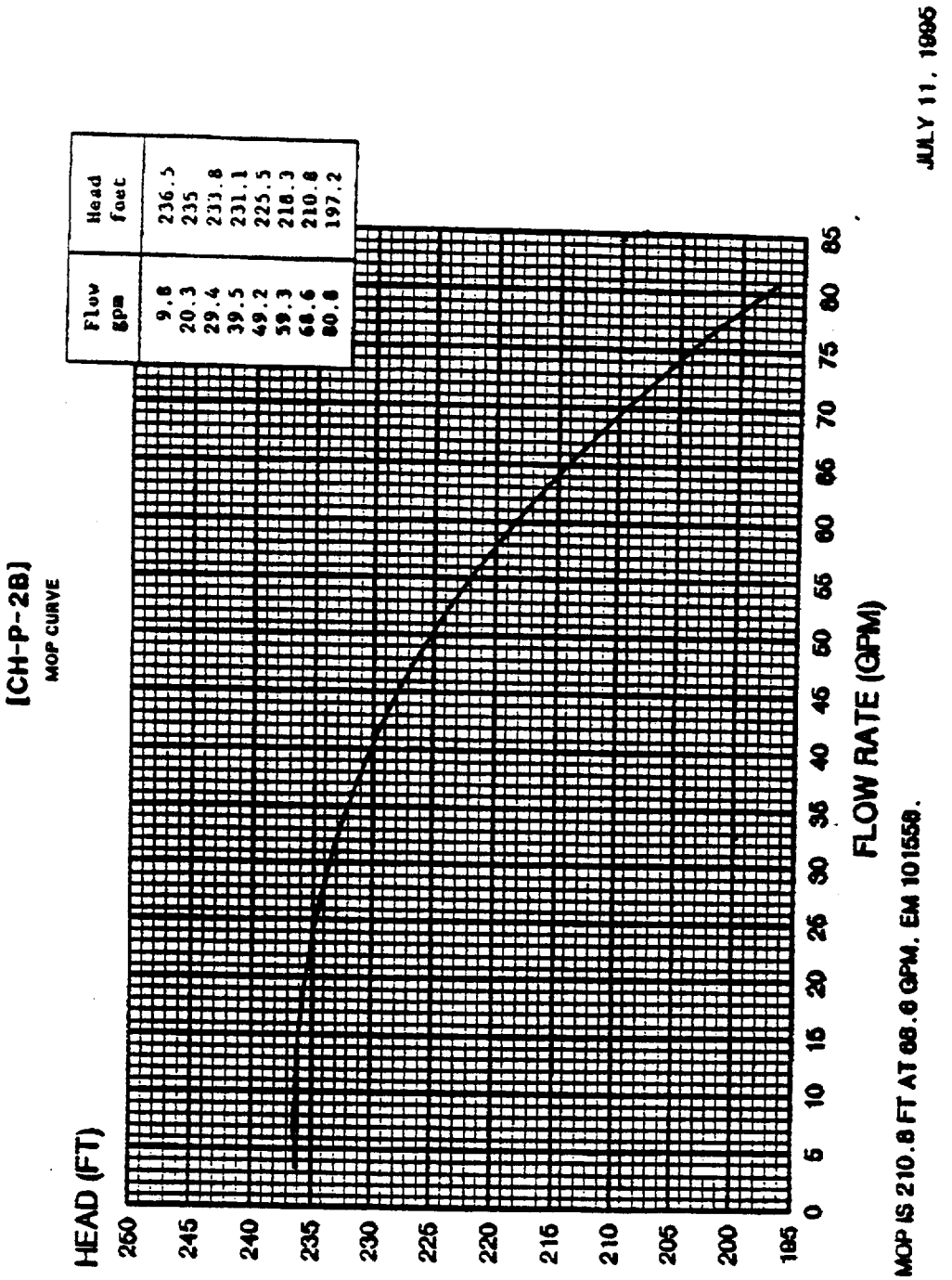
Pump Name: 2A Boric Acid Transfer Pump

Pump Number: [1CH-P-2A]



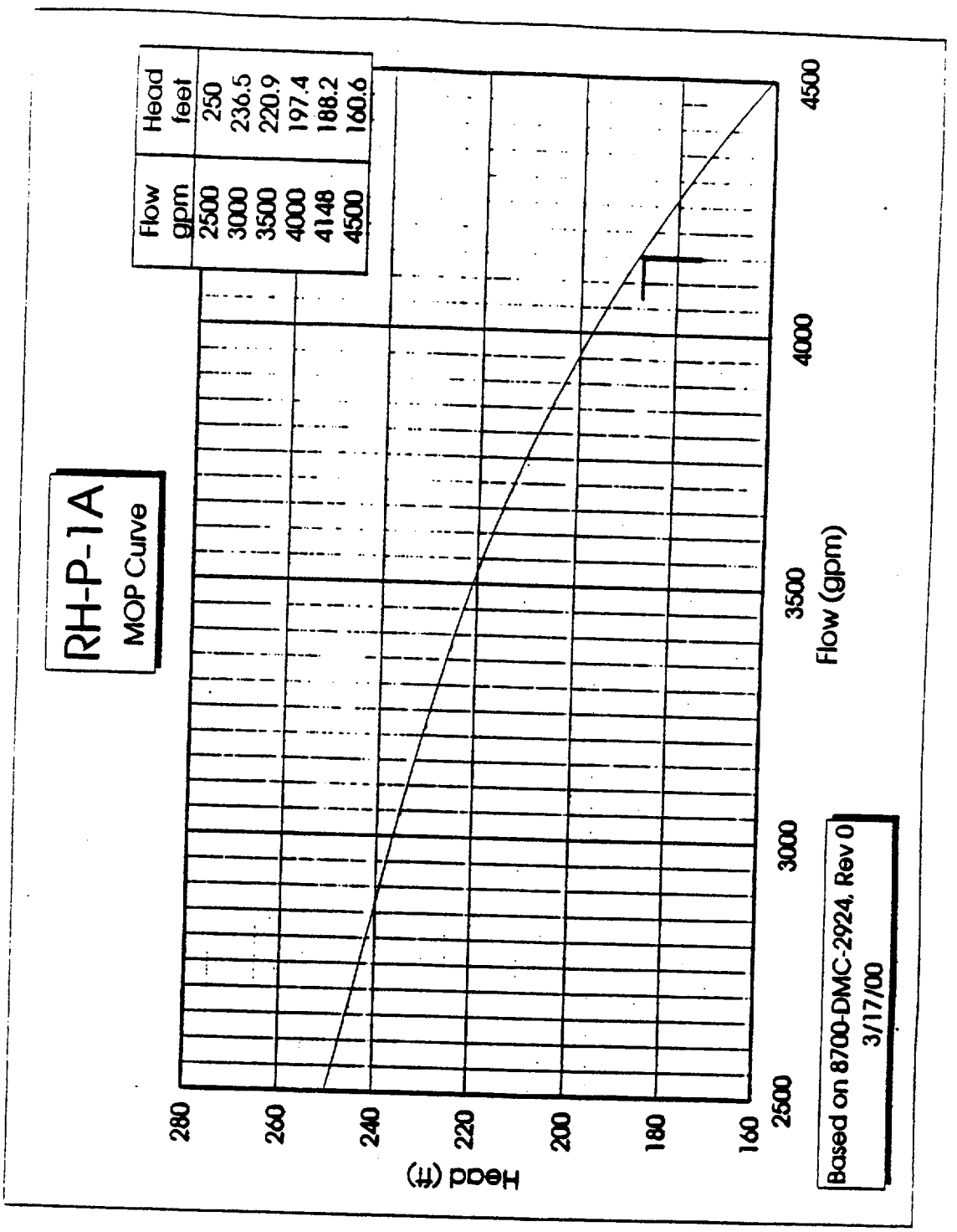
Pump Name 2B Boric Acid Transfer Pump

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



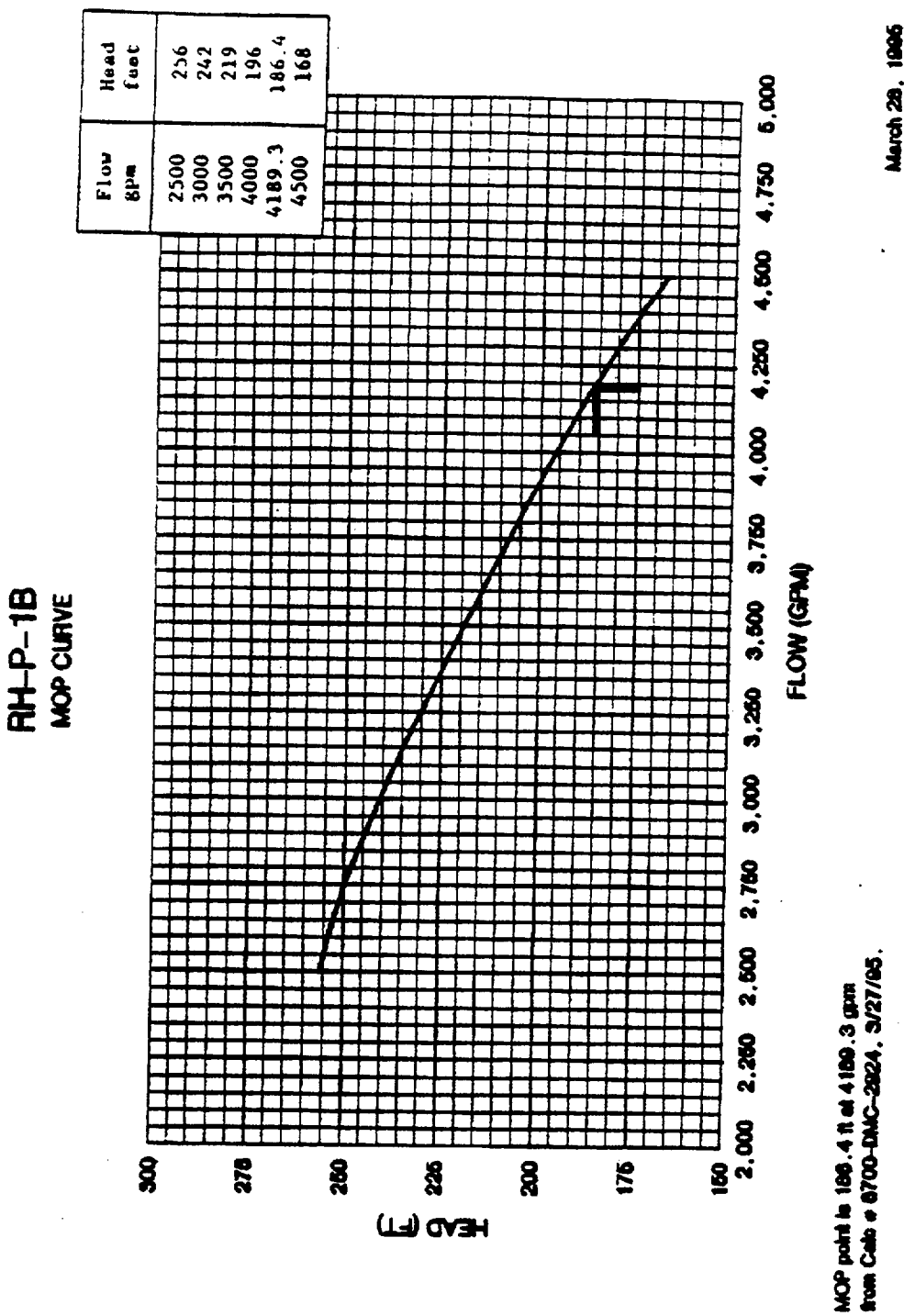
Pump Name 1A Residual Heat Removal Pump

Pump Number [1RH-P-1A]



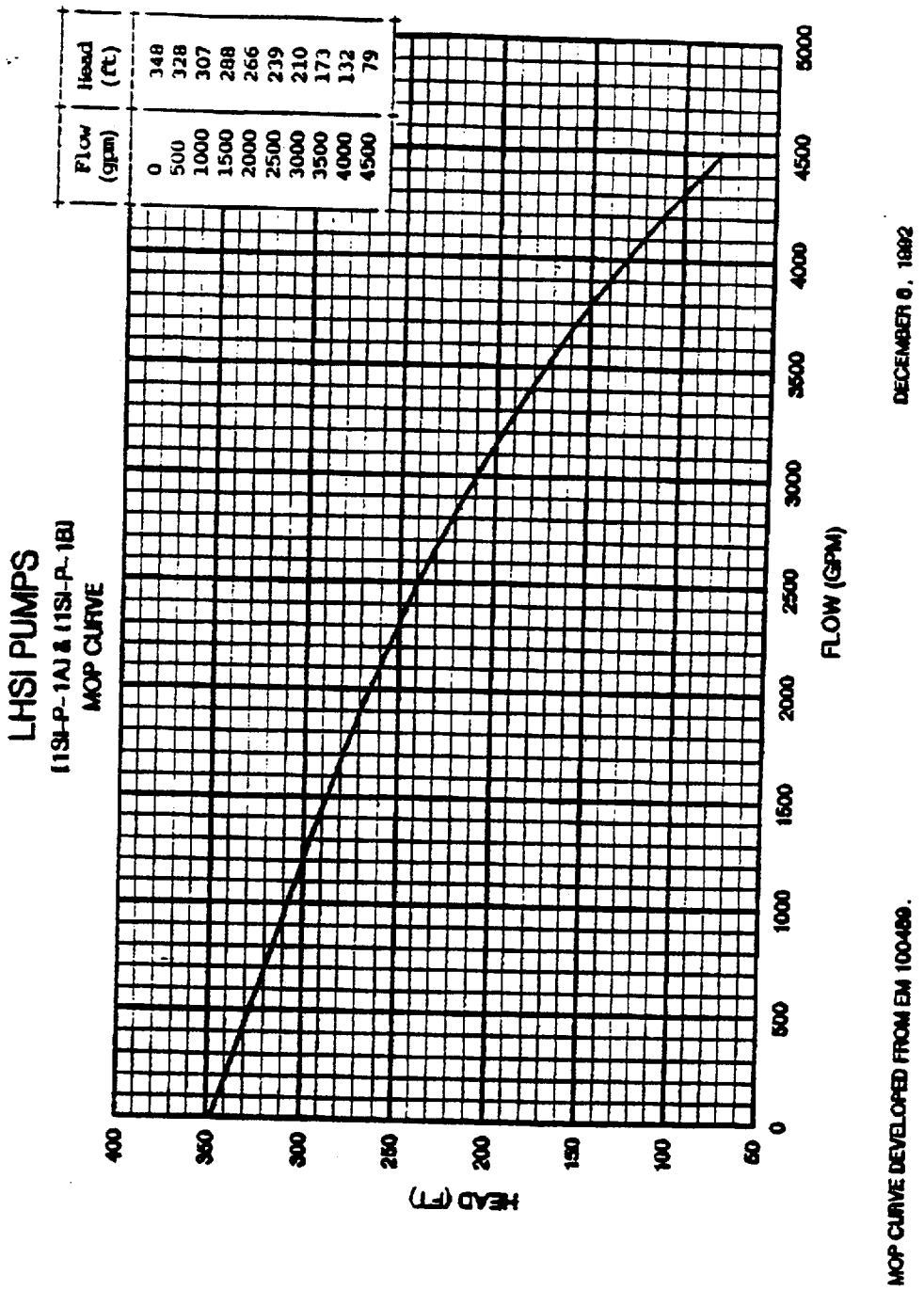
Pump Name: 1B Residual Heat Removal Pump

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



Pump Name: Low Head Safety Injection Pumps

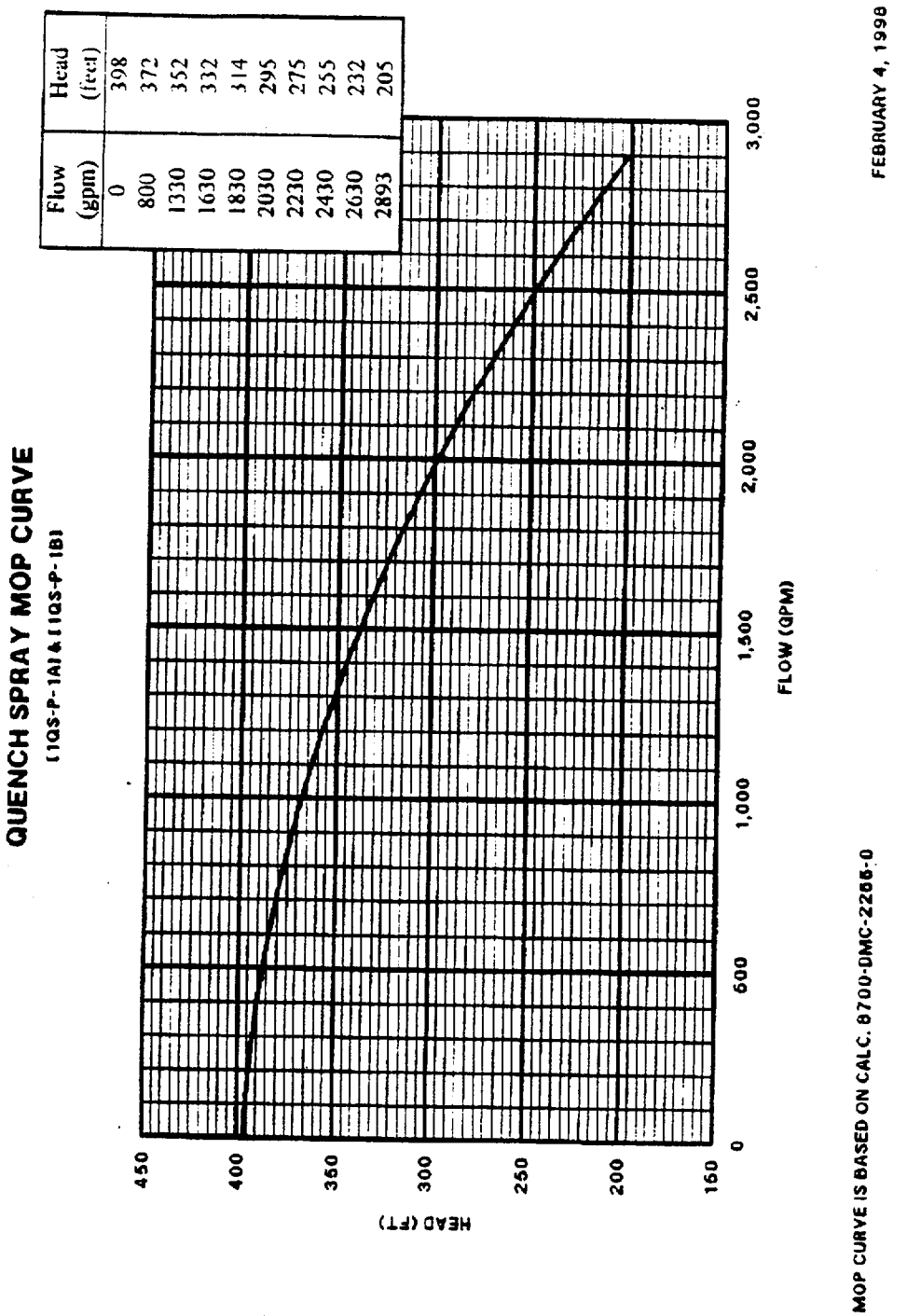
Pump Number: [1SI-P-1A]
[1SI-P-1B]



Pump Name Quench Spray Pumps

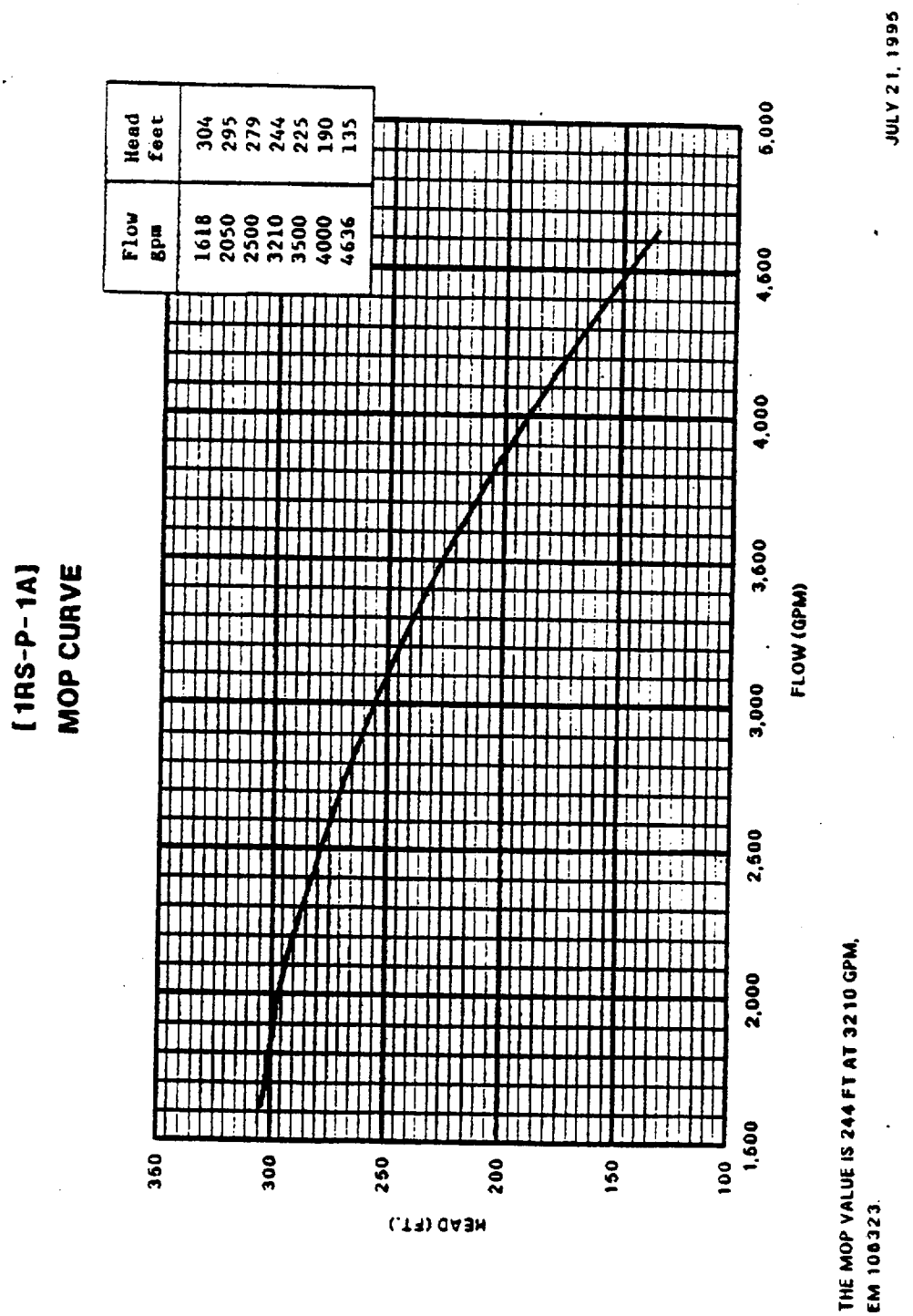
Pump Number: [1QS-P-1A]
[1QS-P-1B]

Flow (gpm)	Head (feet)
0	398
800	372
1330	352
1630	332
1830	314
2030	295
2230	275
2430	255
2630	232
2893	205



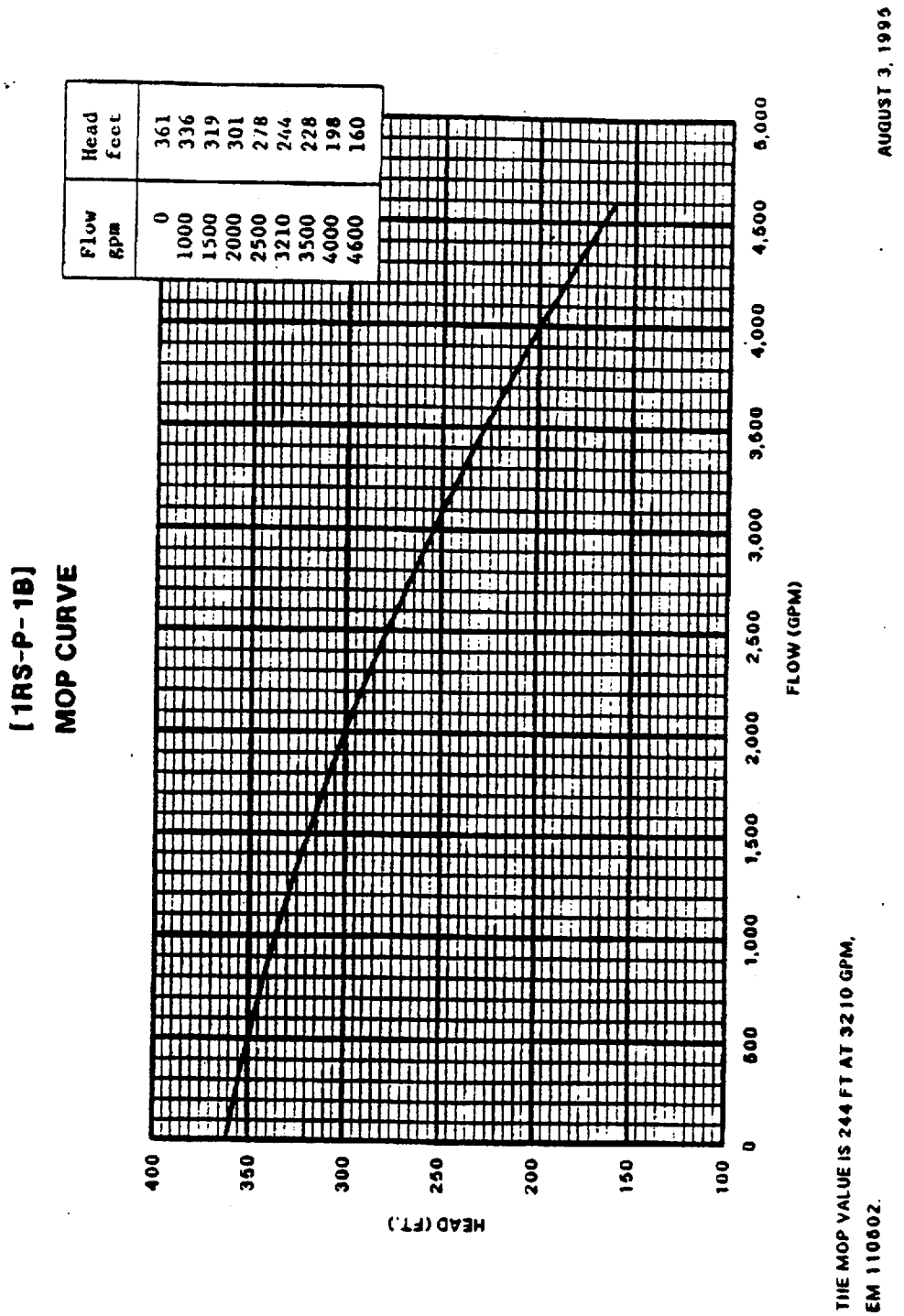
Pump Name 1A inside Recirculation Spray Pump

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



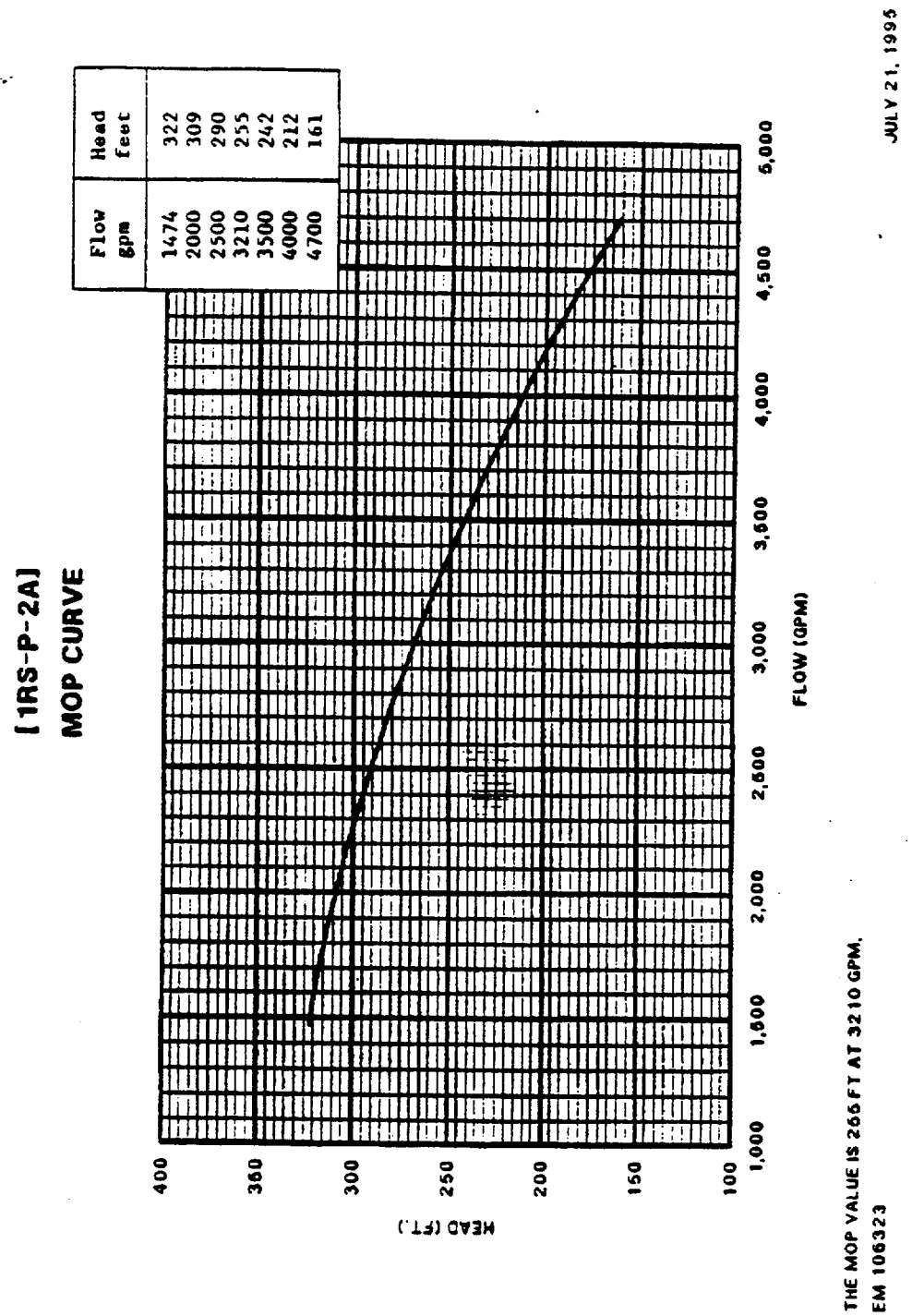
Pump Name 1B Inside Recirculation Spray Pump

Pump Number [1RS-P-1B]



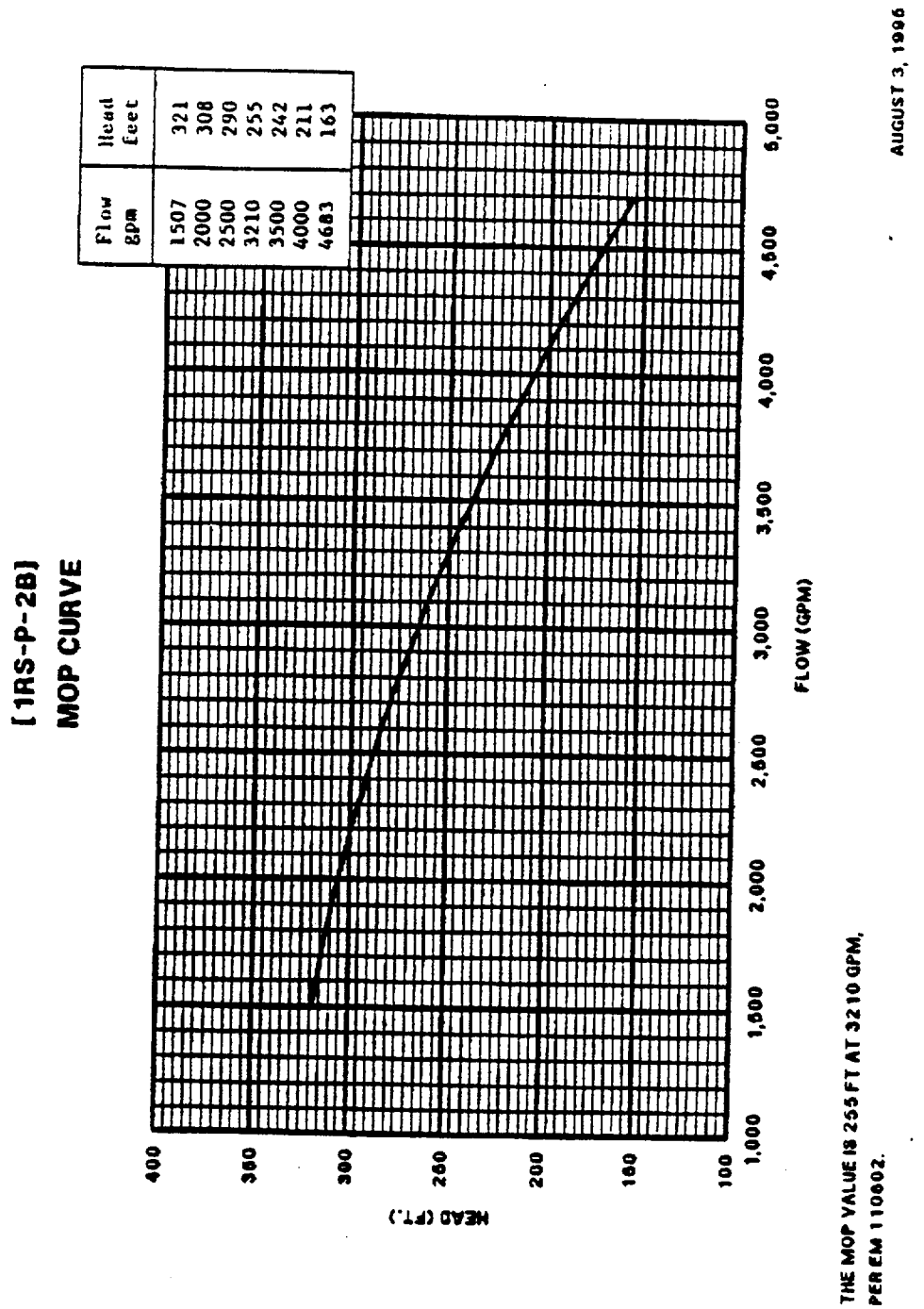
Pump Name: 2A Outside Recirculation Spray Pump

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



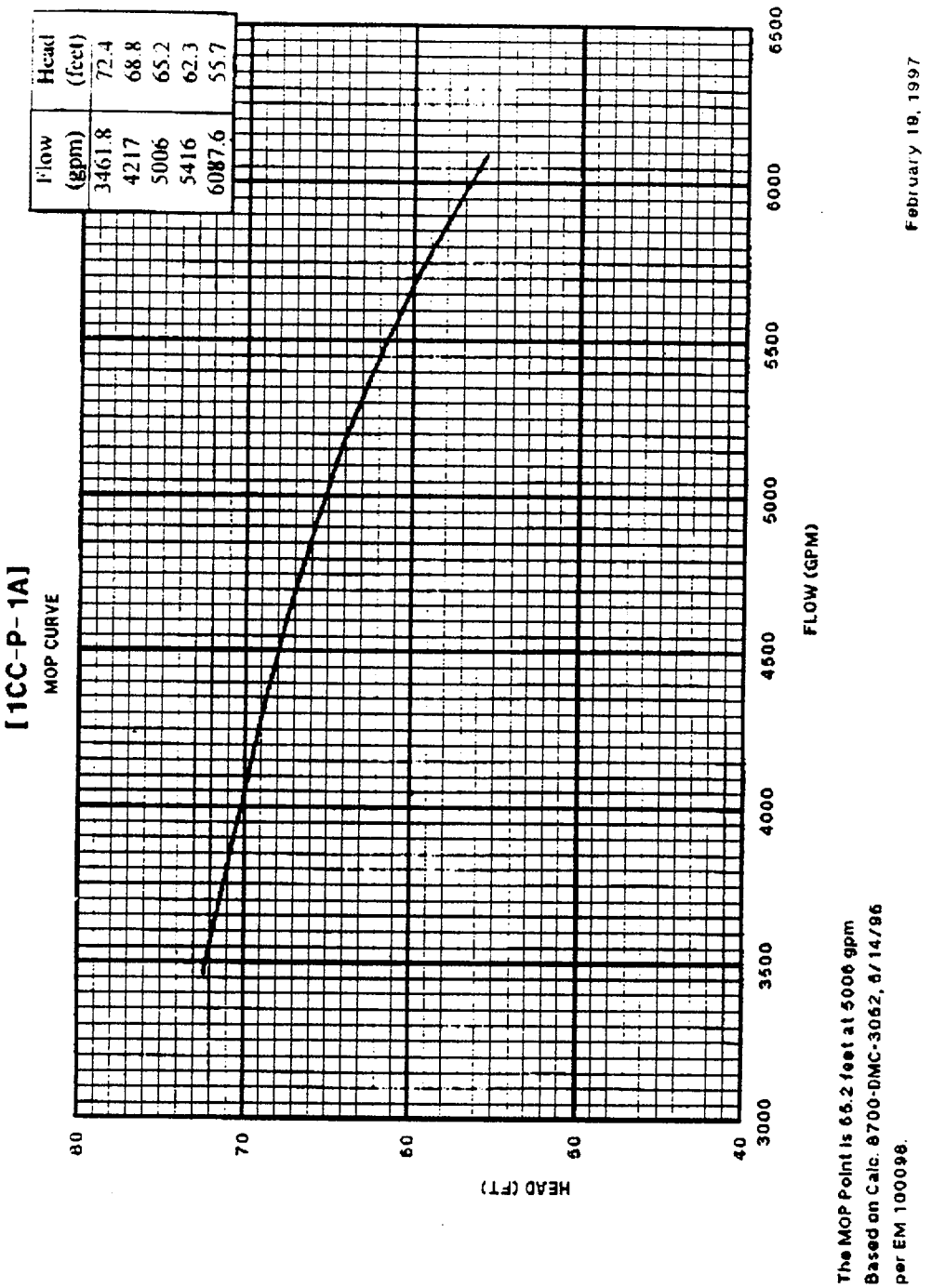
Pump Name 2B Outside Recirculation Spray Pump

Pump Number [1RS-P-2B]



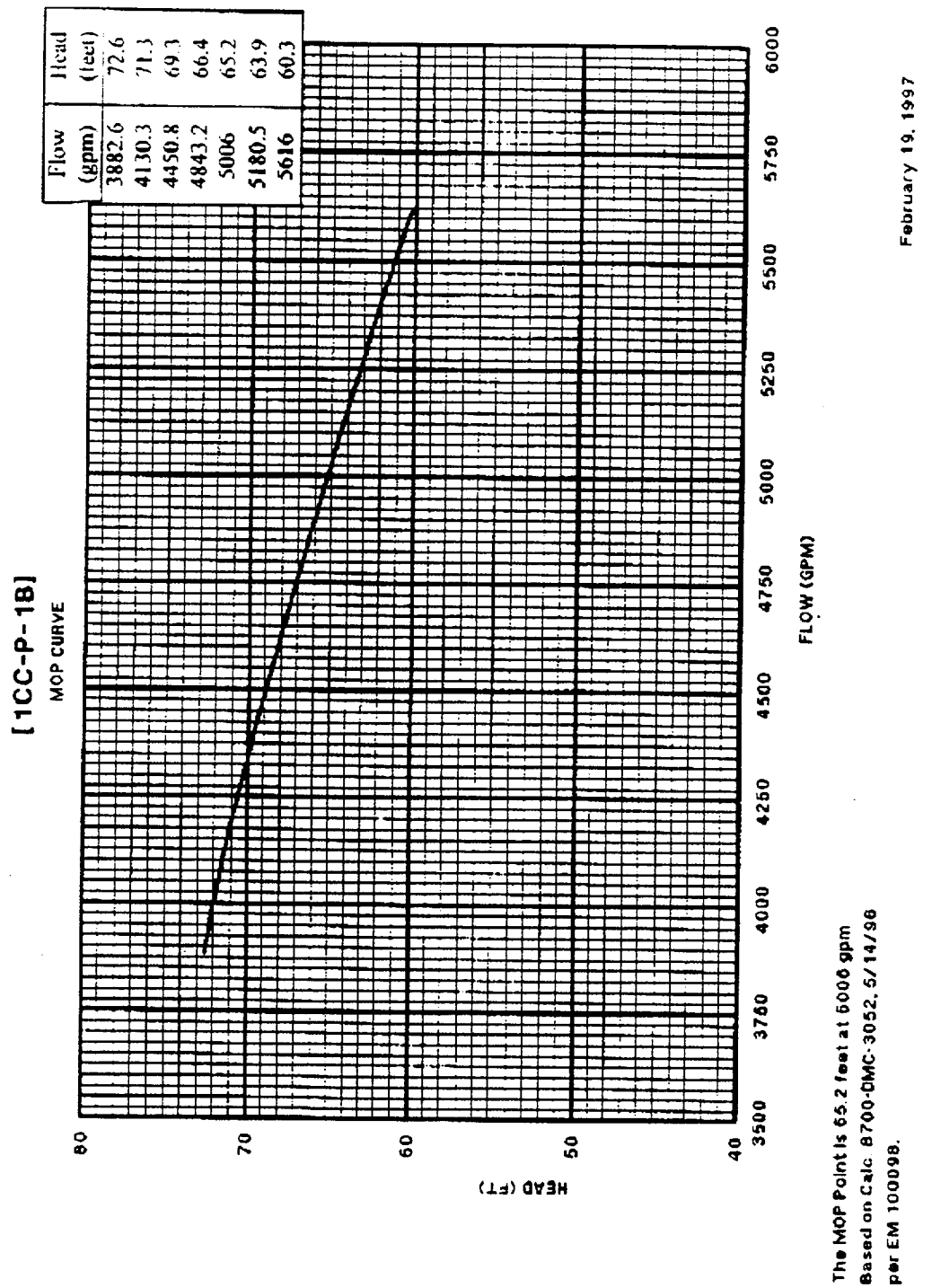
Pump Name: 1A Component Cooling Water Pump

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



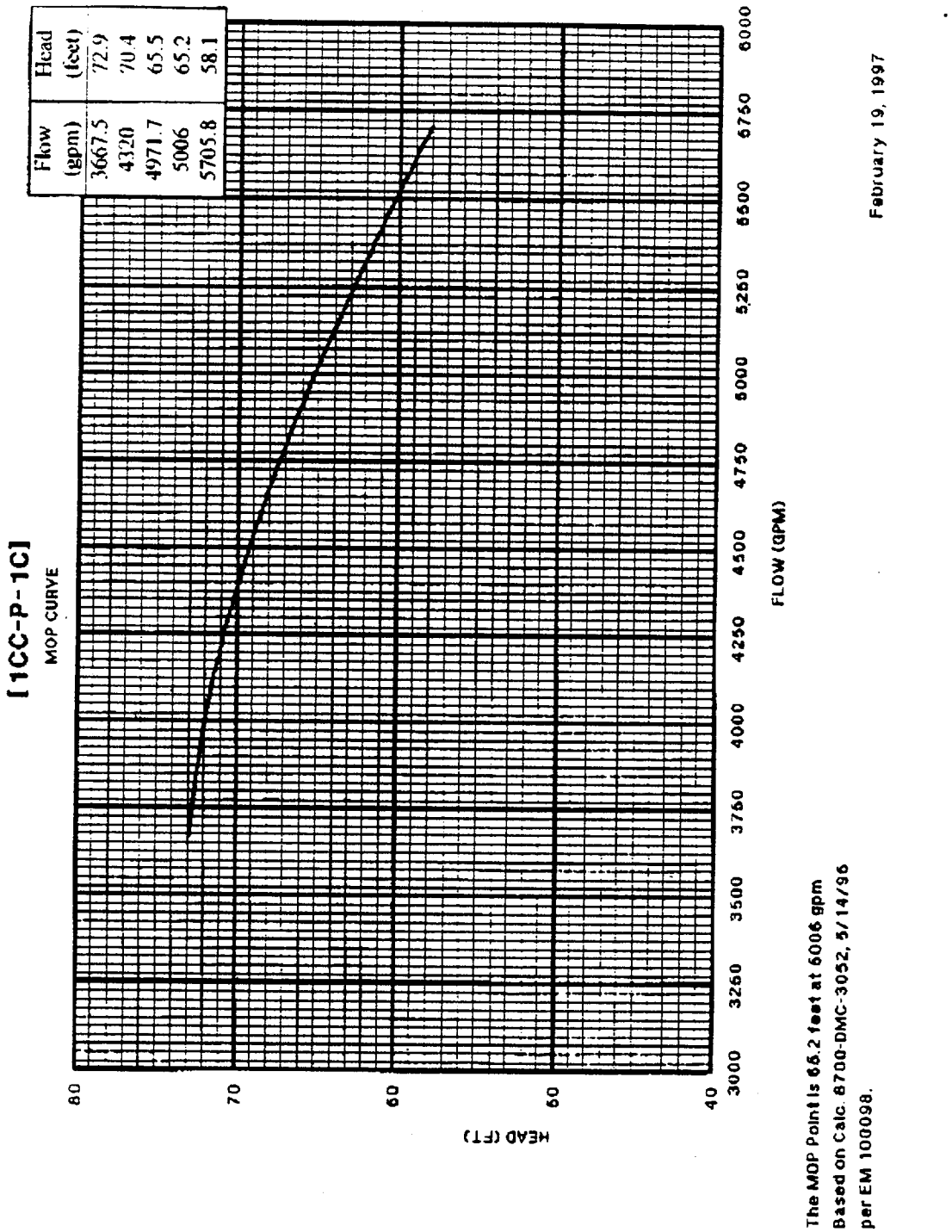
Pump Name 1B Component Cooling Water Pump

Pump Number [1CC-P-1B]



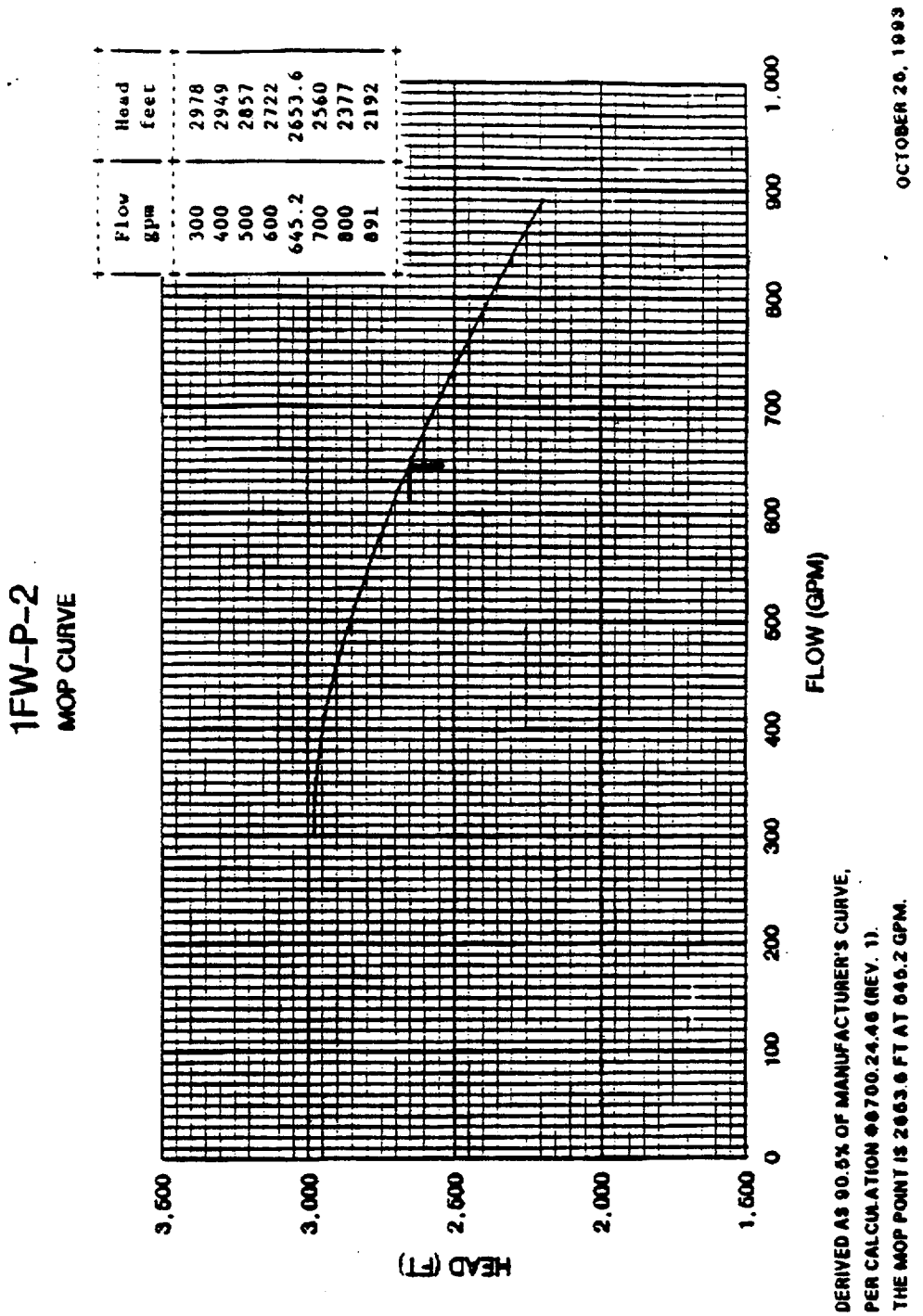
Pump Name 1C Component Cooling Water Pump

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



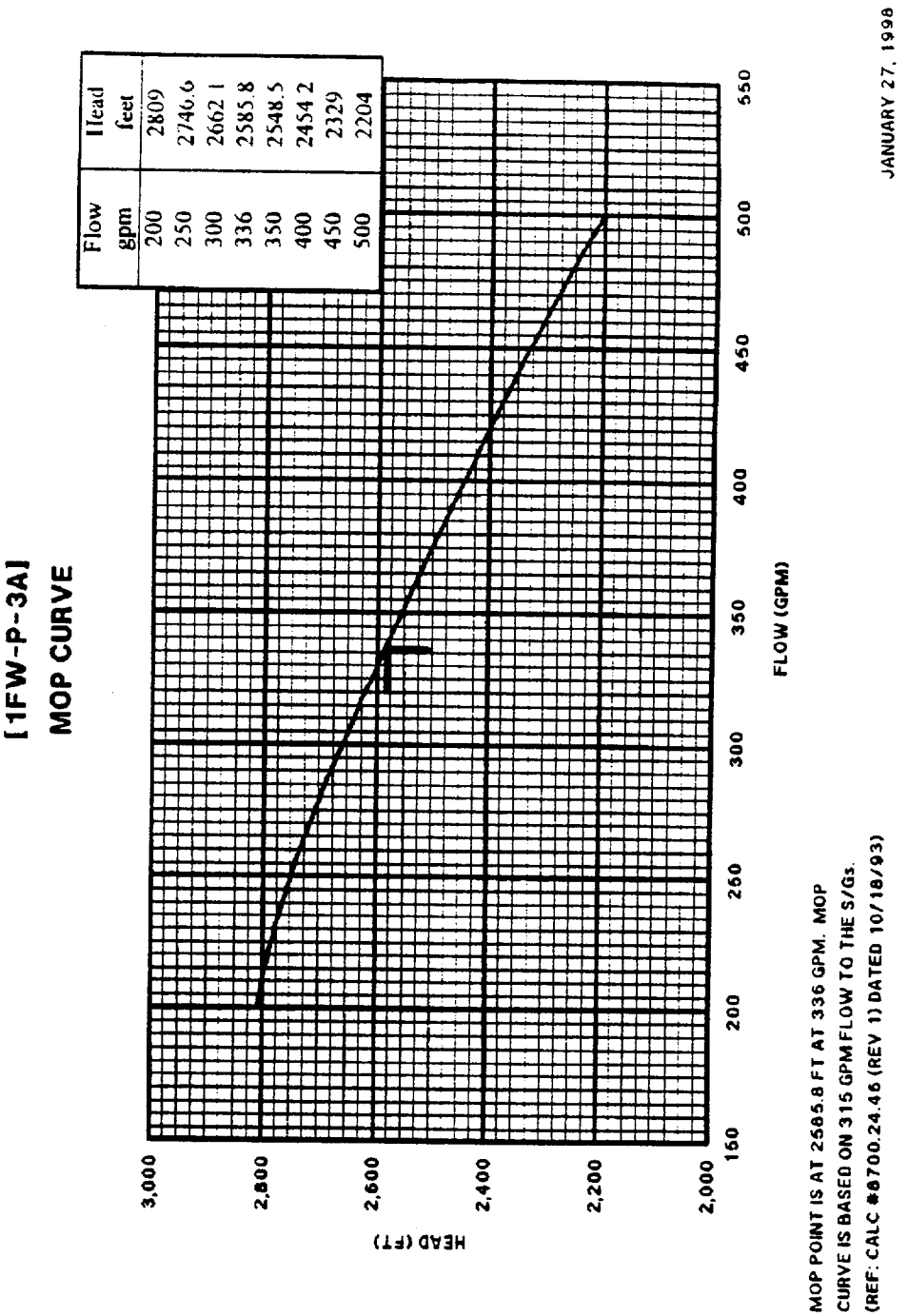
Pump Name: Turbine Driven Auxiliary Feed Pump

Pump Number: [1FW-P-2]



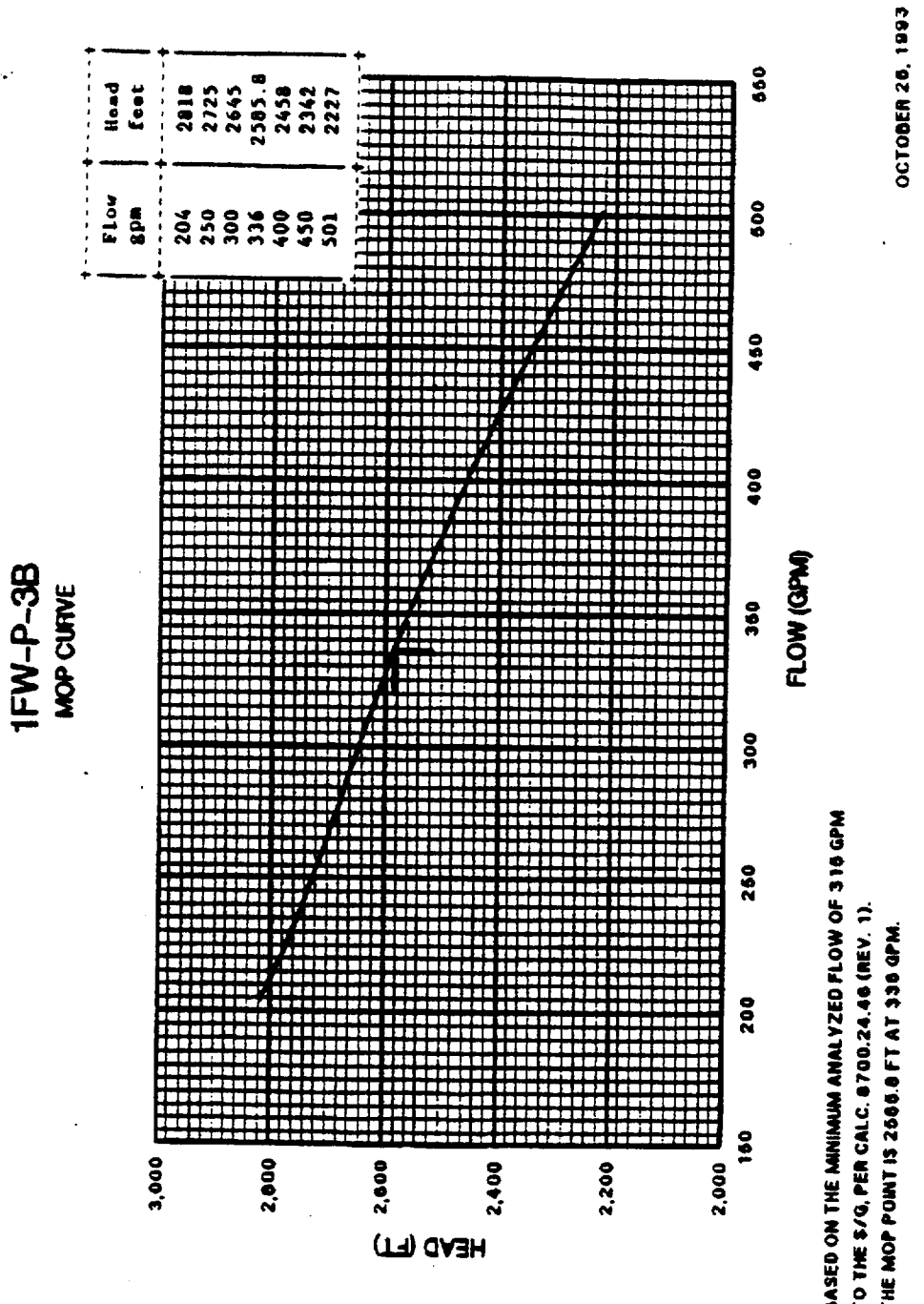
Pump Name: Motor Driven Auxiliary Feed Pump

Pump Number: [1FW-P-3A]



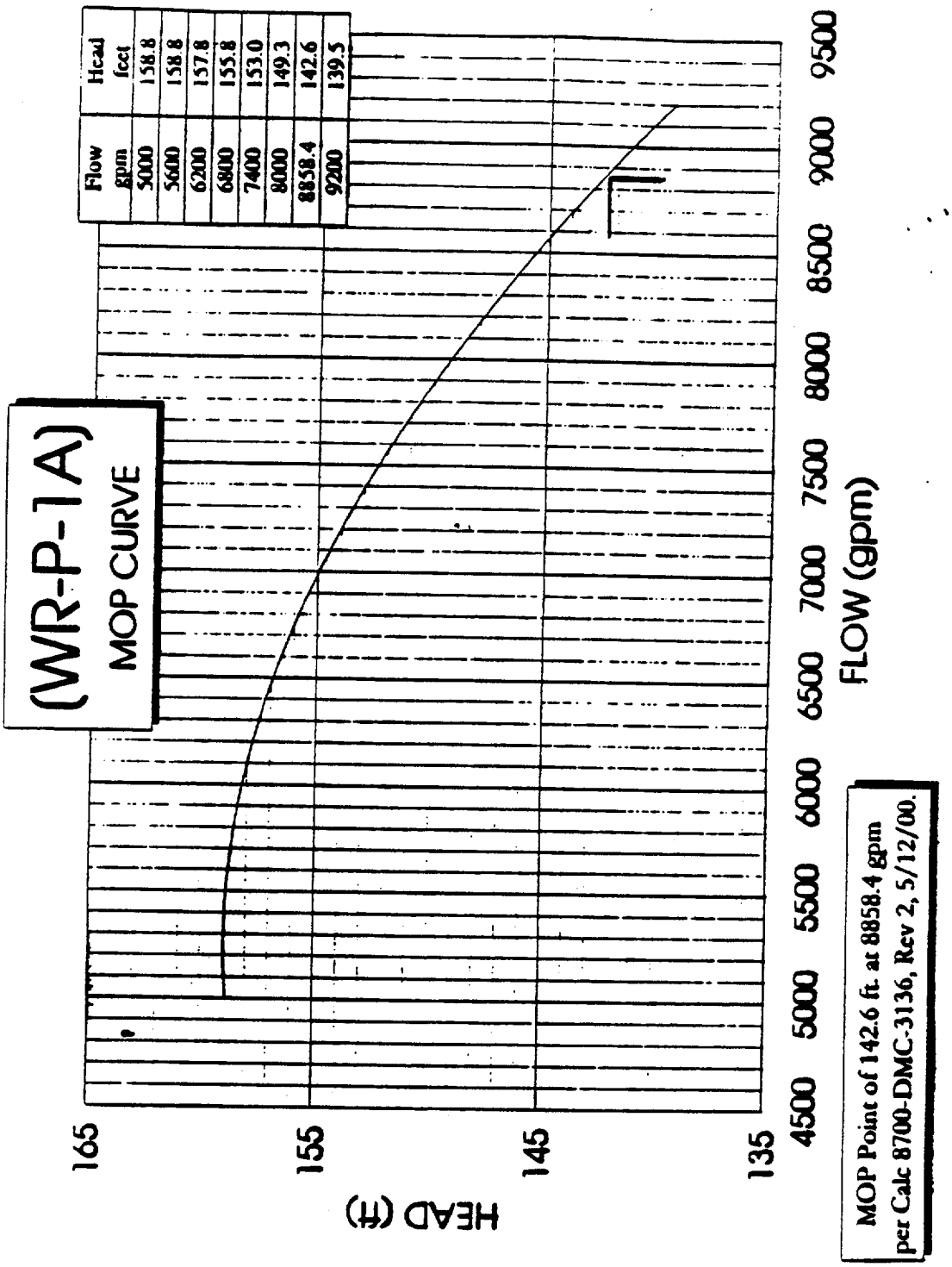
Pump Name Motor Driven Auxiliary Feed Pump

Pump Number: [1FW-P-3B]



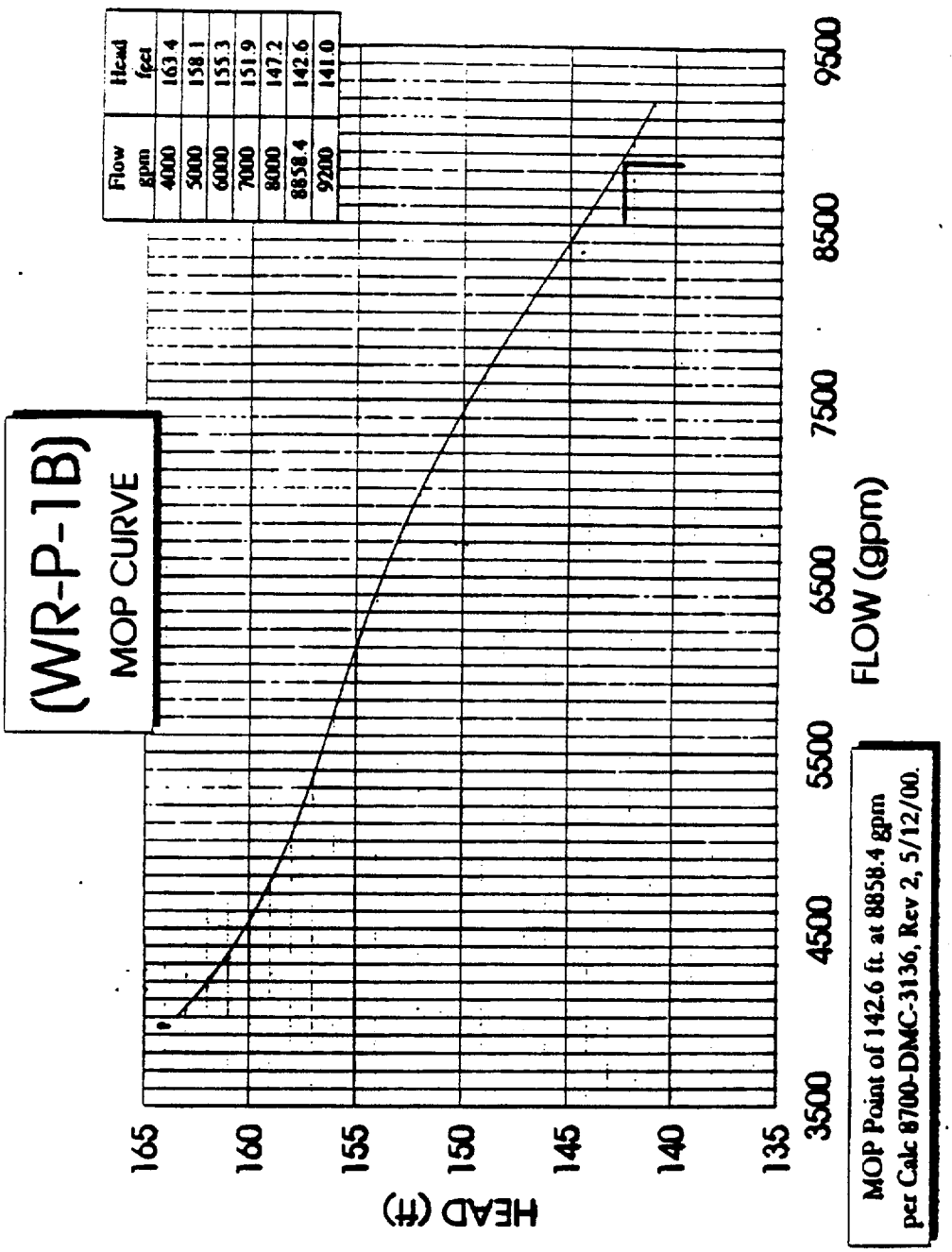
Pump Name: 1A Reactor Plant Water Pump

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



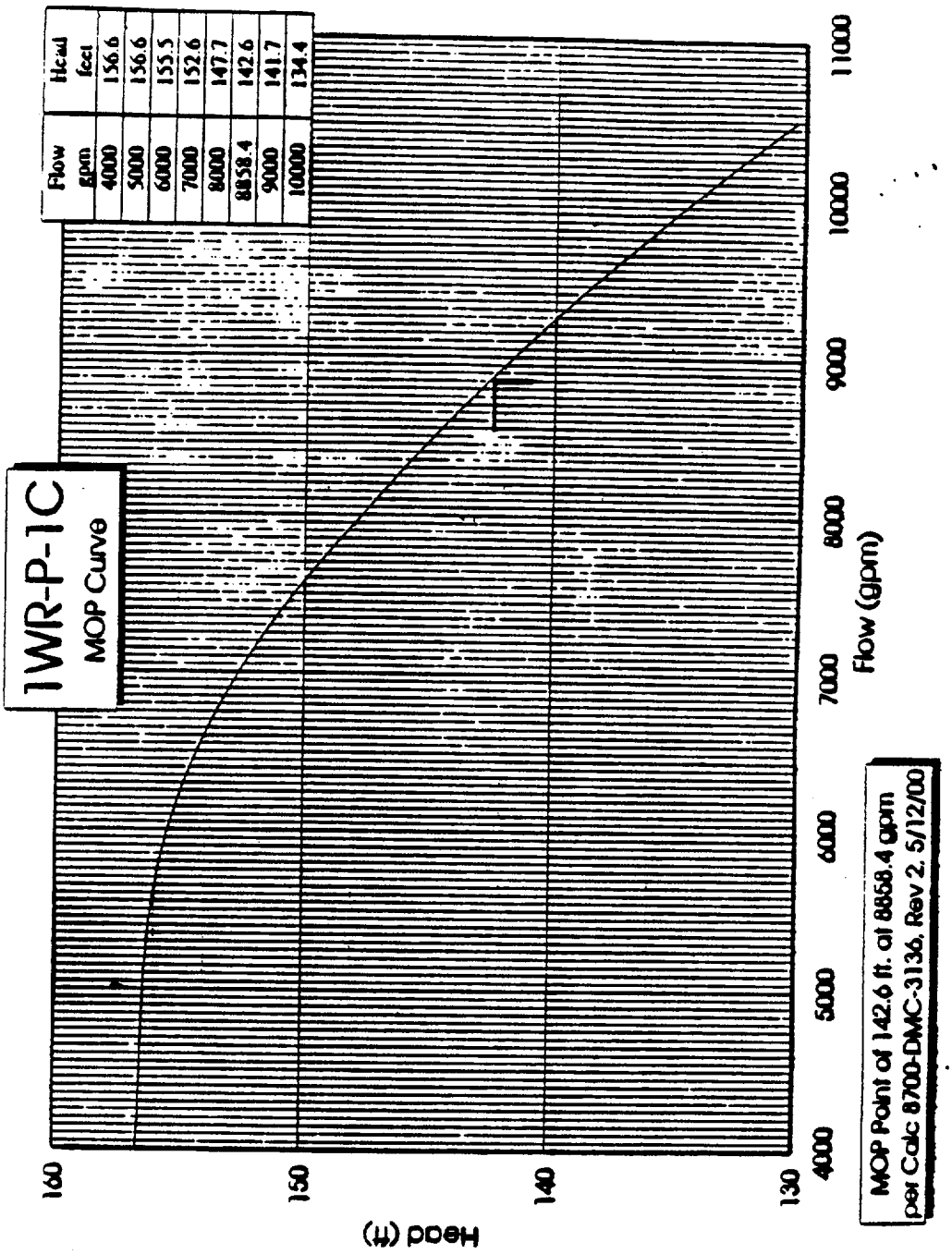
Pump Name: 1B Reactor Plant Water Pump

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



Pump Name 1C Reactor Plant Water Pump

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



SECTION VII: VALVE TESTING REQUIREMENTS

The Inservice Test (IST) Program for valves at Beaver Valley Power Station (BVPS), Unit 1, is based on the following:

- American Society of Mechanical Engineers (ASME) / American National Standards Institute (ANSI) Operational and Maintenance (OM) Standard Part 10, "Inservice Testing of Valves in Light Water Reactor Power Plants" (OM-10), OMa-1988 addenda to the OM-1987 Edition, in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1989 edition (the Code).

- Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"

- NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"

The valves included in this program are all ASME Class 1, 2 or 3 required to perform a specific function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident. The pressure-relief devices covered are those for protecting systems or portions of systems which perform a required function in shutting down a reactor to the cold shutdown condition, in maintaining cold shutdown condition, or in mitigating the consequences of an accident, at BVPS, Unit 1. Unit 1, however, was designed with hot shutdown as its safe shutdown condition. (Per NUREG-1482, Section 2.2, "If the plant was licensed for a safe shutdown condition of hot standby or hot shutdown rather than cold shutdown, the IST Program document will stipulate that the plant was not designed and licensed for a safe shutdown of cold shutdown").

The requirements of the Code and Generic Letter No. 89-04 including Supplement 1 (NUREG-1482) 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. Active Category A and B valves shall be full-stroke exercised nominally every three months to the position required to fulfill their function unless such operation is not practicable during plant operation. If only limited operation is practicable during plant operation, the valves may be part-stroke exercised during plant operation and full-stroke exercised during cold shutdowns. If exercising is not practicable during plant operation, the valves may be limited to full-stroke exercising during cold shutdowns. If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, the valves may be limited to part-stroke exercising during cold shutdowns, and full-stroke exercising during refueling outages. If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages. Exception is taken to part-stroke exercising 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. In the case of frequent cold shutdowns, these valves need not be exercised more often than once every three months. All valve exercising required to be performed during a refueling outage shall be completed prior to returning the plant to operation. For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months prior to placing the system in an operable status, the valves shall be exercised and the schedule resumed.

The stroke time of all power-operated valves shall be measured to at least the nearest second. Full-stroke time is the time interval from initiation of the actualing signal to the end of the actuating stroke. The time to full-stroke exercise each power-operated valve will be measured and compared to a reference value (baseline time) and/or an ASME limiting stroke time as follows:

1. Motor-operated valves (MOVs) with reference stroke times greater than 10 seconds shall exhibit no more than a ±15% change in stroke time when compared to the reference time. MOVs with reference stroke times less than or equal to 10 seconds shall exhibit no more than a ±25% or ±1 second change in stroke time, whichever is greater, when compared to the reference time.

2. All other power-operated valves with reference stroke times greater than 10 seconds shall exhibit no more than a ±25% change in stroke time when compared to the reference time. All other power-operated valves with reference stroke times less than or equal to 10 seconds shall exhibit no more than a ±50% change in stroke time when compared to the reference time.

3. Valves that stroke in less than 2 seconds may be exempted from 1 and 2 above, in such cases the maximum limiting stroke time shall be 2.0 seconds.

4. The ASME limiting stroke time is based on the following:

   a. The Technical Specification value.

   b. ESF response time requirements.

   c. The reference stroke time times 2 for valves with reference stroke times less than or equal to 10 seconds.

   d. The reference stroke time times 1.5 for valves with reference stroke times greater than 10 seconds.

   e. The design time listed in UFSAR.

The necessary valve disk movement shall be determined by exercising the valve while observing an appropriate indicator, such as indicating lights which signal the required change of disk position, or by observing other evidence, such as changes in system pressure, flow rate, level, or temperature, which reflect disk position. Control Room position indicating lights (or arrows for modulating valves) are used for valve stroke indication for all testing of power-operated valves with remote position indicators on the Control Board. In addition, valves with remote position indicators will be observed locally at least once every 2 years to verify that valve operation is accurately indicated in the direction required to fulfill its function. Where practicable, this local observation may be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify disk position. However, these observations need not be concurrent. Where local observation is not possible other indications shall be used for verification of valve operation.

All valves with fail-safe actuators shall be tested by observing the operation of the actuator upon loss of valve actuating power. All valves with fail-safe actuators (e.g., 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 fail-safe 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 a valve fails to exhibit the required change of valve disk position or exceeds its specified ASME limiting value of full-stroke time, then the valve shall be declared inoperable immediately. 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 shall be followed.

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

   c. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supercede the requirements of any technical specification.

2. Valves with measured stroke times which do not meet the acceptance criteria in OM-10, Paragraph 4.2.1.8 (i.e., % change when compared to the baseline time) shall be immediately retested or declared inoperable as follows:

   a. If the valve is retested and the second set of data meets the acceptance criteria of OM-10, Paragraph 4.2.1.8, the cause of the initial deviation shall be analyzed and the results documented in the test.

   b. If the valve is retested and the second set of data also does not meet the acceptance criteria of OM-10, Paragraph 4.2.1.8, the data shall be analyzed within 96 hours to verify that the new stroke time represents acceptable valve operation, or the valve shall be declared inoperable. Valve operability based on analysis shall have the results of the analysis documented in the test.

3. Valves declared inoperable may be repaired, replaced, or the data may be analyzed to determine the cause of the deviation and the valve shown to be operating acceptably. Valve operability based on analysis shall have the results of the analysis documented in the test.

4. When a valve or its control system has been replaced, repaired or has undergone maintenance that could affect the valve's performance, a new reference value shall be determined or the previous value reconfirmed by an inservice test run prior to the time it is returned to service or immediately if not removed from service, to demonstrate that the performance parameters which could be affected by the replacement, repair or maintenance are within acceptable limits. Deviations between the previous and new reference values shall be identified and analyzed. Verification that the new values represent acceptable operation shall be documented in the test. Examples of maintenance that could affect valve performance parameters are adjustment of stem packing, limit switches, or control system valves, and removal of the bonnet, stem assembly, actuator, obturator, or control system components.

In addition, Category A valves shall be leak rate tested at least once every two years normally, but not necessarily, at refueling outages. The Category A valves that are tested in accordance with Option B of 10CFR50, Appendix J, Type C, are leak rate tested at the frequency specified in Option B of 10CFR50, Appendix J. If the leak rate exceeds the allowable limit, the valves will be repaired or replaced. A retest demonstrating acceptable operation will be performed following any required corrective action before the valve is returned to service.

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) for fulfillment of their function. Category C valves are divided into two groups; safety or relief valves and check valves.

ASME Class 1, 2 and 3 safety and relief valves are tested in accordance with ASME/ANSI Operations and Maintenance (OM) Standard, Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices" (OM-1). All Main Steam Safety Valves and ASME Class 1 safety and relief valves are tested at least once every 5 years, with at least 20% of the valves in each "group" (i.e., same manufacturer, type, system application and service media per NUREG-1482, Section 4.3.9, "Clarifications in OM-1") included in the BVPS-1 IST Program tested within any 24 months. All ASME Class 2 and 3 safety and relief valves are tested at least once every 10 years, with at least 20% of the valves in each "group" included in the BVPS-1 IST Program tested with any 48 months. A test is defined as a set pressure test and a seat tightness test. If any safety or relief valves fail their set pressure test, additional valves shall be set pressure tested on the basis of 2 additional valves to be tested for each valve failure up to the total number of valves from the same group. If any of the additional valves fail, then all remaining valves in the same group shall be set pressure tested. Any safety or relief valve which exceeds its set pressure acceptance criteria shall be repaired or replaced, the cause of failure shall be determined and corrected, and the valve shall successfully pass a retest before it is returned to service. Per NUREG-1482, Section 4.3.6, "Safety/Relief Valve Setpoint Adjustments", the NRC has determined that a setpoint adjustment is an acceptable means of corrective action in lieu of repair or replacement. In addition, a seat tightness test shall be based on a quantitative or qualitative acceptance criteria specified by the owner for gross determination of the as-found seat tightness of a safety or relief valve.

Check valves shall be exercised or examined nominally every three months in an manner which verifies obturator (disk) travel to the closed, full-open or partially open position required to fulfill their function unless such operation is not practicable during plant operation. If full-stroke exercising during plant operation is not practicable, it may be limited to part-stroke during plant operation and full-stroke during cold shutdowns. If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns. If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns, and full-stroke during refueling outages. If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages. In the case of frequent cold shutdowns, these check valves need not be exercised more often than once every three months. All check valve testing required to be performed during a refueling outage shall be completed prior to returning the plant to operation. For a check valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months prior to placing the system in an operable status, the valves shall be exercised and the schedule resumed.

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 on cessation or reversal of flow. Check valves that are normally closed during plant operation and whose function is to open shall be tested by proving that the disk opens to the position required to fulfill its function when flow through the valve is initiated, or when a mechanical opening force is applied to the disk. As an alternative to the testing described above, a check valve may be disassembled and inspected per the requirements of Generic Letter No. 89-04. These check valves will normally, but not necessarily be inspected during refueling outages.

If a check valve fails to exhibit the required change of disk position by this testing, then the check valve shall be declared inoperable immediately. 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 shall be followed.

2. If the inoperable check valve is in a system covered by a technical specification, an assessment of its condition shall be made to determine if it makes the system inoperable. If the condition of the check valve renders the system inoperable, then the applicable system technical specification action statements shall 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 performance shall 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 in the Beaver Valley Power Station, Unit 1, IST Program.

All the inservice testing requirements for each different category of valve in the IST Program are summarized in Table 1 of OM-10. This table lists the paragraphs of OM-10 that apply to each different type of valve.

TABLE 1
INSERVICE TEST REQUIREMENTS FROM OM-10

Category (See Para. 1.4)	Valve Function	Leakage Test Procedure	Exercise Test Procedure	Special Test Procedure [Note (1)]	Position Indication Verification
A	Active	See para. 4.2.2	See para. 4.2.1	None	See para. 4.1
A	Passive	See para. 4.2.2	None	None	See para. 4.1
B	Active	None	See para. 4.2.1	None	See para. 4.1
B	Passive	None	None	None	See para. 4.1
C (Safety and Relief)	Active	None [Note (2)]	See para. 4.3.1	None	See para. 4.1
C (Check)	Active	None [Note (2)]	See para. 4.3.2	None	See para. 4.1
D	Active	None	None	See para. 4.4	None

NOTES:
(1) Note additional requirement for fail-safe valves, para. 4.2.1.6.
(2) When more than one distinguishing category, characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary.

Passive valves are valves which maintain obturator position and are not required to change obturator position to accomplish a required 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 Valve Outline Section except where remote position verification is required.

Certain exemptions from the valve testing requirements of the ASME code defined by Paragraph 1.2 of OM-10 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 system or component maintenance; and

4. External control and protection systems responsible for sensing plant conditions and providing signals for valve operation.

Manufacturer supplied skid-mounted valves (i.e., check valves, SOV's, TCV's, relief valves) which are integral sub-components of, and are required to support the operation of a parent pump or other component, are often times not designed to be tested in accordance with the ASME XI Code, regardless of their ASME Code class. Therefore, ASME Code class manufacturer supplied skid-mounted valves are not included in the BVPS Unit 1 IST Program because it has been recognized by the NRC in NUREG-1482, Section 3.4, that the test of the parent pump or other component itself challenges the operability of the sub-components. This ensures that the skid-mounted valves operate acceptably commensurate with their safety functions, provided satisfactory performance of the parent pump or other component is demonstrated by an applicable surveillance test or the valve is examined separately by a preventive maintenance activity.

Records of the results of inservice tests and corrective actions as required by Paragraph 6 of OM-10 are maintained in computerized or 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 four sections of this document are the "Valve Outlines", "Valves Cold Shutdown Justifications", "Valve Refueling Outage Justifications" and "Valve Relief Requests" sections.

The "Valve Outlines" section is a listing of all the valves in the IST Program, their system code class, category, size, type, NSA, drawing number and coordinates, testing requirements, specific cold shutdown justification, refueling outage justifications and/or 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 in Paragraph 1.4 of OM-10. In addition, combinations of categories may be utilized. If the valve is not required to change obturator position to accomplish a required function, 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.

3. From the valve mark number given, the valve actuator can be determined from the list of abbreviations below:

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

4. The normal system arrangement (NSA) will be listed using the abbreviations below:

   O - Open
   S - Shut
   A - Automatic
   T - Throttled
   LO - Locked Open
   LS - Locked Shut
   SS - Sealed Shut

5. The drawing numbers and coordinates will be the ones used in the Operating Manuals.

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

   QS - Quarterly Stroke
   QST - Quarterly Stroke & Time
   LT - Leak Rate Test
   LTJ - Leak Rate Test per 10CFR50, Appendix J (Option B)
   SPT - Set Point Test
   LM - Leakage Monitoring
   POS - Position Verification
   NA - Not Applicable

7. The specific Valve Cold Shutdown Justification (VCSJ) Valve Refueling Outage Justification (VROJ) and/or Valve Relief Request (VRR) reference number(s) will be listed.

8. The specific test procedure number, required frequency, type of testing, and any comments will be listed using the abbreviations below:

   1OM - Operating Manual (Unit 1)
   1BVT - Beaver Valley Test (Unit 1)
   1OST - Operating Surveillance Test (Unit 1)
   CMP - Corrective Maintenance Procedure
   2 YR - Required every 2 years, but normally done at refueling.
   5 YR - Required every 5 years, but normally done at refueling.
   10 YR - Required every 10 years, but normally done at refueling.
   CSD - Cold Shutdown Frequency
   R - Refueling Frequency
   SP - Special Frequency
   Q - Quarterly Frequency
   M - Monthly Frequency
   FS - Full Stroke
   PS - Partial Stroke
   FD - Forward Direction
   RD - Reverse Direction
   RPV - Remote Position Verification (Required every 2 years, but normally done at refueling.)

The "Valve 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. Beaver Valley Unit 1 reactor containment is maintained subatmospheric as required by technical specifications. The subatmospheric condition presents a hazardous working environment for station personnel and is considered inaccessible for surveillance testing. Surveillance testing that requires a reactor containment entry will be performed at cold shutdown and refueling. Per OM-10, Paragraphs 4.2.1.2(g) and 4.3.2.2(g), valve exercising during cold shutdown shall commence within 48 hours of achieving cold shutdown, and continue until all testing is complete or the plant is ready to return to power. 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 but need not be completed more often than once every 92 days. For planned or extended 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. provided all valves required to be tested during cold shutdown are tested prior to plant startup.

The "Valve Refueling Outage Justifications" 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 refueling outages.

The "Valve 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 valves. An alternate test method and the frequency of revised testing is also included to meet the intent of 10CFR50.55a.

SECTION VIII: VALVE OUTLINES

BVPS-1 IST

VALVE OUTLINE

SYSTEM NAME: Reactor Coolant — **SYSTEM NUMBER:** 6

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1RC-68	2	A/C	3/4	Check		6-2	B-3	QS	VROJ1	1BVT 1.47.5-FS, RD by Leak Test (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1RC-72	2	A/C	3	Check		6-2	C-3	QS	VROJ2	1BVT 1.47.5-FS, RD by Leak Test (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1RC-101	2	A	3/4	Globe	S	6-2	B-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
SOV-1RC-102A	1	B	1	Globe	LS	6-2	A-1	QST	VCSJ1	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-102B	1	B	1	Globe	LS	6-2	A-1	QST	VCSJ1	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-103A	1	B	1	Globe	LS	6-2	A-2	QST	VCSJ1	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-103B	1	B	1	Globe	LS	6-2	A-2	QST	VCSJ1	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-104	1	B	1	Globe	LS	6-2	A-3	QST	VCSJ1	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
SOV-1RC-105	1	B	1	Globe	LS	6-2	B-2	QST	VCSJ1	1OST-1.10-Stroke & Time Open/Closed (CSD) 1OST-6.9-(RPV)
1RC-277	2	A/P	1/8	Needle	S	6-2	F-10	LTJ		1BVT 1.47.5-Leak Test (SP)
1RC-278	2	A/P	1/8	Globe	S	6-2	E-10	LTJ		1BVT 1.47.5-Leak Test (SP)
PCV-1RC-455C	1	B	3	Plug	A	6-2	B-10	QST	VCSJ2	1OST-6.8-Stroke & Time Open (CSD) (RPV)
SOV-1RC-455C1	3		3/4	Three-way	S	11-2	G-8	QST	VROJ3	1OST-6.12-Stroke & Time Open & Closed (R)
SOV-1RC-455C2	3	B	3/4	Three-way	S	11-2	G-9	QST	VROJ3	1OST-6.12-Stroke & Time Open & Closed (R)

BVPS-1 IST

VALVE OUTLINE

SYSTEM NAME: Reactor Coolant — **SYSTEM NUMBER:** 6

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
PCV-1RC-455D	1	B	3	Plug	A	6-2	C-10	QST	VCSJ2	1OST-6.8-Stroke & Time Open (CSD) (RPV)
SOV-1RC-455D1	3	B	3/4	Three-way	S	11-2	E-8	QST	VROJ3	1OST-6.12-Stroke & Time Open & Closed (R)
SOV-1RC-455D2	3	B	3/4	Three-way	S	11-2	E-9	QST	VROJ3	1OST-6.12-Stroke & Time Open & Closed (R)
PCV-1RC-456	1	B	3	Plug	A	6-2	C-10	QST	VCSJ2	1OST-1.10-Stroke & Time Open (CSD) (RPV)
SOV-1RC-456-1	3	B	3/8	Three-way	S	6-2	B-10	QST	VROJ3	1OST-6.12-Stroke & Time Open & Closed (R)
SOV-1RC-456-2	3	B	3/8	Three-way	S	6-2	B-10	QST	VROJ3	1OST-6.12-Stroke & Time Open & Closed (R)
TV-1RC-519	2	A	3	Diaphragm	S	6-2	C-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1RC-535	1	B	3	Gate	O	6-2	B-9	QST		1OST 6.6-Stroke & Time Closed (Q) 1OST-6.8-Stroke Only Closed (CSD) (RPV)
MOV-1RC-536	1	B	3	Gate	O	6-2	C-9	QST		1OST-6.6-Stroke & Time Closed (Q) 1OST-1.10-Stroke & Time Closed (CSD) (RPV)
MOV-1RC-537	1	B	3	Gate	O	6-2	C-9	QST		1OST-6.6-Stroke & Time Closed (Q) 1OST-6.8-Stroke Only Closed (CSD) (RPV)
RV-1RC-551A	1	C	6 x 6	Safety		6-2	C-6	SPT		1BVT 1.60.5-(5 YR)
RV-1RC-551B	1	C	6 x 6	Safety		6-2	C-7	SPT		1BVT 1.60.5-(5 YR)
RV-1RC-551C	1	C	6 x 6	Safety		6-2	C-8	SPT		1BVT 1.60.5-(5 YR)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1CH-22	2	C	3	Check		7-1	C-3	QS		1OST-7.4-PS, FD (Q)
								QS		1OST-7.5(6)-FS, RD (Q)
								QS	VROJ4	1OST-11.14B-FS, FD (R)
1CH 23	2	C	3	Check		7-1	D-3	QS		1OST-7.5-PS,FD (Q)
								QS		1OST-7.4(6)-FS, RD (Q)
								QS	VROJ4	1OST-11.14B-FS, FD (R)
1CH-24	2	C	3	Check		7-1	E-3	QS		1OST-7.6-PS, FD (Q)
								QS		1OST-7.4(5)-FS, RD (Q)
								QS	VROJ4	1OST-11.14B-FS, FD (R)
1CH-25	2	B	3	Gate	LO	7-1	C-2	QS		1OST-7.5(6)-Stroke Only Closed (Q) 1OST-45.4-(RPV)
1CH-26	2	B	3	Gate	LO	7-1	D-2	QS		1OST-7.4(6)-Stroke Only Closed (Q) 1OST-45.4-(RPV)
1CH-27	2	B	3	Gate	LO	7-1	E-2	QS		1OST-7.4(5)-Stroke Only Closed (Q) 1OST-45.4-(RPV)
1CH-31	2	A/C	3	Check		7-1	C-1	QS	VROJ5	1BVT 1.47.11-FS, RD by Leak Test (R)
								QS		1OST-47.3B-FS, FD (Q)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1CH-32	1	C	3	Check		7-1	B-2	QS		1OST-47.3B-FS, FD (Q)
1CH-75	3	C	2	Check		7-3	C-4	QS		1OST-7.1-PS, FD (Q)
								QS	VCSJ3	1OST-1.10-FS, FD (CSD)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1CH-76	3	C	2	Check		7-3	G-4	QS		1OST-7.2-PS, FD (Q)
								QS	VCSJ3	1OST-1.10-FS, FD (CSD)
1CH-84	3	C	1	Check		7-3	E-7	QS	VCSJ4	1OST-1.10-FS, FD (CSD)
FCV-1CH-113A	3	B	2	Globe	A	7-3	E-7	QST		1OST-47.3B-Stroke & Time Open and Fail Open (Q) (RPV)
FCV-1CH-114A	3	B	2	Globe	S	7-3	E-8	QST		1OST-47.3B-Sroke & Time Closed and Fail Closed (Q) (RPV)
MOV-1CH-115B	2	A	8	Gate	S	7-1	E-6	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1CH-115C	2	B	4	Gate	O	7-1	G-5	QST	VROJ6	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
MOV-1CH-115D	2	A	8	Gate	O	7-1	E-6	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1CH-115E	2	B	4	Gate	O	7-1	F-5	QST	VROJ6	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
1CH-135	3	B	1	Diaphragm	S	7-3	E-8	QS		1OST-47.3B-Stroke Only Open (Q)
1CH-136	3	C	1	Check		7-3	F-8	QS	VCSJ4	1OST-1.10-FS, FD (CSD)
1CH-141	2	C	2	Check		7-3	G-8	QS	VCSJ5	1OST-1.10-FS, FD (CSD)
MOV-1CH-142	2	A	2	Globe	S	7-1	A-9	QS	VCSJ6	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1CH-152	2	C	2	Check		7-1	C-3	QS		1OST-7.4-FS, FD (Q)
								QS		1OST-7.5(6)-FS, RD (Q)
1CH-153	2	C	2	Check		7-1	D-3	QS		1OST-7.5-FS, FD (Q)
								QS		1OST-7.4(6)-FS, RD (Q)
1CH-154	2	C	2	Check		7-1	E-3	QS		1OST-7.6-FS, FD (Q)
								QS		1OST-7.4(5)-FS, RD (Q)
1CH-158	2	B	3	Gate	LO	7-1	C-3	POS		1OST-7.5(6)-Stroke Only Closed (Q) 1OST-45.4-(RPV)
1CH-159	2	B	3	Gate	LO	7-1	D-3	POS		1OST-7.4(6)-Stroke Only Closed (Q) 1OST-45.4-(RPV)
FCV-1CH-160	2	A/P	2	Globe	S	7-1	G-3	LT		1BVT 1.47.11-Leak Test (2 YR)
1CH-161	2	B	3	Gate	LO	7-1	E-3	POS		1OST-7.4(5)-Stroke Only Closed (Q) 1OST-45.4-(RPV)
1CH-170	1	A/C/P	2	Check		7-1	G-2	LT		1BVT 1.47.11- Leak Test (2 YR)
1CH-181	2	A/C	2	Check		7-4	B-4	QS	VROJ7	1BVT 1.47.11-FS, RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1CH-182	2	A/C	2	Check		7-4	D-4	QS	VROJ7	1BVT 1.47.11-FS, RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1CH-183	2	A/C	2	Check		7-4	G-4	QS	VROJ7	1BVT 1.47.11-FS, RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CH-200A	2	A	2	Globe	S	7-1	A-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CH-200B	2	A	2	Globe	O	7-1	A-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CH-200C	2	A	2	Globe	S	7-1	A-7	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CH-203	2	A/C	2 x 3	Relief		7-1	A-5	SPT		1BVT 1.60.5-(R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CH-204	2	A	2	Gate	O	7-1	B-10	QST	VROJ8	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CH-209	2	C	2 x 3	Relief		7-1	D-10	SPT		1BVT 1.60.5-(10 YR)
RV-1CH-257	2	C	3 x 4	Relief		7-3	B-8	SPT		1BVT 1.60.5-(10 YR)
MOV-1CH-289	2	A	3	Gate	O	7-1	D-1	QST	VROJ8	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1CH-308A	2	A	2	Globe	O	7-4	B-3	QST	VROJ9	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1CH-308B	2	A	2	Globe	O	7-4	D-3	QST	VROJ9	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11 Leak Test (2 YR)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1CH-308C	2	A	2	Globe	O	7-4	G-3	QST	VROJ9	1OST-1.10 Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1CH-310	1	B	3	Gate	O	7-1	B-2	QST	VROJ8	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
MOV-1CH-350	3	B	2	Gate	S	7-3	G-7	QST		1OST-47.3B-Stroke & Time Open (Q) (RPV)
1CH-369	2	A/C	3/4	Check		7-4	D-8	QS	VROJ10	1BVT 1.47.5-FS,FD,RD by Leak Test (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1CH-378	2	A	3/4	Gate	O	7-4	D-8	QST	VROJ11	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1CH-381	2	A	3/4	Gate	O	7-4	F-8	QST	VROJ11	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CH-382A	2	C	2 x 3	Relief		7-4	C-8	SPT		1BVT 1.60.5-(10 YR)
RV-1CH-382B	2	C	2 x 3	Relief		7-4	E-10	SPT		1BVT 1.60.5-(10 YR)
RV-1CH-383	2	C	¾ x 1	Relief		7-1	C-2	SPT		1BVT 1.60.5-(10 YR)
RV-1CH-391	1	C	¾ x 1	Relief		7-1	G-2	SPT		1BVT 1.60.5-(10 YR)
LCV-1CH-460A	1	B	2	Globe	O	7-1	A-2	QST	VROJ8	1OST-1.10-Stroke & Time Closed and Fail Closed (CSD or R) (RPV)
LCV-1CH-460B	1	B	2	Globe	O	7-1	A-3	QST	VROJ8	1OST-1.10-Stroke & Time Closed and Fail Closed (CSD or R) (RPV)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1DA-101	2	A/C	¾ x 1	Relief		9-1	G-4	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1DA-100A	2	A	2	Globe	S(A)	9-1	G-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1DA-100B	2	A	2	Globe	O	9-1	G-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1DG-108A	2	A	2	Globe	O	9-1	F-9	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1DG-108B	2	A	2	Globe	O	9-1	F-10	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1DG-109A1	2	A	1½	Globe	A	9-1	E-9	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1DG-109A2	2	A	1½	Globe	A	9-1	E-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1DG-102	2	A/C	3/4 x 1	Relief		9-1	F-9	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1RH-3	2	C	10	Check		10-1	E-3	QS	VCSJ8	1OST-10.1-FS,FD,RD (CSD)
1RH-4	2	C	10	Check		10-1	F-3	QS	VCSJ8	1OST-10.1-FS,FD,RD (CSD)
1RH-14	2	A/P	6	Gate	S	10-1	D-8	LTJ		1BVT 1.47.5-Leak Test (SP)
1RH-15	2	A/P	6	Gate	S	10-1	B-8	LTJ		1BVT 1.47.5-Leak Test (SP) 1OST-45.4-(RPV)
1RH-16	2	A/P	4	Ball	S	10-1	C-9	LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1RH-700	1	A	14	Gate	S	10-1	F-1	QST	VSCJ9	1OST-10.4-Stroke & Time Open/Closed (CSD) (RPV)
								LM		1OST-10.5-Leakage Monitoring (2 YR) (R per Tech. Specs.)
MOV-1RH-701	1	A	14	Gate	S	10-1	F-2	QST	VSCJ9	1OST-10.4-Stroke & Time Open/Closed (CSD) (RPV)
								LM		1OST-10.5-Leakage Monitoring (2 YR) (R per Tech. Specs.)
MOV-1RH-720A	1	A	10	Gate	S	10-1	C-9	QST	VSCJ9	1OST-10.4-Stroke & Time Open/Closed (CSD) (RPV)
								LM		Continuous Monitoring of RHR System Pressure
MOV-1RH-720B	1	A	10	Gate	S	10-1	D-9	QST	VSCJ9	1OST-10.4-Stroke & Time Open/Closed (CSD) (RPV)
								LM		Continuous Monitoring of RHR System Pressure
RV-1RH-721	2	C	3 x 4	Relief		10-1	B-7	SPT		1BVT 1.60.5-(10 YR)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Safety Injection

SYSTEM NUMBER: 11

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1SI-1	2	C	12	Check		11-1	G-3	QS	VRR1	Sample Disassembly and Inspection per 1/2CMP-75-ALOYCO CHECK 1M(R)
1SI-2	2	C	12	Check		11-1	G-3	QS	VRR1	Sample Disassembly and Inspection per 1/2CMP-75-ALOYCO-CHECK-1M(R)
1SI-5	2	C	12	Check		11-1	G-2	QS		1OST-11.1(2)-PS,FD (Q)
								QS	VROJ12	1OST-11.14A-FS,FD (R)
1SI-6	2	C	10	Check		11-1	E-2	QS		1OST-11.2-FS,RD (Q)
								QS	VROJ13	1OST-11.14A-FS,FD (R)
1SI-7	2	C	10	Check		11-1	E-4	QS		1OST-11.1-FS,RD (Q)
								QS	VROJ13	1OST-11.14A-FS,FD (R)
1SI-10	1	A/C	6	Check		11-1	D-8	QS	VROJ14	1OST-11.16-FS,RD by Leak Test (R)
								QS	VROJ14	1OST-11.14A-FS,FD (R)
								LT		1OST-11.16-Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-11	1	A/C	6	Check		11-1	D-8	QS	VROJ14	1OST-11.16-FS,RD by Leak Test (R)
								QS	VROJ14	1OST-11.14A-FS,FD (R)
								LT		1OST-11.16-Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-12	1	A/C	6	Check		11-1	C-8	QS	VROJ14	1OST-11.16-FS,RD by Leak Test (R)
								QS	VROJ14	1OST-11.14A-FS,FD (R)
								LT		1OST-11.16-Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-13	2	A/C/P	6	Check		11-1	F-7	LT		1BVT 1.47.11-Leak Test (2 YR) (R per Tech. Specs.)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1SI-14	2	A/C/P	6	Check		11-1	F-7	LT		1BVT 1.47.11 Leak Test (2 YR) (R per Tech Specs)
1SI-15	1	A/C/P	6	Check		11-1	F-9	LT		1OST 11.19-Leak Test (2 YR) (R per Tech Specs.)
1SI-16	1	A/C/P	6	Check		11-1	F-9	LT		1OST-11.19-Leak Test (2 YR) (R per Tech Specs.)
1SI-17	1	A/C/P	6	Check		11-1	F-9	LT		1OST-11.19-Leak Test (2 YR) (R per Tech Specs.)
1SI-20	1	A/C	6	Check		11-1	F-10	QS	VROJ15	1OST-11.14B-FS,FD (R)
								LT		1OST-11.19-Leak Test (2 YR)
1SI-21	1	A/C	6	Check		11-1	F-10	QS	VROJ15	1OST-11.14B-FS,FD (R)
								LT		1OST-11.19-Leak Test (2 YR)
1SI-22	1	A/C	6	Check		11-1	F-10	QS	VROJ15	1OST-11.14B-FS,FD (R)
								LT		1OST-11.19-Leak Test (2 YR)
1SI-23	1	A/C	6	Check		11-1	C-10	QS	VROJ14	1OST-11.16-FS,RD by Leak Test (R)
								QS	VROJ14	1OST-11.14A-FS,FD (R)
								LT		1OST-11.16-Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-24	1	A/C	6	Check		11-1	D-10	QS	VROJ14	1OST-11.16-RS,RD by Leak Test (R)
								QS	VROJ14	1OST-11.14A-FS,FD (R)
								LT		1OST-11.16-Leak Test (2 YR) (CSD or R per Tech. Specs.)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1SI-25	1	A/C	6	Check		11-1	D-10	QS	VROJ14	1OST-11.16-FS,RD by Leak Test (R)
								QS	VROJ14	1OST-11.14A-FS,FD (R)
								LT		1OST-11.16 Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-27	2	A/C	8	Check		11-1	G-1	QS	VROJ16	1OST-11.20-PS,FD (CSD)
								QS	VROJ16	1OST-11.14B-FS,FD (R)
								QS	VROJ16	1BVT 1.47.11-FS,RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1SI-28	2	C	2	Check		11-1	F-4	QS		1OST-11.1-FS,RD (Q)
								QS		1OST-11.2-FS,FD (Q)
1SI-29	2	C	2	Check		11-1	F-2	QS		1OST-11.1-FS,FD (Q)
								QS		1OST-11.2-FS,RD (Q)
1SI-41	2	A/P	1	Globe	LS	11-2	D-6	LTJ		1BVT 1.47.5-Leak Test (SP)
1SI-42	2	A/C/P	1	Check		11-2	D-5	LTJ		1BVT 1.47.5-Leak Test (SP)
1SI-48	1	A/C	12	Check		11-2	C-2	QS	VROJ33	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B-Leak Test (2 YR) (R per Tech Specs.)
1SI-49	1	A/C	12	Check		11-2	E-2	QS	VROJ33	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B-Leak Test (2 YR) (R per Tech. Specs.)

BVPS-1 IST VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1SI-50	1	A/C	12	Check		11-2	G-2	QS	VROJ33	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4B Leak Test (2 YR) (R per Tech Specs.)
1SI-51	1	A/C	12	Check		11-2	C-2	QS	VROJ33	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4A-Leak Test (2 YR) (R per Tech. Specs.)
1SI-52	1	A/C	12	Check		11-2	E-2	QS	VROJ33	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4A-Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-53	1	A/C	12	Check		11-2	G-2	QS	VROJ33	1BVT 1.11.3-FS,FD (R)
								LT		1OST-11.4A-Leak Test (2 YR) (CSD or R per Tech. Specs.)
1SI-83	1	A/C	3	Check		11-1	E-7	QS	VROJ17	1OST-11.20-PS,FD (CSD)
								QS	VROJ17	1OST-11.14B-FS,FD (R)
								QS	VROJ17	1BVT 1.47.11-FS,RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1SI-84	1	A/C	3	Check		11-1	F-7	QS	VROJ17	1OST-11.20-PS,FD (CSD)
								QS	VROJ17	1OST-11.14B-FS,FD (R)
								QS	VROJ17	1BVT 1.47.11-FS,RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1SI-94	2	A/C	3	Check		11-1	B-7	QS	VROJ18	1OST-11.14B-FS,FD (R)
								QS	VROJ18	1BVT 1.47.11-FS,RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)

BVPS-1 IST VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1SI-95	2	A/C	3	Check		11-1	A-7	QS	VROJ17	1OST-11.20-PS,FD (CSD)
								QS	VROJ17	1OST-11.14B-FS,FD (R)
								QS	VROJ17	1BVT-1.47.11-FS,RD by Leak Test (R)
								LT		1BVT 1.47.11-Leak Test (2 YR)
1SI-100	1	C	2	Check		11-1	A-9	QS	VROJ15	1OST-11.14B-FS,FD (R)
1SI-101	1	C	2	Check		11-1	A-9	QS	VROJ15	1OST-11.14B-FS,FD (R)
TV-1SI-101-1	2	A	1	Globe	S	11-2	B-6	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SI-101-2	2	A	1	Globe	S	11-2	B-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1SI-102	1	C	2	Check		11-1	B-9	QS	VROJ15	1OST-11.14B-FS,FD (R)
1SI-115	2	C	1	Check		11-1	C-3	QS	VROJ19	1OST-47.3B-FS,RD (Q or R)
1SI-116	2	C	1	Check		11-1	C-3	QS	VROJ19	1OST-47.3B-FS,RD (Q or R)
MOV-1SI-836	2	A	3	Gate	S	11-1	A-6	QST	VROJ20	1OST-1.10-Stroke & Time Open/Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-842	2	A	2	Globe	S	11-2	E-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1SI-845A	2	C	¾ x 1	Relief		11-1	D-2	SPT		1BVT 1.60.5-(10 YR)
RV-1SI-845B	2	C	¾ x 1	Relief		11-1	D-2	SPT		1BVT 1.60.5-(10 YR)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1SI-845C	2	C	¾ x 1	Relief		11-1	D-4	SPT		1BVT 1.60.5 (10 YR)
RV-1SI-857	2	C	¾ x 1	Relief		11-1	B-6	SPT		1BVT 1.60.5-(10 YR)
RV-1SI-858A	2		1 x 2	Relief		11-2	A-2	SPT		1BVT 1.60.5-(10 YR)
RV-1SI 858B	2	C	1 x 2	Relief		11-2	C-2	SPT		1BVT 1.60.5-(10 YR)
RV-1SI 858C	2	C	1 x 2	Relief		11-2	E-2	SPT		1BVT 1.60.5-(10 YR)
MOV-1SI-860A	2	A	12	Gate	S	11-1	F-3	QST	VCSJ10	1OST-1.10-Stroke & Time Open/Closed (CSD) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-860B	2	A	12	Gate	S	11-1	F-4	QST	VCSJ10	1OST-1.10-Stroke & Time Open/Closed (CSD) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-862A	2	B	12	Gate	O	11-1	G-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
MOV-1SI-862B	2	B	12	Gate	O	11-1	G-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
MOV-1SI-863A	2	B	6	Gate	S	11-1	E-1	QST		1OST-47.3B-Stroke & Time Open (Q) (RPV)
MOV-1SI-863B	2	B	6	Gate	S	11-1	E-5	QST		1OST-47.3B-Stroke & Time Open (Q) (RPV)
MOV-1SI-865A	2	B	12	Gate	O	11-2	B-2	QST	VCSJ11	1OM-51.4.C & 1OST-1.10 Stroke & Time Closed (CSD) 1BVT 1.11.3-(RPV)
MOV-1SI-865B	2	B	12	Gate	O	11-2	E-2	QST	VCSJ11	1OM-51.4.C & 1OST-1.10 Stroke & Time Closed (CSD) 1BVT 1.11.3-(RPV)
MOV-1SI-865C	2	B	12	Gate	O	11-2	G-2	QST	VCSJ11	1OM-51.4.C & 1OST-1.10 Stroke & Time Closed (CSD) 1BVT 1.11.3-(RPV)
MOV-1SI 867A	2	B	3	Gate	S	11-1	A-2	QST	VROJ21	1OST-1.10-Stroke & Time Open (CSD or R) (RPV)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1SI-867B	2	B	3	Gate	S	11-1	A 2	QST	VROJ21	1OST-1.10-Stroke & Time Open (CSD or R) (RPV)
MOV-1SI-867C	2	A	3	Gate	S	11-1	B-6	QST	VROJ22	1OST-11.14B-Stroke & Time Open/Closed (R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-867D	2	A	3	Gate	S	11-1	B-6	QST	VROJ22	1OST-11.14B-Stroke & Time Open/Closed (R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-869A	2	A	3	Gate	S	11-1	E-7	QST	VROJ20	1OST-1.10-Stroke & Time Open/Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-869B	2	A	3	Gate	S	11-1	F-7	QST	VROJ20	1OST-1.10-Stroke & Time Open/Closed (CSD or R) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
TV-1SI-884A	2	B	1	Globe	O	11-1	C-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1SI-884B	2	B	1	Globe	O	11-1	C-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1SI-884C	2	B	1	Globe	O	11-1	C-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
MOV-1SI-885A	2	A	2	Globe	O	11-1	F-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-885B	2	A	2	Globe	O	11-1	F-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)

BVPS-1 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1SI-885C	2	A	2	Globe	O	11-1	F-5	QST		1OST-47 3B-Stroke & Time Closed (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
MOV-1SI-885D	2	A	2	Globe	O	11-1	F-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
TV-1SI-889	2	A	3/4	Gate	S	11-1	G-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1SI-890A	2	A/P	10	Gate	S	11-1	D-3	LT		1BVT 1.47.11-Leak Test (2 YR) (RPV)
MOV-1SI-890B	2	A/P	10	Gate	S	11-1	D-5	LT		1BVT 1.47.11-Leak Test (2 YR) (RPV)
MOV-1SI-890C	2	A	10	Gate	O	11-1	D-6	QST	VCSJ12	1OST-1.10-Stroke & Time Open/Closed (CSD) (RPV)
								LT		1BVT 1.47.11-Leak Test (2 YR)
RV-1SI-894	2	C	¾ x 1	Relief		11-2	D-5	SPT		1BVT 1.60.5-(10 YR)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Safety Injection - Gaseous Nitrogen System — **SYSTEM NUMBER:** 11

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1GN-108	3	C	1 x 1½	Relief		11-2	E-7	SPT		1BVT 1.60.5 (10 YR)
RV-1GN-109	3	C	1 x 1½	Relief		11-2	F-7	SPT		1BVT 1.60.5-(10 YR)
RV-1GN-117	3	C	1 x 1½	Relief		11-2	G-7	SPT		1BVT 1.60.5-(10 YR)
RV-1GN-118	3	C	¾ x 1	Relief		11-2	G-6	SPT		1BVT 1.60.5-(10 YR)
RV-1GN-119	3	C	¾ x 1	Relief		11-2	E-6	SPT		1BVT 1.60.5-(10 YR)
RV-1GN-120	3	C	¾ x 1	Relief		11-2	F-6	SPT		1BVT 1.60.5-(10 YR)
1NG-518	3	A/C	½	Check		11-2	F-6	QS	VROJ32	1BVT 2.34.4 - FS, RD by Leak Test (R)
								LT		1BVT 2.34.4 - Leak Test (2 YR)
1NG-519	3	A/C	½	Check		11-2	E-6	QS	VROJ32	1BVT 2.34.4 - FS, RD by Leak Test (R)
								LT		1BVT 2.34.4 - Leak Test (2 YR)
1NG-520	3	A/C	½	Check		11-2	G-6	QS	VROJ32	1BVT 2.34.4 - FS, RD by Leak Test (R)
								LT		1BVT 2.34.4 - Leak Test (2 YR)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Containment Vacuum — **SYSTEM NUMBER:** 12

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CV-101A	2	A	1	Globe	O	12-1	D-6	QST		1OST-47.3B Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CV-101B	2	A	1	Globe	O	12-1	D-7	QST		1OST-47.3B Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CV-102	2	A	1	Globe	O	12-1	E-7	QST		1OST-47.3B Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1CV-102-1	2	A	1	Globe	O	12-1	E-8	QST		1OST-47.3B Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1CV-150A	2	A	2	Globe	O	12-1	F-6	QST		1OST-47.3B Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1CV-150B	2	A	2	Globe	S	12-1	F-7	QST		1OST-47.3B Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1CV-150C	2	A	2	Globe	O	12-1	E-7	QST		1OST-47.3B Stroke & Time Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1CV-150D	2	A	2	Globe	S	12-1	E-6	QST		1OST-47.3B-Stroke & Time Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
HCV-1CV-151	2	A/P	8	Butterfly	LS	12-1	F-8	LTJ		1BVT 1.47.5-Leak Test (SP)
HCV-1CV-151-1	2	A/P	8	Butterfly	LS	12-1	F-7	LTJ		1BVT 1.47.5-Leak Test (SP)
1CV-57	2	A/P	3/8	Globe	SS	12-1	C-4	LTJ		1BVT 1.47.5 Leak Test (SP)
1CV-58	2	A/P	3/8	Globe	SS	12-1	B-4	LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Containment Vacuum

SYSTEM NUMBER: 12

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing OM No.	Drawing Coord.	Test Requirement	VCSJ, VROJ or Relief Requests	Comments
1CV-59	2	A/P	3/8	Globe	SS	12-1	B-4	LTJ		1BVT 1.47.5-Leak Test (SP)
1CV-60	2	A/P	3/8	Globe	SS	12-1	B-4	LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1QS-3	2	A/C	10	Check		13-1	E-9	QS	VROJ34	1OST-1.10-FS,FD,RD by Mechanical Exerciser (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1QS-4	2	A/C	10	Check		13-1	E-9	QS	VROJ34	1OST-1.10-FS,FD,RD by Mechanical Exerciser (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1QS-100A	2	B/P	12	Gate	O	13-1	C-4	POS		1OST-47.3B-(RPV)
MOV-1QS-100B	2	B/P	12	Gate	O	13-1	D-4	POS		1OST-47.3B-(RPV)
RV-1QS-100A	2	C	1½ x 2½	Relief	13-1	F-3	SPT			1BVT 1.60.5-(10 YR)
RV-1QS-100B	2	C	1½ x 2½	Relief	13-1	F-5	SPT			1BVT 1.60.5-(10 YR)
MOV-1QS-101A	2	A	10	Gate	S	13-1	E-9	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1QS-101B	2	A	10	Gate	S	13-1	F-9	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1QS-103A	2	B	10	Gate	O	13-1	E-7	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
MOV-1QS-103B	2	B	10	Gate	O	13-1	F-7	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
MOV-1QS-104A	2	B	3	Diaphragm	S	13-1	E-3	QST		1OST-13.10A-Stroke & Time Open (Q) (RPV)
MOV-1QS-104B	2	B	3	Diaphragm	S	13-1	E-3	QST		1OST-13.10B-Stroke & Time Open (Q) (RPV)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Containment Depressurization (Recirc Spray) — **SYSTEM NUMBER:** 13

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1RS-100	2	A/C	10	Check		13-2	C-6	QS	VROJ34	1OST-1.10-FS,FD,RD, by Mechanical Exerciser (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1RS-101	2	A/C	10	Check		13-2	B-8	QS	VROJ34	1OST-1.10-FS,FD,RD, by Mechanical Exerciser (R)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1RS-155A	2	B	12	Gate	O	13-2	F-6	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RS-155B	2	B	12	Gate	O	13-2	F-8	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RS-156A	2	B	10	Gate	O	13-2	D-6	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RS-156B	2	B	10	Gate	O	13-2	D-8	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
1RS-157	2	B	6	Gate	LS	13-2	D-7	QS		1OST-47.3B-Stroke Only Open (Q) 1OST-45.4-(RPV)
1RS-158	2	C	6	Check		13-2	D-7	QS	VRR3	Sample Disassembly and Inspection per CMP 1/2-75-VELAN CHECK-1M (R)
1RS-159	2	B	6	Gate	LS	13-2	D-9	QS		1OST-47.3B-Stroke Only Open (Q) 1OST-45.4-(RPV)
1RS-160	2	C	6	Check		13-2	D-9	QS	VRR3	Sample Disassembly and Inspection per CMP 1/2-75-VELAN CHECK-1M (R)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1SS-100A1	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-100A2	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-102A1	2	A	3/4	Globe	S	14A-1	A-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1SS-102A2	2	A	3/4	Globe	S	14A-1	A-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1SS-103A1	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-103A2	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-104A1	2	A	3/4	Globe	O	14A-1	C-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-104A2	2	A	3/4	Globe	O	14A-1	C-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-105A1	2	A	3/4	Globe	S	14A-1	B-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1SS-105A2	2	A	3/4	Globe	S	14A-1	B-3	QST		1OST-47.3B Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1SS-109A1	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-109A2	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-111A1	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-111A2	2	A	3/4	Globe	O	14A-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-112A1	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-112A2	2	A	3/4	Globe	O	14A-1	E-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1SS-117A	2	B	3/4	Globe	O	14A-1	G-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1SS-117B	2	B	3/4	Globe	O	14A-1	F-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1SS-117C	2	B	3/4	Globe	O	14A-1	F-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
RV-1SS-605	2	A/C	¾ x 1	Relief		14A-1	E-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1SS 606	2	A/C	¾ x 1	Relief		14A-1	A-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1SS-607	2	A/C	¾ x 1	Relief		14A-1	D-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1SS-608	2	A/C	¾ x 1	Relief		14A-1	D-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1SS-609	2	A/C	¾ x 1	Relief		14A-1	B-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1SS-610	2	A/C	¾ x 1	Relief		14A-1	C-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1SS-611	2	A/C	¾ x 1	Relief		14A-1	E-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1CCR 4	3	C	18	Check		15-1	E-6	QS		1OST-15.1-FS,FD (Q)
								QS		1OST-15.2(3)-FS,RD (Q)
1CCR-5	3	C	18	Check		15-1	E-7	QS		1OST-15.2-FS,FD (Q)
								QS		1OST-15.1(3)-FS,RD (Q)
1CCR-6	3	C	18	Check		15-1	E-8	QS		1OST-15.3-FS,FD (Q)
								QS		1OST-15.1(2)-FS,RD (Q)
TV-1CC-103A	2	A	6	Globe	O	15-5	A-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-103A1	2	A	6	Globe	O	15-5	B-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-103B	2	A	6	Globe	O	15-5	A-4	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-103B1	2	A	6	Globe	O	15-5	B-4	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-103C	2	A	6	Globe	O	15-5	A-3	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-103C1	2	A	6	Globe	O	15-5	B-3	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-105D1	2	A	6	Globe	O	15-5	F-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-105D2	2	A	6	Globe	O	15-5	G-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-105E1	2	A	4	Globe	O	15-5	F-5	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-105E2	2	A	4	Globe	O	15-5	G-5	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-107A	3	A	2	Globe	O	15-5	C-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.60.7-Leak Test (2 YR)
TV-1CC-107B	3	A	2	Globe	O	15-5	D-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.60.7-Leak Test (2 YR)
TV-1CC-107C	3	A	2	Globe	O	15-5	F-6	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LT		1BVT 1.60.7-Leak Test (2 YR)
TV-1CC-107D1	2	A	3	Globe	O	15-5	F-4	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-107D2	2	A	3	Globe	O	15-5	G-4	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-107E1	2	A	2	Globe	O	15-5	F-3	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-107E2	2	A	2	Globe	O	15-5	G-3	QST	VROJ23	1OST-1.10-Stroke & Time Closed (CSD or R) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-109	3	C	¾ x 1	Relief		15-2	E-7	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-110	3	C	¾ x 1	Relief		15-2	E-6	SPT		1BVT 1.60.5-(10 YR)
TV-1CC-110D	2	A	8	Globe	O	29-2	E-9	QST	VCSJ14	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-110E2	2	A	8	Globe	O	29-2	A-2	QST	VCSJ14	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-110E3	2	A	8	Globe	O	29-2	A-3	QST	VCSJ14	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-110F1	2	A/P	8	Globe	S	29-2	E-10	LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
TV-1CC-110F2	2	A	8	Globe	O	29-2	F-10	QST	VCSJ14	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-111A	3	C	¾ x 1	Relief		15-2	B-6	SPT		1BVT 1.60.5-(10 YR)
TV-1CC-111A1	2	A	6	Globe	O	15-3	B-8	QST	VCSJ15	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-111A2	2	A	6	Globe	O	15-3	B-8	QST	VCSJ15	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-111B	3	C	¾ x 1	Relief		15-2	B-6	SPT		1BVT 1.60.5-(10 YR)
TV-1CC-111D1	2	A	6	Globe	O	15-3	F-4	QST	VCSJ15	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1CC-111D2	2	A	6	Globe	O	15-3	G-4	QST	VCSJ15	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1CC-112A2	2	A	18	Butterfly	S	15-5	A-7	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								QST	VCSJ31	1OST-10.4 & 1OM-10.4.A & C-Stroke & Time Open/Closed (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1CC-112A3	2	A	18	Butterfly	S	15-5	F-7	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								QST	VCSJ31	1OST-10.4 & 1OM-10.4.A & C-Stroke & Time Open/Closed (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1CC-112B2	2	A	18	Butterfly	S	15-5	A-8	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								QST	VCSJ31	1OST-10.4 & 1OM-10.4.A & C-Stroke & Time Open/Closed (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1CC-112B3	2	A	18	Butterfly	S	15-5	F-8	QST		1OST-47.3B-Stroke & Time Open/Closed (Q) (RPV)
								QST	VCSJ31	1OST-10.4 & 1OM-10.4.A & C Stroke & Time Open/Closed (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-113A	3	C	¾ x 1	Relief		15-3	D-2	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-113B	3	C	¾ x 1	Relief		15-3	D-5	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-113C	3	C	¾ x 1	Relief		15-3	C-8	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-115A	3	C	¾ x 1	Relief		15-5	B-4	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-115B	3	C	¾ x 1	Relief		15-5	D-4	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-115C	3	C	¾ x 1	Relief		15-5	E-4	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-116A	3	C	¾ x 1	Relief		15-5	C-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-116B	3	C	¾ x 1	Relief		15-5	D-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-116C	3	C	¾ x 1	Relief		15-5	E-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-117	3	C	¾ x 1	Relief		15-4	C-9	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-118	3	C	¾ x 1	Relief		15-4	C-9	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-119A	3	C	¾ x 1	Relief		15-5	C-7	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-119B	3	C	¾ x 1	Relief		15-5	E-8	SPT		1BVT 1.60.5-(10 YR)
TV-1CC-121-1	3	B	2	Globe	O	15-5	B-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-121-2	3	B	2	Globe	O	15-5	F-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-125	3	B	6	Globe	O	15-2	A-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-125-1	3	B	6	Globe	O	15-1	F-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1CC-125-2	3	B	6	Globe	O	15-1	F-5	QST		1OST-47.3B Stroke & Time Closed (Q) (RPV)
TV-1CC-126	3	B	8	Globe	O	15-2	A-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-126-1	3	B	8	Globe	O	15-1	G-7	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-126-2	3	B	8	Globe	O	15-1	G-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-127	3	B	8	Globe	O	15-2	B-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-127-1	3	B	8	Globe	O	15-1	F-9	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-127-2	3	B	8	Globe	O	15-1	E-9	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-129	3	B	6	Globe	O	15-2	A-10	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-129-1	3	B	6	Globe	O	15-2	B-10	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-129-2	3	B	6	Globe	O	15-2	E-10	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-133-2	3	B	1½	Globe	O	15-2	G-9	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-133-3	3	B	6	Globe	O	15-2	F-10	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-134-1	3	B	1½	Globe	O	15-2	A-7	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-134-2	3	B	1½	Globe	O	15-2	B-7	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-134-3	3	B	1½	Globe	O	15-2	G-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-136	3	B	12	Globe	O	15-2	A-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
RV-1CC-136A	3	C	¾ x 1	Relief		15-5	B-7	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-136B	3	C	¾ x 1	Relief		15-5	D-8	SPT		1BVT 1.60.5-(10 YR)
TV-1CC-137	3	B	2	Globe	O	15-5	B-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-137A	3	B	1½	Globe	O	15-5	D-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1CC-137B	3	B	1½	Globe	S	15-5	E-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-139A	3	C	¾ x 1	Relief		15-4	B-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139B	3	C	¾ x 1	Relief		15-4	B-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139C	3	C	¾ x 1	Relief		15-4	B-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139D	3	C	¾ x 1	Relief		15-4	C-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139E	3	C	¾ x 1	Relief		15-4	D-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139F	3	C	¾ x 1	Relief		15-4	E-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139G	3	C	¾ x 1	Relief		15-4	E-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139H	3	C	¾ x 1	Relief		15-4	E-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139I	3	C	¾ x 1	Relief		15-4	F-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139J	3	C	¾ x 1	Relief		15-4	F-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139K	3	C	¾ x 1	Relief		15-4	F-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139L	3	C	¾ x 1	Relief		15-4	G-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139M	3	C	¾ x 1	Relief		15-4	D-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139N	3	C	¾ x 1	Relief		15-4	D-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139P	3	C	¾ x 1	Relief		15-4	C-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-139R	3	C	¾ x 1	Relief		15-4	C-6	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140A	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140B	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140C	3	C	¾ x 1	Relief		15-4	B-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140D	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140E	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 1.60.5-(10 YR)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-140F	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140G	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140H	3	C	¾ x 1	Relief		15-4	E-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140I	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140J	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140K	3	C	¾ x 1	Relief		15-4	F-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140L	3	C	¾ x 1	Relief		15-4	G-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140M	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140N	3	C	¾ x 1	Relief		15-4	D-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140P	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 1.60.5-(10 YR)
RV-1CC-140R	3	C	¾ x 1	Relief		15-4	C-3	SPT		1BVT 1.60.5-(10 YR)
1CCR-247	2	A	18	Butterfly	LS	15-5	A-7	QS	VCSJ16	1OM-10.4.A-Stroke Only Open (CSD) 1OST-10.4 (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1CCR-248	2	A	18	Butterfly	LS	15-5	A-8	QS	VCSJ16	1OM-10.4.A-Stroke Only Open (CSD) 1OST-10.4 (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1CCR-251	2	A	18	Butterfly	LS	15-5	G-8	QS	VCSJ16	1OM-10.4.A-Stroke Only Open (CSD) 1OST-10.4 (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1CCR-252	2	A	18	Butterfly	LS	15-5	G-8	QS	VCSJ16	1OM-10.4.A-Stroke Only Open (CSD) 1OST-10.4 (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-261	2	A/C	¾ x 1	Relief		15-5	A-7	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-262	2	A/C	¾ x 1	Relief		15-5	F-8	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-263	2	A/C	¾ x 1	Relief		15-5	A-8	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-264	2	A/C	¾ x 1	Relief		15-5	F-7	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-265	2	A/C	¾ x 1	Relief		15-5	F-4	SPT		1BVT 1.60.5-(10 YR)
								LT		1BVT 1.47.5-Leak Test (SP)
RV-1CC-266	2	A/C	¾ x 1	Relief		15-3	F-4	SPT		1BVT 1.60.5-(10 YR)
								LT		1BVT 1.47.5-Leak Test (SP)
RV-1CC-267	2	A/C	¾ x 1	Relief		29-2	E-9	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-268	2	A/C	¾ x 1	Relief		29-2	A-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-269	2	A/C	¾ x 1	Relief		15-3	B-8	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Reactor Plant Component Cooling Water — **SYSTEM NUMBER:** 15

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1CC-270	2	A/C	¾ x 1	Relief		15-5	B-4	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-271	2	A/C	¾ x 1	Relief		15-5	B-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-272	2	A/C	¾ x 1	Relief		15-5	F-6	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-273	2	A/C	¾ x 1	Relief		15-5	F-3	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-274	2	A/C	¾ x 1	Relief		15-5	F-5	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1CC-275	2	A/C	¾ x 1	Relief		15-3	B-6	SPT		1BVT 1.60.5-(10 YR)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1CCR-289	3	A/C	2	Check		15-5	C-3	QS	VROJ24	1BVT 1.60.7-FS,RD by Leak Test (R)
								LT		1BVT 1.60.7-Leak Test (2 YR)
1CCR-290	3	A/C	2	Check		15-5	D-3	QS	VROJ24	1BVT 1.60.7-FS,RD by Leak Test (R)
								LT		1BVT 1.60.7-Leak Test (2 YR)
1CCR-291	3	A/C	2	Check		15-5	F-3	QS	VROJ24	1BVT 1.60.7-FS,RD by Leak Test (R)
								LT		1BVT 1.60.7-Leak Test (2 YR)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Fuel Pool Cooling and Purification

SYSTEM NUMBER: 20

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1PC-9	2	A/P	6	Ball	LS	20-1	D-8	LTJ		1BVT 1.47.5-Leak Test (SP)
1PC-10	2	A/P	6	Ball	LS	20-1	D-7	LTJ		1BVT 1.47.5-Leak Test (SP)
1PC-37	2	A/P	6	Ball	LS	20-1	D-8	LTJ		1BVT 1.47.5-Leak Test (SP)
1PC-38	2	A/P	6	Ball	LS	20-1	D-7	LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Main Steam — **SYSTEM NUMBER:** 21

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1MS-15	2	B	3	Gate	LO	21-1	B-4	QS		1OST-24.4-Stroke Only Closed (Q) 1OST-24.9-Stroke Only Closed (CSD)
1MS-16	2	B	3	Gate	LO	21-1	D-4	QS		1OST-24.4-Stroke Only Closed (Q) 1OST-24.9-Stroke Only Closed (CSD)
1MS-17	2	B	3	Gate	LS	21-1	F-3	QS		1OST-24.4-Stroke Only Open (Q) 1OST-24.9-Stroke Only Open (CSD)
1MS-18	2	C	3	Check		21-1	G-4	QS		1OST-24.4-PS,FD (Q)
								QS	VROJ25	1OST-24.9-FS,FD (CSD)
								QS	VROJ25	1BVT-1.60.7-FS,RD by Leak Test (R)
1MS-19	2	C	3	Check		21-1	G-4	QS		1OST-24.4-PS,FD (Q)
								QS	VROJ25	1OST-24.9-FS,FD (CSD)
								QS	VROJ25	1BVT-1.60.7-FS,RD by Leak Test (R)
1MS-20	2	C	3	Check		21-1	G-4	QS		1OST-24.4-PS,FD (Q)
								QS	VROJ25	1OST-24.9-FS,FD (CSD)
								QS	VROJ25	1BVT-1.60.7-FS,RD by Leak Test (R)
1MS-80	2	C	3	Check		21-1	C-7	QS	VROJ26	Sample Disassembly and Inspection per 1CMP-75-CRANE CHECK-1M(R) 1OM-50.4.C PS,FD S/U after disassembly
1MS-81	2	C	3	Check		21-1	C-7	QS	VROJ26	Sample Disassembly and Inspection per 1CMP-75-CRANE CHECK-1M(R) 1OM-50.4.C PS,FD S/U after disassembly
1MS-82	2	C	3	Check		21-1	E-7	QS	VROJ26	Sample Disassembly and Inspection per 1CMP-75-CRANE CHECK-1M(R) 1OM-50.4.C PS,FD S/U after disassembly
MOV-1MS-101A	2	B	2	Globe	S	21-1	C-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
NRV-1MS-101A	2	B/C	32	Check	O	21-1	B-8	QS	VCSJ17	1OST-1.10-FS,RD (CSD) (RPV)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Main Steam — **SYSTEM NUMBER:** 21

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
PCV-1MS-101A	2	B	6	Globe	A	21-1	A-5	QST	VCSJ18	1OST-1.10-Stroke & Time Open/Closed and Fail Closed (CSD) (RPV)
SV-1MS-101A	2	C	6 x 10	Safety		21-1	B-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
TV-1MS-101A	2	B/C	32	Inverse Check	O	21-1	B-8	QST	VCSJ19	1OST-21.4-Stroke & Time Closed (CSD) (RPV)
MOV-1MS-101B	2	B	2	Globe	S	21-1	E-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
NRV-1MS-101B	2	B/C	32	Check	O	21-1	D-8	QS	VCSJ17	1OST-1.10-FS,RD (CSD) (RPV)
PCV-1MS-101B	2	B	6	Globe	A	21-1	C-5	QST	VCSJ18	1OST-1.10-Stroke & Time Open/Closed and Fail Closed (CSD) (RPV)
SV-1MS-101B	2	C	6 x 10	Safety		21-1	D-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
TV-1MS-101B	2	B/C	32	Inverse Check	O	21-1	D-8	QST	VCSJ19	1OST-21.5-Stroke & Time Closed (CSD) (RPV)
MOV-1MS-101C	2	B	2	Globe	S	21-1	G-8	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
NRV-1MS-101C	2	B/C	32	Check	O	21-1	F-8	QS	VCSJ17	1OST-1.10-FS,RD (CSD) (RPV)
PCV-1MS-101C	2	B	6	Globe	A	21-1	E-5	QST	VCSJ18	1OST-1.10-Stroke & Time Open/Closed and Fail Closed (CSD) (RPV)
SV-1MS-101C	2	C	6 x 10	Safety		21-1	E-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
TV-1MS-101C	2	B/C	32	Inverse Check	O	21-1	F-8	QST	VCSJ19	1OST-21.6-Stroke & Time Closed (CSD) (RPV)
SV-1MS-102A	2	C	6 x 10	Safety		21-1	B-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-102B	2	C	6 x 10	Safety		21-1	D-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-102C	2	C	6 x 10	Safety		21-1	E-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-103A	2	C	6 x 10	Safety		21-1	B-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-103B	2	C	6 x 10	Safety		21-1	D-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-103C	2	C	6 x 10	Safety		21-1	E-4	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-104A	2	C	6 x 10	Safety		21-1	B-3	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Main Steam — **SYSTEM NUMBER:** 21

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
SV-1MS-104B	2	C	6 x 10	Safety		21-1	D-3	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-104C	2	C	6 x 10	Safety		21-1	E-3	SPT		1BVT 1.60.5 & 1BVT 1.21.2 (5 YR)
SV-1MS-105A	2	C	6 x 10	Safety		21-1	B-3	SPT		1BVT 1.60.5 & 1BVT 1.21.2 (5 YR)
SV-1MS-105B	2	C	6 x 10	Safety		21-1	D-3	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
SV-1MS-105C	2	C	6 x 10	Safety		21-1	E-3	SPT		1BVT 1.60.5 & 1BVT 1.21.2-(5 YR)
TV-1MS-105A	3	B	3	Gate	S	21-1	G-4	QST		1OST-24.4-Stroke & Time Open (Q) (RPV)
TV-1MS-105B	3	B	3	Gate	S	21-1	G-5	QST		1OST-24.4-Stroke & Time Open (Q) (RPV)
MOV-1MS-105	3	B	3	Gate	O	21-1	G-4	QST	VCSJ20	1OST-1.10-Stroke & Time Open/Closed (CSD) (RPV)
TV-1MS-111A	2	B	1½	Gate	O	26-4	E-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1MS-111B	2	B	1½	Gate	O	26-4	C-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1MS-111C	2	B	1½	Gate	O	26-4	A-1	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Feedwater — **SYSTEM NUMBER:** 24

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1FW-33	3	C	6	Check		24-2	E-7	QS	VCSJ21	1OST-24.9-FS,FD (CSD)
								QS	VCSJ21	1OST-24.8-FS,RD (CSD)
1FW-34	3	C	4	Check		24-2	E-2	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-35	3	C	4	Check		24-2	E-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-36	3	B	6	Gate	LO	24-2	D-7	QS		1OST-24.4-Stroke Only Closed (Q)
1FW-37	3	B	4	Gate	LO	24-2	D-2	QS		1OST-24.2-Stroke Only Closed (Q)
1FW-38	3	B	4	Gate	S	24-2	D-4	QS		1OST-24.3-Stroke Only Open (Q)
1FW-39	3	B	6	Gate	S	24-2	D-7	QS		1OST-24.4-Stroke Only Open (Q)
1FW-40	3	B	4	Gate	S	24-2	D-2	QS		1OST-24.2-Stroke Only Open (Q)
1FW-41	3	B	4	Gate	LO	24-2	D-5	QS		1OST-24.3-Stroke Only Closed (Q)
1FW-42	2	C	3	Check		24-1	B-7	QS	VCSJ21	1OST-24.8-FS,FD (CSD)
								QS		FS,RD by 10M-54 PAB Log (Q) & 1OST-24.11(R)
1FW-43	2	C	3	Check		24-1	E-7	QS	VCSJ21	1OST-24.8-FS,FD (CSD)
								QS		FS,RD by 10M-54 PAB Log (Q) & 1OST-24.11(R)
1FW-44	2	C	3	Check		24-1	G-7	QS	VCSJ21	1OST-24.8-FS,FD (CSD)
								QS		FS,RD by 10M-54 PAB Log (Q) & 1OST-24.11(R)
1FW-50	3	C	1	Check		24-2	E-7	QS		1OST-24.4-PS,FD (Q)
								QS	VCSJ22	1OST-24.9-FS,FD (CSD)
1FW-51	3	C	1	Check		24-2	E-2	QS		1OST-24.2-PS,FD (Q)
								QS	VCSJ22	1OST-24.8-FS,FD (CSD)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Feedwater — **SYSTEM NUMBER:** 24

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1FW-52	3	C	1	Check		24-2	E-5	QS		1OST-24.3-PS,FD (Q)
								QS	VCSJ22	1OST-24.8-FS,FD (CSD)
1FW-68	3	C	1	Check		24-2	E-8	QS		1OST-24.4-PS,FD (Q)
								QS	VCSJ22	1OST-24.9-FS,FD (CSD)
1FW-69	3	C	1	Check		24-2	E-2	QS		1OST-24.2-PS,FD (Q)
								QS	VCSJ22	1OST-24.8-FS,FD (CSD)
1FW-70	3	C	1	Check		24-2	E-5	QS		1OST-24.3-PS,FD (Q)
								QS	VCSJ22	1OST-24.8-FS,FD (CSD)
MOV-1FW-150A	3	B	20	Gate	O	24-3	C-3	QST	VCSJ23	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
MOV-1FW-150B	3	B	20	Gate	O	24-3	D-3	QST	VCSJ23	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
MOV-1FW-151A	2	B	3	Globe	O	24-2	C-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
MOV-1FW-151B	2	B	3	Globe	O	24-2	C-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
MOV-1FW-151C	2	B	3	Globe	O	24-2	B-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
MOV-1FW-151D	2	B	3	Globe	O	24-2	B-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
MOV-1FW-151E	2	B	3	Globe	O	24-2	A-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
MOV-1FW-151F	2	B	3	Globe	O	24-2	A-3	QST		1OST-24.1-Stroke & Time Open/Closed (Q) (RPV)
RV-1FW-155	2	C	3 x 4	Relief		24-2	F-7	SPT		1BVT 1.60.5 (R)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: Feedwater — SYSTEM NUMBER: 24

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1FW-156A	2	B/C	16	Check	O	24-1	B-7	QST	VCSJ24	1OST-1.10-Stroke & Time Closed (CSD) (RPV) 1OST-24.14A - Verify closure by Leak Test (R)
MOV-1FW-156B	2	B/C	16	Check	O	24-1	D-7	QST	VCSJ24	1OST-1.10-Stroke & Time Closed (CSD) (RPV) 1OST-24.14B - Verify closure by Leak Test (R)
MOV-1FW-156C	2	B/C	16	Check	O	24-1	F-7	QST	VCSJ24	1OST-1.10-Stroke & Time Closed (CSD) (RPV) 1OST-24.14C - Verify closure by Leak Test (R)
HCV-1FW-158A	2	B/P	3	Gate	O	24-1	B-7	POS		1OST-24.11-(RPV)
HCV-1FW-158B	2	B/P	3	Gate	O	24-1	D-7	POS		1OST-24.11-(RPV)
HCV-1FW-158C	2	B/P	3	Gate	O	24-1	G-7	POS		1OST-24.11-(RPV)
FCV-1FW-478	2	B	16	Globe	A	24-1	B-4	QST	VCSJ25	1OST-1.10-Stroke & Time Closed and Fail Closed (CSD) (RPV)
FCV-1FW-479	2	B	4	Globe	A	24-1	A-4	QST		1OST-47.3B-Stroke & Time Closed and Fail Closed (Q) (RPV)
FCV-1FW-488	2	B	16	Globe	A	24-1	D-4	QST	VCSJ25	1OST-1.10-Stroke & Time Closed and Fail Closed (CSD) (RPV)
FCV-1FW-489	2	B	4	Globe	A	24-1	D-4	QST		1OST-47.3B-Stroke & Time Closed and Fail Closed (Q) (RPV)
FCV-1FW-498	2	B	16	Globe	A	24-1	F-4	QST	VCSJ25	1OST-1.10-Stroke & Time Closed and Fail Closed (CSD) (RPV)
FCV-1FW-499	2	B	4	Globe	A	24-1	F-4	QST		1OST-47.3B-Stroke & Time Closed and Fail Closed (Q) (RPV)
1FW-622	2	C	3	Check		24-2	C-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-623	2	C	3	Check		24-2	C-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-624	2	C	3	Check		24-2	B-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-625	2	C	3	Check		24-2	B-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-626	2	C	3	Check		24-2	A-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)
1FW-627	2	C	3	Check		24-2	A-4	QS	VCSJ21	1OST-24.8-FS,FD,RD (CSD)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1BD-100A	2	B	3	Globe	O	25-1	B-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-100B	2	B	3	Globe	O	25-1	D-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-100C	2	B	3	Globe	O	25-1	F-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-101A1	2	B	3	Gate	O	25-1	B-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-101A2	2	B	3	Gate	O	25-1	B-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-101B1	2	B	3	Gate	O	25-1	D-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-101B2	2	B	3	Gate	O	25-1	D-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-101C1	2	B	3	Gate	O	25-1	F-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
TV-1BD-101C2	2	B	3	Gate	O	25-1	F-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Main Turbine and Condenser System

SYSTEM NUMBER: 26

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing OM No.	Drawing Coord.	Test Requirement	VCSJ, VROJ or Relief Requests	Comments
TV-1SV-100A	2	A	6	Globe	S	26-6	D-9	QST	VCSJ26	1OST-1.10-Stroke & Time Open/Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1AS-278	2	A/C	6	Check		26-6	D-10	QS	VCSJ26	1OST-1.10-FS,FD,RD, by Mechanical Exerciser (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Auxiliary Steam **SYSTEM NUMBER:** 27

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
HYV-1AS-101A	3	B	8	Gate	O	27-1	D-3	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
HYV-1AS-101B	3	B	8	Gate	O	27-1	D-2	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: River Water — **SYSTEM NUMBER:** 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1RW-57	3	C	20	Check		30-1	A-3	QS		1OST-30.2-FS,FD (Q)
								QS	VCSJ29	1OST-30.6A-FS,RD (Q or CSD)
1RW-58	3	C	20	Check		30-1	C-3	QS		1OST-30.3-FS,FD (Q)
								QS	VCSJ29	1OST-30.6B-FS,RD (Q or CSD)
1RW-59	3	C	20	Check		30-1	D-3	QS		1OST-30.6-FS,FD (Q)
								QS	VCSJ29	1OST-30.6A & B-FS,RD (Q or CSD)
RV-1RW-101A	2	C	¾ x 1	Relief		30-3	C-8	SPT		1BVT 1.60.5-(10 YR)
RV-1RW-101B	2	C	¾ x 1	Relief		30-3	E-8	SPT		1BVT 1.60.5-(10 YR)
RV-1RW-101C	2	C	¾ x 1	Relief		30-3	D-8	SPT		1BVT 1.60.5-(10 YR)
RV-1RW-101D	2	C	¾ x 1	Relief		30-3	F-8	SPT		1BVT 1.60.5-(10 YR)
RV-1RW-102A	3	C	¾ x 1	Relief		30-3	C-2	SPT		1BVT 1.60.5-(10 YR)
MOV-1RW-102A2	3	B	20	Butterfly	O	30-1	A-4	QST		1OST-30.2-Stroke & Time Open (Q) (RPV)
RV-1RW-102B	3	C	¾ x 1	Relief		30-3	D-2	SPT		1BVT 1.60.5-(10 YR)
MOV-1RW-102B1	3	B	20	Butterfly	S	30-1	C-4	QST		1OST-30.3-Stroke & Time Open (Q) (RPV)
RV-1RW-102C	3	C	¾ x 1	Relief		30-3	E-2	SPT		1BVT 1.60.5-(10 YR)
MOV-1RW-102C1	3	B	20	Butterfly	S	30-1	D-4	QST	VCSJ30	1OST-30.6B-Stroke & Time Open (Q or CSD) (RPV)
MOV-1RW-102C2	3	B	20	Butterfly	S	30-1	D-4	QST	VCSJ30	1OST-30.6A-Stroke & Time Open (Q or CSD) (RPV)
MOV-1RW-103A	3	B	24	Butterfly	S	30-3	B-2	QST		1OST-30.4-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RW-103B	3	B	24	Butterfly	S	30-3	B-2	QST		1OST-30.4-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RW-103C	3	B	24	Butterfly	S	30-3	G-2	QST		1OST-30.5-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RW-103D	3	B	24	Butterfly	S	30-3	G-2	QST		1OST-30.5-Stroke & Time Open/Closed (Q) (RPV)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: River Water — **SYSTEM NUMBER:** 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1RW-104A	2	B	14	Butterfly	O	30-3	C-6	QST		1OST-30.4-Stroke & Time Closed (Q) (RPV)
MOV-1RW-104B	2	B	14	Butterfly	O	30-3	F-6	QST		1OST-30.5-Stroke & Time Closed (Q) (RPV)
MOV-1RW-104C	2	B	14	Butterfly	O	30-3	D-6	QST		1OST-30.4-Stroke & Time Closed (Q) (RPV)
MOV-1RW-104D	2	B	14	Butterfly	O	30-3	G-6	QST		1OST-30.5-Stroke & Time Closed (Q) (RPV)
MOV-1RW-105A	2	B	14	Butterfly	O	30-3	C-9	QST		1OST-30.4-Stroke & Time Closed (Q) (RPV)
MOV-1RW-105B	2	B	14	Butterfly	O	30-3	E-9	QST		1OST-30.5-Stroke & Time Closed (Q) (RPV)
MOV-1RW-105C	2	B	14	Butterfly	O	30-3	D-9	QST		1OST-30.4-Stroke & Time Closed (Q) (RPV)
MOV-1RW-105D	2	B	14	Butterfly	O	30-3	F-9	QST		1OST-30.5-Stroke & Time Closed (Q) (RPV)
MOV-1RW-106A	3	B	24	Butterfly	O	30-3	C-1	QST		1OST-30.4-Stroke & Time Open/Closed (Q) (RPV)
RV-1RW-106A	3	C	¾ x 1	Relief		30-1	E-8	SPT		1BVT 1.60.5-(10 YR)
MOV-1RW-106B	3	B	24	Butterfly	O	30-3	F-1	QST		1OST-30.5-Stroke & Time Open/Closed (Q) (RPV)
RV-1RW-106B	3	C	¾ x 1	Relief		30-1	E-7	SPT		1BVT 1.60.5-(10 YR)
1RW-106	3	C	24	Check		30-1	A-9	QS		1OST-30.2(6A)-FS,FD (Q)
								QS	VROJ27	1OST-30.8A-FS,RD or Disassembly and Inspection per 1/2CMP-75-Water Check-1M (R)
1RW-107	3	C	24	Check		30-1	D-9	QS		1OST-30.3(6B)-FS,FD (Q)
								QS	VROJ27	1OST-30.8B-FS,RD or Disassembly and Inspection per 1/2CMP-75-Water Check-1M (R)
1RW-108	3	C	24	Check		30-3	B-4	QS		1OST-30.2(6A)-FS,FD(Q)
1RW-109	3	C	24	Check		30-3	G-6	QS		1OST-30.3(6B)-FS,FD(Q)
MOV-1RW-113A	3	B	4	Gate	S	30-4	F-10	QST		1OST-30.4-Stroke & Time Open (Q) (RPV)
MOV-1RW-113B	3	B	4	Gate	S	30-1	F-10	QST		1OST-30.4-Stroke & Time Open (Q) (RPV)

BVPS-1 IST VALVE OUTLINE

SYSTEM NAME: River Water — **SYSTEM NUMBER:** 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
MOV-1RW-113C	3	B	4	Gate	S	30-1	G-10	QST		1OST-30.5-Stroke & Time Open (Q) (RPV)
MOV-1RW-113D1	3	B	4	Gate	S	30-5	G-8	QST		1OST-30.5-Stroke & Time Open (Q) (RPV)
MOV-1RW-114A	3	B	24	Butterfly	O	30-3	B-1	QST		1OST-30.4-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RW-114B	3	B	24	Butterfly	O	30-3	F-1	QST		1OST-30.5-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RW-116A	3	B	24	Butterfly	S	30-1	B-10	QST		1OST-30.1A-Stroke & Time Open/Closed (Q) (RPV)
MOV-1RW-116B	3	B	24	Butterfly	S	30-1	D-10	QST		1OST-30.1B-Stroke & Time Open/Closed (Q) (RPV)
1RW-133	3	C	3	Check		30-2	C-4	QS		1OST-30.14-FS,RD (Q)
1RW-134	3	C	3	Check		30-2	D-4	QS		1OST-30.14-FS,RD (Q)
1RW-142	3	B	3	Ball	S	30-2	C-4	QS		1OST-30.14-Stroke only Open (Q)
1RW-143	3	B	3	Ball	S	30-2	D-4	QS		1OST-30.14-Stroke only Open (Q)
1RW-150	3	B	3	Ball	S	30-2	C-5	QS		1OST-30.14-Stroke only Open (Q)
1RW-151	3	B	3	Ball	S	30-2	D-5	QS		1OST-30.14-Stroke only Open (Q)
1RW-152	3	B	3	Ball	O	30-2	C-3	QS		1OST-30.14-Stroke only Closed (Q)
1RW-153	3	B	3	Ball	O	30-2	D-3	QS		1OST-30.14-Stroke only Closed (Q)
1RW-158	3	C	3	Check		30-2	E-5	QS		1OST-30.14-FS,FD,RD(Q)
1RW-159	3	C	3	Check		30-2	C-5	QS		1OST-30.14-FS,FD,RD(Q)
1RW-193	2	C	14	Check		30-3	C-7	QS	VROJ28	1OST-30.12A-FS,FD(R)
1RW-194	2	C	14	Check		30-3	E-7	QS	VROJ28	1OST-30.12A-FS,FD(R)
1RW-195	2	C	14	Check		30-3	F-7	QS	VROJ28	1OST-30.12B-FS,FD(R)
1RW-196	2	C	14	Check		30-3	G-7	QS	VROJ28	1OST-30.12B-FS,FD(R)
1RW-206	3	B	6	Butterfly	LS	24-1	F-10	QS		1OST-24.10-Stroke Only Open (Q) (M per Tech. Specs.)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: River Water — **SYSTEM NUMBER:** 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1RW-207	3	B	6	Butterfly	S	24-1	G-9	QS		1OST-24.10-Stroke Only Open (Q) (M per Tech. Specs.)
1RW-208	3	B	6	Butterfly	S	24-1	F-8	QS		1OST-24.10-Stroke Only Open (Q) (M per Tech. Specs.)
1RW-209	3	B	4	Butterfly	S	24-1	G-2	QS		1OST-24.10-Stroke Only Open (Q) (M per Tech. Specs.)
1RW-210	3	B	4	Butterfly	S	24-1	F-5	QS		1OST-24.10-Stroke Only Open (Q) (M per Tech. Specs.)
1RW-486	3	C	3	Check		30-1	A-2	QS		1OST-30.2-FS,FD,RD (Q)
1RW-487	3	C	3	Check		30-1	C-2	QS		1OST-30.3-FS,FD,RD (Q)
1RW-488	3	C	3	Check		30-1	D-2	QS		1OST-30.6A & B-FS,FD,RD (Q)
1RW-615	2	B	1	Ball	O	43-2	D-2	QS		1OST-47.3B-Stroke Only Closed (Q)
1RW-621	2	B	1	Ball	O	43-2	D-7	QS		1OST-47.3B-Stroke Only Closed (Q)
1RW-627	2	B	1	Ball	O	43-2	F-2	QS		1OST-47.3B-Stroke Only Closed (Q)
1RW-633	2	B	1	Ball	O	43-2	F-7	QS		1OST-47.3B-Stroke Only Closed (Q)
1RW-675	3	C	3/4	Check		30-1	A-2	QS		1OST-30.2-FS,FD (Q)
1RW-676	3	C	3/4	Check		30-1	B-2	QS		1OST-30.3-FS,FD (Q)
1RW-677	3	C	3/4	Check		30-1	D-2	QS		1OST-30. 6A & B-FS,FD (Q)
1RW-65	3	B	3/4	Ball	S	30-1	A-2	QS		1OST-30.2-Stroke Only Closed (Q)
1RW-66	3	B	3/4	Ball	S	30-1	B-2	QS		1OST-30.3-Stroke Only Closed (Q)
1RW-67	3	B	3/4	Ball	S	30-1	D-2	QS		1OST-30.6A & B-Stroke Only Closed (Q)
1RW-829	3	B	3/4	Ball	S	30-1	A-2	QS		1OST-30.2-Stroke Only Closed (Q)
1RW-830	3	B	3/4	Ball	S	30-1	B-2	QS		1OST-30.3-Stroke Only Closed (Q)
1RW-831	3	B	3/4	Ball	S	30-1	D-2	QS		1OST-30.6A & B-Stroke Only Closed (Q)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: River Water — **SYSTEM NUMBER:** 30

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1WT-382	3	C	3	Check		30-2	B-1	QS	VROJ30	Sample Disassembly and Inspection per 1CMP-75-Pacific SW Check-1M(R)
1WT-383	3	C	3	Check		30-2	B-2	QS	VROJ30	Sample Disassembly and Inspection per 1/2CMP-75-West Check-1M(R)
1WT-387	3	C	3	Check		30-2	G-2	QS	VROJ30	Sample Disassembly and Inspection per 1/2CMP-M-75-006(R)
1WT-388	3	C	3	Check		30-2	G-2	QS	VROJ30	Sample Disassembly and Inspection per 1/2CMP-75-West Check-1M(R)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Fire Protection — **SYSTEM NUMBER:** 33

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
TV-1FP-105	2	A	4	Gate	S	33-1B	C-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1FP-106	2	A	4	Gate	S	33-1B	C-4	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
TV-1FP-107	2	A	4	Globe	S	33-1B	C-5	QST		1OST-47.3B-Stroke & Time Closed (Q) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1FP-800	2	A/C	3	Check		33-1B	D-4	QS	VCSJ27	1OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1FP-804	2	A/C	3	Check		33-1B	D-4	QS	VCSJ27	1OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1FP-827	2	A/C	4	Check		33-1B	D-5	QS	VCSJ27	1OST-1.10-FS,FD,RD by Mechanical Exerciser (CSD)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Compressed Air (Station Air) **SYSTEM NUMBER:** 34

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1SA-14	2	A/P	2	Gate	LS	34-1	B-10	LTJ		1BVT 1.47.5-Leak Test (SP)
1SA-15	2	A/C/P	2	Check		34-1	B-10	LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: Compressed Air (Instrument Air) — **SYSTEM NUMBER:** 34

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1IA-90	2	A/P	2	Gate	LS	34-2	E-2	LTJ		1BVT 1.47.5-Leak Test (SP) 1OST-45.4-(RPV)
1IA-91	2	A/C/P	1	Check		34-2	E-3	LTJ		1BVT 1.47.5-Leak Test (SP)
RV-1IA-107A	3	C	½ x 1	Relief		34-8	B-8	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-107B	3	C	½ x 1	Relief		34-8	B-9	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-107C	3	C	½ x 1	Relief		34-8	C-8	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-107D	3	C	½ x 1	Relief		34-8	C-9	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-107E	3	C	½ x 1	Relief		34-8	E-8	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-107F	3	C	½ x 1	Relief		34-8	E-9	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-108	3	C	1 x 1½	Relief		11-2	E-9	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-109	3	C	1 x 1½	Relief		11-2	F-9	SPT		1BVT 1.60.5-(10 YR)
RV-1IA-117	3	C	1 x 1½	Relief		11-2	G-9	SPT		1BVT 1.60.5-(10 YR)
1IA-116	3	A/C	3/4	Check		11-2	F-7	QS	VROJ31	1BVT 2.34.4-FS,RD by Leak Test (R)
								LT		1BVT 2.34.4-Leak Test (R)
1IA-117	3	A/C	3/4	Check		11-2	G-7	QS	VROJ31	1BVT 2.34.4-FS,RD by Leak Test (R)
								LT		1BVT 2.34.4-Leak Test (R)
1IA-378	3	A/C	1/2	Check		11-2	G-8	QS	VROJ31	1BVT 2.34.4-FS,RD by Leak Test (R)
								LT		1BVT 2.34.4-Leak Test (2 YR)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1DA-100	3	C	3/4	Check		36-1	A-2	QS		1OST-36.1-FS,RD (Q)
1DA-101	3	C	3/4	Check		36-1	A-4	QS		1OST-36.1-FS,RD (Q)
1DA-130	3	C	3/4	Check		36-1	A-7	QS		1OST-36.2-FS,RD (Q)
1DA-131	3	C	3/4	Check		36-1	A-9	QS		1OST-36.2-FS,RD (Q)
SOV-1EE-101	3	B	3/8	Solenoid	S	36-1	F-2	QST	VRR4	1OST-36.1-Stroke & Time Open (Bi-Monthly)
SOV-1EE-102	3	B	3/8	Solenoid	S	36-1	F-4	QST	VRR4	1OST-36.1-Stroke & Time Open (Bi-Monthly)
SOV-1EE-103	3	B	3/8	Solenoid	S	36-1	F-7	QST	VRR4	1OST-36.2-Stroke & Time Open (Bi-Monthly)
SOV-1EE-104	3	B	3/8	Solenoid	S	36-1	F-9	QST	VRR4	1OST-36.2-Stroke & Time Open (Bi-Monthly)
RV-1EE-201A	3	C	1/2	Relief		36-1	C-1	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-201B	3	C	1/2	Relief		36-1	D-1	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-201C	3	C	1/2	Relief		36-1	D-1	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-202A	3	C	1/2	Relief		36-1	C-5	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-202B	3	C	1/2	Relief		36-1	D-5	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-202C	3	C	1/2	Relief		36-1	D-5	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-203A	3	C	1/2	Relief		36-1	C-6	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-203B	3	C	1/2	Relief		36-1	D-6	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-203C	3	C	1/2	Relief		36-1	D-6	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-204A	3	C	1/2	Relief		36-1	C-10	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-204B	3	C	1/2	Relief		36-1	D-10	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-204C	3	C	1/2	Relief		36-1	D-10	SPT		1BVT 1.60.5-(10 YR)

BVPS-1 IST
VALVE OUTLINE

SYSTEM NAME: 4KV Station Service (Diesel Fuel Oil) — SYSTEM NUMBER: 36

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1FO-7	3	C	3/4	Check		36-2	B-5	QS		1OST-36.1-FS,FD,RD (Q)
1FO-8	3	C	3/4	Check		36-2	A-5	QS		1OST-36.1-FS,FD,RD (Q)
1FO-9	3	C	3/4	Check		36-2	E-5	QS		1OST-36.2-FS,FD,RD (Q)
1FO-10	3	C	3/4	Check		36-2	E-5	QS		1OST-36.2-FS,FD,RD (Q)
1FO-35	3	C	2	Check		36-2	B-3	QS		1OST-36.1-FS,FD (Q)
1FO-36	3	C	2	Check		36-2	E-3	QS		1OST-36.2-FS,FD (Q)
1FO-116	3	B	2	Gate	LS	36-2	B-1	QS		1OST-47.3B-Stroke Only Open (Q)
1FO-117	3	B	2	Gate	LS	36-2	F-1	QS		1OST-47.3B-Stroke Only Open (Q)
RV-1EE-101A	3	C	¾ x 1	Relief		36-2	B-4	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-101B	3	C	¾ x 1	Relief		36-2	A-4	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-101C	3	C	¾ x 1	Relief		36-2	E-4	SPT		1BVT 1.60.5-(10 YR)
RV-1EE-101D	3	C	¾ x 1	Relief		36-2	E-4	SPT		1BVT 1.60.5-(10 YR)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
RV-1VS-101A	3	C	½ x 1	Relief		44A-1	F-2	SPT		1BVT 1.60.5-(10 YR)
TV-1VS-101A	3	B	1	Gate	S	44A-1	G-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
RV-1VS-101B	3	C	½ x 1	Relief		44A-1	F-2	SPT		1BVT 1.60.5-(10 YR)
TV-1VS-101B	3	B	1	Gate	S	44A-1	F-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
RV-1VS-101C	3	C	½ x 1	Relief		44A-1	E-2	SPT		1BVT 1.60.5-(10 YR)
TV-1VS-101C	3	B	1	Gate	S	44A-1	E-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
RV-1VS-101D	3	C	½ x 1	Relief		44A-1	D-2	SPT		1BVT 1.60.5-(10 YR)
TV-1VS-101D	3	B	1	Gate	S	44A-1	D-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
RV-1VS-101E	3	C	½ x 1	Relief		44A-1	C-2	SPT		1BVT 1.60.5-(10 YR)
TV-1VS-101E	3	B	1	Gate	S	44A-1	C-3	QST		1/2 OST-44A.11-Stroke & Time Open (Q)
1VS-D-40-1A	3	B	48	Butterfly	O	44A-4	C-2	QST		1/2 OST-44A.12-Stroke & Time Closed (Q) (RPV)
1VS-D-40-1B	3	B	48	Butterfly	O	44A-4	C-3	QST		1/2 OST-44A.12-Stroke & Time Closed (Q) (RPV)
1VS-D-40-1C	3	B	48	Butterfly	O	44A-4	B-5	QST		1/2 OST-44A.12-Stroke & Time Closed (Q) (RPV)
1VS-D-40-1D	3	B	48	Butterfly	O	44A-4	B-5	QST		1/2 OST-44A.12-Stroke & Time Closed (Q) (RPV)
1VS-544	3	A/C	1/4	Check		44A-2	F-7	QS		1/2OST-44A.12-FS,FD (Q)
								QS		1/2OST-44A.16-FS,RD by Leak Test (Q)
								LT		1/2OST-44A.16 Leak Test (2 YR)
1VS-545	3	A/C	1/4	Check		44A-2	G-7	QS		1/2OST-44A.12-FS,FD (Q)
								QS		1/2OST-44A.16-FS,RD by Leak Test (Q)
								LT		1/2OST-44A.16 Leak Test (2 YR)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1VS-546	3	A/C	1/4	Check		44A-2	E-7	QS		1/2OST 44A.12-FS,FD (Q)
								QS		1/2OST-44A.16 FS,RD by Leak Test (Q)
								LT		1/2OST-44A.16 Leak Test (2 YR)
1VS-547	3	A/C	1/4	Check		44A-2	F-7	QS		1/2OST-44A.12-FS,FD (Q)
								QS		1/2OST-44A.16-FS,RD by Leak Test (Q)
								LT		1/2OST-44A.16 Leak Test (2 YR)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1VS-D-5-3A	2	A	42	Butterfly	LS	16-1	D-5	QST	VCSJ28	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-D-5-3B	2	A	42	Butterfly	LS	16-1	D-5	QST	VCSJ28	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-D-5-5A	2	A	42	Butterfly	LS	16-1	E-5	QST	VCSJ28	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-D-5-5B	2	A	42	Butterfly	LS	16-1	E-5	QST	VCSJ28	1OST-1.10-Stroke & Time Closed (CSD) (RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-D-5-6	2	A/P	8	Ball	LS	16-1	D-5	LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1HY-101	2	A	2	Ball	LS	46-1	A-3	QS		1OST-47.3B-Stroke Only Open (Q) 1OST-45.4-(RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1HY-102	2	A	2	Ball	LS	46-1	E-3	QS		1OST-47.3B-Stroke Only Open (Q) 1OST-45.4-(RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
MOV-1HY-102A	2	B	2	Ball	S	46-1	B-5	QST		1OST-47.3B-Stroke & Time Open (Q) (RPV)
SOV-1HY-102A1	2	A	3/8	Globe	S	46-2	A-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-102A2	2	A	3/8	Globe	S	46-2	B-4	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
MOV-1HY-102B	2	B	2	Ball	S	46-1	E-5	QST		1OST-47.3B-Stroke & Time Open (Q) (RPV)
SOV-1HY-102B1	2	A	3/8	Globe	S	46-2	E-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-102B2	2	A	3/8	Globe	S	46-2	E-4	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
1HY-103	2	A	2	Ball	LS	46-1	A-3	QS		1OST-47.3B-Stroke Only Open (Q) 1OST-45.4-(RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
SOV-1HY-103A1	2	A	3/8	Globe	S	46-2	B-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
SOV-1HY-103A2	2	A	3/8	Globe	S	46-2	B-4	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-103B1	2	A	3/8	Globe	S	46-2	F-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-103B2	2	A	3/8	Globe	S	46-2	F-4	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
1HY-104	2	A	2	Ball	LS	46-1	E-3	QS		1OST-47.3B-Stroke Only Open (Q) 1OST-45.4-(RPV)
								LTJ		1BVT 1.47.5-Leak Test (SP)
SOV-1HY-104A1	2	A	3/8	Globe	S	46-2	C-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-104A2	2	A	3/8	Globe	S	46-2	C-4	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-104B1	2	A	3/8	Globe	S	46-2	G-3	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
SOV-1HY-104B2	2	A	3/8	Globe	S	46-2	F-4	QST		1OST-47.3B-Stroke & Time Open/Closed (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP) (RPV)
1HY-110	2	A	2	Ball	LS	46-1	C-2	QS		1OST-47.3B-Stroke Only Open (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1HY-111	2	A	2	Ball	LS	46-1	G-2	QS		1OST-47.3B-Stroke Only Open (Q)
								LTJ		1BVT 1.47.5 Leak Test (SP)

BVPS-1 IST
VALVE 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	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1HY-196	2	A	2	Ball	LS	46-1	C-3	QS		1OST-47.3B-Stroke Only Open (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP)
1HY-197	2	A	2	Ball	LS	46-1	G-3	QS		1OST-47.3B-Stroke Only Open (Q)
								LTJ		1BVT 1.47.5-Leak Test (SP)

BVPS-1 IST VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (In.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
1VS-167	2	A/P	1½	Ball	S	47-1	B-9	LTJ		1BVT 1.47.5 Leak Test (SP)
1VS-168	2	A/P	1½	Ball	S	47-1	B-9	LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-169	2	A/P	1½	Ball	S	47-1	B-7	LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-170	2	A/P	1½	Ball	S	47-1	B-7	LTJ		1BVT 1.47.5-Leak Test (SP)
1VS-183	2	A/P	2	Ball	S	47-1	F-7	LTJ		1BVT 1.47.10-Type B Leak Test (SP)
1VS-184	2	A/P	2	Ball	S	47-1	F-5	LTJ		1BVT 1.47.10-Type B Leak Test (SP)

SECTION IX: VALVE COLD SHUTDOWN JUSTIFICATIONS

VALVE COLD SHUTDOWN JUSTIFICATION 1

Valve Mark No(s): SOV-1RC-102A
SOV-1RC-102B
SOV-1RC-103A
SOV-1RC-103B
SOV-1RC-104
SOV-1RC-105

Category: B **Class:** 1

System: 6 - Reactor Coolant System

Function: To vent non-condensable gases from the reactor vessel head to the containment or the PRT.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are closed during normal operation and are designed to vent the RCS in an emergency to assure that core cooling during natural circulation will not be inhibited by a buildup of non-condensable gases. Periodic stroking of these valves at power could degrade this system by repeatedly challenging the downstream valves due to a phenomenon known as "burping." This phenomenon has been previously described in ASME report "Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves - An Investigation of the Phenomenon." The phenomenon involves a rapid pressure surge buildup at the valve inlet caused by opening the upstream valve in a series double isolation arrangement or closing a valve in a parallel redundant flow path isolation arrangement. The pressure surge is sufficient enough to lift the valve plug until a corresponding pressure increase in a control chamber above the pilot and disc can create enough downward differential pressure to close the valve. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed open and closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test." This frequency is consistent with T.S. 3.4.12 which was written to comply with the requirements of NUREG 0737, "Clarification of TMI Action Plan Requirements."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 2

Valve Mark No(s): PCV-1RC-455C
PCV-1RC-455D
PCV-1RC-456

Category: B **Class:** 1

System: 6 - Reactor Coolant System

Function: The Power Operated Relief Valves (PORVs) limit system pressure for a large power mismatch.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: The PORVs are not needed for overpressure protection during power operation since the pressurizer code safety valves fulfill this function. In the event that a PORV was to fail or stick open while being cycled at power, the potential loss of RCS inventory through this relief path could lead to a forced plant shutdown. Therefore, stroking these valves at power is not considered practical. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns." This is also in accordance with NUREG-1482, Section 4.4.1, "Pressurizer Power Operated Relief Valve Inservice Testing."

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

Alternate Test: Full-stroke exercised and timed open each cold shutdown, not to exceed once per 92 days, per 1OST-6.8, "Placing Overpressure Protection System in Service," for the two valves used for overpressure protection. The third valve will be full-stroke exercised and timed open at the normal cold shutdown frequency per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).
NUREG-1482, Section 4.4.1.
10CFR50, Appendix G.

VALVE COLD SHUTDOWN JUSTIFICATION 3

Valve Mark No(s): 1CH-75
1CH-76

Category: C Class: 3

System: 7 - Chemical and Volume Control System

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

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: These check valves can only be full-stroke exercised by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1, through either the emergency boration flow path and verifying it using the installed flow instrumentation in this flow path or through the recirculation line without installed instrumentation. Testing through the emergency boration flow path would cause an undesired reactivity transient through the direct injection of 7,000 ppm borated water to the suction of the charging pumps. The resultant over-boration of the RCS would cause a temperature transient as Tavg dropped to compensate and could cause a plant shutdown. The recirc line is not instrumented, and a temporary flow instrument must be installed. In order to install the flow instrument, the insulation and heat trace must be gently moved away from where the transducers and tracks must be installed. Moving the heat trace elements places stresses on them which could cause them to break. Therefore, it is not practical to use the recirc line for either quarterly or cold shutdown full-stroke testing. The guidance in NUREG-1482, Section 3.1.1, "Deferring Valve Testing to Each Cold Shutdown or Refueling Outage," states: "Check valves that can be stroked quarterly, but must be monitored by a nonintrusive technique to verify full stroke, may be full-stroke tested during cold shutdowns or refueling outages if another method of verifying full-stroke exists at these plant conditions. However, the quarterly partial-stroke testing would continue to be required. Also, the NRC would not require a licensee to invest in nonintrusive equipment for the purpose of testing check valves quarterly in lieu of testing during cold shutdowns or refueling outages, though the use of nonintrusive techniques is recommended where practical." Per OM-10, Paragraph 4.3.2.2(b), "If full-stroke exercising during plant operation is not practicable during plant operation, it may be limited to part-stroke during plant operation and full-stroke during cold shutdowns."

VALVE CSJ 3

Alternate Test: Part-stroke exercised open quarterly when the boric acid transfer pumps are tested through their recirculation flow paths per 1OST-7.1 & 7.2, "Boric Acid Transfer Pump Operational Test." Full-stroke exercised open at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.3.2.1, and 4.3.2.2(b).
GL 89-04, Position 1.
NUREG-1482, Section 3.1.1.

VALVE COLD SHUTDOWN JUSTIFICATION 4

Valve Mark No(s):	1CH-84 1CH-136
Category: C	**Class:** 3
System:	7 - Chemical and Volume Control System
Function:	To open to provide an Alternate Emergency Boration Flow Path from the boric acid tanks to the suction of the Charging Pumps.
Test Requirement:	Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.
Basis for CSJ:	These valves must open to fulfill their safety function to provide an alternate emergency boration flow path from the boric acid tanks to the reactor coolant system. They can only be full-stroke exercised by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1, through either the emergency boration flow path and verifying it using the installed flow instrumentation in this flow path or through the recirculation line without installed instrumentation. Testing in this manner at power, either full or part-stroke, would cause an undesired reactivity transient through the direct injection of 7,000 ppm borated water to the suction of the charging pumps. The resultant over-boration of the RCS would cause a temperature transient as Tavg dropped to compensate and could lead to a forced plant shutdown. Therefore, full and part-stroke exercising of these valves is impractical during normal plant operations. Per OM-10, Paragraph 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."
Alternate Test:	Full-stroke exercised open during cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."
References:	OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(c). GL 89-04, Position 1.

VALVE COLD SHUTDOWN JUSTIFICATION 5

Valve Mark No(s): 1CH-141

Category: C **Class:** 2

System: 7 - Chemical and Volume Control System

Function: To open to allow emergency boration flow to the suction of the Charging Pumps.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: This valve is closed during normal operation and can only be exercised by initiating flow through the emergency boration path. It can only be full-stroke exercised by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1, through either the emergency boration flow path and verifying it using the installed flow instrumentation in this flow path or through the recirculation line without installed instrumentation. Testing in this manner at power, either full or part-stroke, would cause an undesired reactivity transient through the direct injection of 7,000 ppm borated water to the suction of the charging pumps. The resultant over-boration of the RCS would cause a temperature transient as Tavg dropped to compensate and could cause a plant shutdown. Therefore, full- and part-stroke exercising of this valve is impractical during normal operations. Per OM-10, Paragraph 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised open during cold shutdown per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(b).
GL 89-04, Position 1.

VALVE COLD SHUTDOWN JUSTIFICATION 6

Valve Mark No(s): MOV-1CH-142

Category: A **Class:** 2

System: 7 - Chemical and Volume Control System

Function: Residual Heat Removal Letdown to the Chemical and Volume Control System containment isolation valve.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

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

Therefore, because this valve cannot be opened during power operations, it will be stroked and timed during cold shutdowns. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed closed during cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 7

Valve Mark No(s):

DELETED

Category:

System:

Function:

Test Requirement:

Basis for ROJ:

Alternate Test:

References:

VALVE COLD SHUTDOWN JUSTIFICATION 8

Valve Mark No(s): 1RH-3
1RH-4

Category: C **Class:** 2

System: 10 - Residual Heat Removal System

Function: Residual Heat Removal Pumps discharge check valves

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: These valves can only be full-stroke exercised by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1, when the Residual Heat Removal (RHR) Pumps are in operation. The RHR pumps are run only during cold shutdowns. The pumps and valves in the RHR system are located inside the subatmospheric containment and are inaccessible during normal operation. Therefore, it is not practical to part- or full-stroke exercise these check valves quarterly. Per OM-10, Paragraph 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised open and closed during cold shutdowns per 1OST-10.1, "Residual Heat Removal Pump Performance Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(c).
GL 89-04, Position 1.

VALVE COLD SHUTDOWN JUSTIFICATION 9

Valve Mark No(s): MOV-1RH-700
MOV-1RH-701
MOV-1RH-720A
MOV-1RH-720B

Category: A **Class:** 1

System: 10 - Residual Heat Removal System

Function: The Residual Heat Removal System Inlet and Outlet Isolation Valves open to place the RHR System in service to cooldown the plant and must close and be leak tight during normal plant operation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are normally closed and de-energized during power operation. They cannot be cycled at power without subjecting the RHR system (a low pressure system) to RCS pressure, and cannot be opened due to pressure and temperature interlocks. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

In addition, the two series isolation valves on the pump suction, [MOV-1RH-700, 701] cannot be stroked without shutting down both RHR pumps. A failure of one of these valves to re-open after testing would render the entire RHR system inoperable. These valves can only be stroked if both RHR pumps are shutdown. Therefore, these valves will only be stroked and timed when placing the RHR system in service or removing it from service during cold shutdowns, not more often than once per 92 days.

The RHR system is configured such that the discharge isolation valves, [MOV-1RH-720A, B], can be stroked without the loss of system function during cold shutdown. Therefore, they will be stroked and timed when placing the RHR system in service, removing it from service, or quarterly while in cold shutdown.

VALVE COLD SHUTDOWN JUSTIFICATION 9

Alternate Test: [MOV-1RH-700, 701] - Full stroke exercised and timed open and closed when placing the RHR System in service or removing it from service during cold shutdowns or when defueled, not more often than once per 92 days, per 1OST-10.4, "Residual Heat Removal System Valve Exercise".

[MOV-1RH-720A, 720B] - Full stroke exercised and timed open and closed when placing the RHR System in service or removing it from service, or quarterly during cold shutdowns per 1OST-10.4, "Residual Heat Removal System Valve Exercise".

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 10

Valve Mark No(s): MOV-1SI-860A
MOV-1SI-860B

Category: A **Class:** 2

System: 11 - Safety Injection System

Function: The Low Head Safety Injection Pump containment sump suction valves open on low RWST level to align the suction of the LHSI pumps to the containment sump. They are also containment isolation valves.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are closed during normal operation. They are containment isolation valves which are exposed to containment atmosphere. During an accident, this flow path would be in service and filled with water; not in contact with the atmosphere. Failure of these valves in the open position during power operation would compromise containment integrity. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed open and closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 11

Valve Mark No(s): MOV-1SI-865A
MOV-1SI-865B
MOV-1SI-865C

Category: B Class: 2

System: 11 - Safety Injection System

Function: The Safety Injection Accumulator Discharge Isolation Valves remain open to allow the SI Accumulators to discharge to the RCS. They also close during a small break LOCA to prevent nitrogen from being injected into the RCS.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: During power operation, these valves are de-energized in the open position. Their function is to remain open to allow the SI Accumulators to discharge to the RCS in the event of a LOCA. During a "small break LOCA," however, these valves also have a function to close to prevent nitrogen from being injected into the RCS. If these valves were stroked at power and one of them failed to re-open, the plant would have to be in Hot Standby within 1 hour, per T.S. 3.5.1. The guidance in NUREG-1482, Section 3.1.1, states in part that "...examples of valves to be specifically excluded from exercising tests during plant operations [include] 1) All valves whose failure in a non-conservative position during the cycling test would cause a loss of system function..."

Therefore, these valves will not be stroked and timed during power operation. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed closed when the accumulators are isolated on the way to Mode 5, per shutdown procedure 1OM-51.4.C and recorded in 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).
NUREG-1482, Section 3.1.1.

VALVE COLD SHUTDOWN JUSTIFICATION 12

Valve Mark No(s): MOV-1SI-890C

Category: A **Class:** 2

System: 11 - Safety Injection System

Function: To remain open to allow LHSI flow to the RCS cold legs.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for CSJ: This valve is open during normal operation and is required to remain open to fulfill its safety function. This valve is in the single flow path for the LHSI pumps to the RCS cold legs. Failure of this valve to reopen after testing would render LHSI cold leg injection from both trains inoperable. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed open and closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 13

Valve Mark No(s):

DELETED

Category:

System:

Function:

Test Requirement:

Basis for ROJ:

Alternate Test:

References:

VALVE COLD SHUTDOWN JUSTIFICATION 14

Valve Mark No(s): TV-1CC-110E2
TV-1CC-110E3
TV-1CC-110D
TV-1CC-110F2

Category: A **Class:** 2

System: 15 - Reactor Plant Component Cooling Water System

Function: These are the containment isolation valves for the cooling water supply and return from the containment air recirculation cooling coils and instrument air compressors. They close for containment isolation function.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are normally open during power operation and close upon receipt of a CIB signal for containment isolation. Full or part-stroke testing of these valves and isolating cooling water, would result in the loss of containment cooling and loss of the containment instrument air and would require a plant shutdown. Therefore, full or part-stroke testing of these valves during normal operation is impractical. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 15

Valve Mark No(s):	TV-1CC-111A1 TV-1CC-111A2 TV-1CC-111D1 TV-1CC-111D2
Category: A	**Class:** 2
System:	15 - Reactor Plant Component Cooling Water System
Function:	The containment isolation valves for the CRDM shroud cooling water supply are open to allow water to the CRDM shroud coolers. They close for containment isolation function.
Test Requirement:	Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.
Basis for CSJ:	These valves are normally open during power operation and close upon receipt of a CIB signal for containment isolation. Full or part-stroke testing of these valves and isolating cooling water while the control or shutdown rods are energized, or the plant is above 250 F, would result in component damage. Therefore, full or part-stroke testing of these valves during normal operation is impractical. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."
Alternate Test:	Full-stroke exercised and timed closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."
References:	OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 16

Valve Mark No(s): 1CCR-247
1CCR-248
1CCR-251
1CCR-252

Category: A **Class:** 2

System: 15 - Reactor Plant Component Cooling Water System

Function: The outside containment manual isolation valves are opened to supply component cooling water to the RHR heat exchangers and the RHR pump seal water coolers. They are closed for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are normally locked closed during power operation and remain closed during an accident. The valves are only required to open to place the RHR system in service. They cannot be stroked quarterly without the possibility of violating containment integrity per Tech Spec 3/4.6.1.1. Therefore, per OM-10, 4.3.2.2.(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdown." In addition, during normal operation, the RHR system is not required to be in service and these valves are not required to be opened; they only remain closed to fulfill their containment isolation function. Per OM-10, Paragraph 4.2.1.7, "Valves in Systems Out of Service," "For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months prior to placing the system in an operable status, the valves shall be exercised and the schedule followed in accordance with the requirements of this part."

During cold shutdowns, these valves are opened to place the RHR System in service. Once the RHR System is in service, the safety function of these valves is to remain open to supply cooling water to the RHR heat exchangers and to the RHR pump seals. Per NUREG-1449, "Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States," at PWRs, the RHR System is essential to maintaining shutdown safety. In order to maintain the "Defense in Depth" strategy for shutdown safety, these valves cannot be exercised quarterly during cold shutdowns. In addition, if the RHR system is inservice as the operable RCS loops per Tech Spec 3/4.4.1.3, these valves cannot be tested without entering the action statement which requires immediate restoration of the RCS loop. Failure of these valves during testing at that time would cause loss of cooling flow for one of the required RCS Loops.

Valve CSJ 16

Once the RHR system is not required to be inservice as the operable RCS loops. Tech Specs would permit the exercising of these valves. However, these valves can only be exercised if their associated RHR pump is not operating. Therefore, while the plant is in mode 5 or 6, the RHR pumps would have to be swapped to exercise all of the valves. However, as a result of excessive seal leakage on a RHR Pump at Unit 2 during 2R6, the Maintenance Rule (a)(1) Disposition Review recommended that a review of operating practices/procedures be performed to determine a means to reduce the frequency of RHR Pump cycling. Therefore, in order to minimize the number of pump cycles, these valves will not be stroked if either of the RHR pumps is operating. They will be full-stroke exercised prior to placing the RHR system in service and when removing the system from service or when the plant is defueled, not more often than once per 92 days.

Alternate Test:

Full-stroke exercised open prior to placing the RHR system in service per Operating Manual Chapter 10.4.A, "Startup of the RHR System," and when removing the RHR System from service per 1OM-10.4.C, "Residual Heat Removal System Shutdown (Plant Startup)" or when defueled not more often than once per 92 days. 1OST-10.4 "Residual Heat Removal System Valve Exercise" may also be used to exercise the valves.

References:

OM-10, Paragraphs 4.2.1.1, 4.2.1.7, and 4.3.2.2(c).
Tech Spec 3/4.6.1.1, 3/4.4.1.3.
NUREG-1449

VALVE COLD SHUTDOWN JUSTIFICATION 17

Valve Mark No(s): NRV-1MS-101A
NRV-1MS-101B
NRV-1MS-101C

Category: B/C Class: 2

System: 21 - Main Steam System

Function: The Steam Generator non-return valves prevent reverse flow if its associated S/G is faulted or a line break occurs to prevent blowing down the intact S/Gs.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months and per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are standard swing check valves with motor operators used to assure positive seating of the disc. The motor operator is not capable of closing the non-return valve against normal steam flow. Full or part-stroke testing of these valves at power is not possible because these valves must be open to allow steam to flow from the steam generators to the turbine. Per both OM-10, Paragraphs 4.3.2.2(c) and 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: The valves are exercised in the closed direction on a cold shutdown frequency. The function of the valves is to close if their associated S/Gs are faulted or if a line break occurs between the S/Gs and the main steam trip valves. The motor operators are an operating convenience only and are used as a maintenance isolation boundary point for the S/Gs. To meet the requirements of both OM-10, Paragraphs 4.3.2.4 and 4.2.1.4, the time required to drive the valve stem onto the back of the valve disk using the control room lights is measured. This is sufficient because the maximum design stem force that can be exerted by this motor operator, is only 44,900 lbf. Calculations show that the maximum force against the disc during a MSLB accident would rapidly exceed this value, reaching a value of 500,000 lbf. Also, while the dP across the check valve in the faulted line would be expected to exceed 1000 psid, a very small dP would only be required for accident forces to exceed the maximum stem force that can be exerted by the motor operator. Therefore, the testing performed without a motor trip does prove valve closure on reversal of flow. The valves are full-stroke exercised and timed closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

VALVE CSJ 17

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(c), 4.3.2.4, 4.2.1.1, 4.2.1.2(c) and 4.2.1.4.

VALVE COLD SHUTDOWN JUSTIFICATION 18

Valve Mark No(s): PCV-1MS-101A
PCV-1MS-101B
PCV-1MS-101C

Category: B **Class:** 2

System: 21 - Main Steam System

Function: The Atmospheric Steam Dump pressure control valves open to cool down the Reactor plant when the main condenser is unavailable.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are normally closed. If they are full or part-stroked open at power, steam would be released to the atmosphere, causing a reactor power transient. To prevent this, manual isolation valves would first have to be closed for the test. The manual valves could be damaged when they are reopened against a 1000 psid ΔP. Also, they are located in a potentially hazardous area. Therefore, full or part-stroke testing of these valves during normal operation is impractical. Per OM-10, Paragraph 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed open and closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 19

Valve Mark No(s): TV-1MS-101A
TV-1MS-101B
TV-1MS-101C

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

System: 21 - Main Steam System

Function: Main steam line isolation valves remain open to permit steam flow for normal operations and close in the event of a pipe rupture to prevent blowing down the S/Gs.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months and per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: These valves are normally open at power but must close in the event of a high energy line break. Stroking these valves fully closed during full power operation would cause a reactor trip with the possibility of a safety injection. A review of plant history also indicates that several forced plant shutdowns have resulted from part-stroke testing these valves at power due to their inadvertent closure for reasons not related to valve operability. For these reasons, full and part-stroke testing is not considered practical and will not be performed. This change is consistent with Technical Specification Amendment No. 162, which deleted the TS requirement to part-stroke the valve. Per both OM-10, Paragraphs 4.2.1.2(c) and 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed closed at cold shutdowns per 1OST-21.4, 5 and 6, "Main Steam Trip Valve Full Closure Test."

References: OM-10, Paragraphs 4.2.1.1, 4.2.1.2(c), 4.3.2.1 and 4.3.2.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 20

Valve Mark No(s): MOV-1MS-105

Category: B **Class:** 3

System: 21 - Main Steam System

Function: The Auxiliary Feedwater Turbine Steam Isolation Valve is normally open and it remains open to allow steam to the TDAFW pump. This valve must also close in response to the uncontrolled depressurization of the steam generators accident.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: This valve is normally open during power operation and remains open to allow steam to be supplied to the Turbine Driven Auxiliary Feedwater pump. This valve must also close in response to several postulated accidents by the EOPs. Since, this is a single isolation valve without redundancy, if it failed to re-open after a stroke test, the station would lose all cooling capability in the event of a station blackout. NUREG-1482, Section 3.1.1 "Deferring Valve Testing to Each Cold Shutdown or Refueling Outage" lists as an example of valves to be specifically excluded from exercising (cycling) tests during plant operations: "(1) All valves whose failure in a non-conservative position during the cycling test would cause a loss of system function." Per OM-10, paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke excercising during cold shutdowns."

Alternate Test: Full-stroke excercise and time open and closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1, and 4.2.1.2(c).
NUREG-1482, Section 3.1.1.

VALVE COLD SHUTDOWN JUSTIFICATION 21

Valve Mark No(s):				
	1FW-33	1FW-42	1FW-622	1FW-625
	1FW-34	1FW-43	1FW-623	1FW-626
	1FW-35	1FW-44	1FW-624	1FW-627

Category: C **Class:** 3

System: 24 - Auxiliary Feedwater System

Function: The auxiliary feedwater pumps discharge and loop check valves open to allow auxiliary feed flow to the steam generators. The check valves also close to fulfill a safety function: [1FW-33, 34, 35] close to prevent pump discharge from being short circuited through the non-running pump, [1FW-42, 43, 44] close to prevent main feedwater from flowing back into the auxiliary feedwater piping, [1FW-622, 623, 624, 625, 626, 627] close to separate the A & B auxiliary feedwater headers.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: The safety position for these check valves is open for auxiliary feed system injection to the Steam Generators and closed to provide header separation. These valves can only be full-stroke exercised open by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1, by aligning auxiliary feedwater flow to the S/Gs. This flow path would cause thermal shock at the auxiliary and main feedwater interface caused by the sudden injection of cold water into the S/Gs. Feeding the S/Gs with cold water also would result in large level transients in the S/Gs and cause a reactor trip. In addition, the reverse direction test for valves [1FW-33, 34, 35] and [1FW-622 thru 627] can only be performed with auxiliary feed flow to the S/Gs. Therefore, it is not practical to part or full-stroke exercise these check valves quarterly. Per OM-10, Paragraph 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: All of the above check valves are full-stroke exercised in the open direction at cold shutdowns per 1OST-24.8 "Motor Driven Auxiliary Feed Pumps Check Valves and Flow Test" and 1OST-24.9, "Turbine-Driven AFW Pump [1FW-P-2] Operability Test." Check valves [1FW-33, 34, 35] and [1FW-622 thru 627] are also full-stroke exercised in the closed direction by these OSTs. Reverse direction testing of check valves [1FW-42, 43, 44] is performed by monitoring the upstream temperatures at least quarterly in operator rounds and by leak test per 1OST-24.11, "Auxiliary Feedwater Check Valve Exercise Verification" at refueling outages.

VALVE CSJ 21

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(c).
GL 89-04, Position 1.

VALVE COLD SHUTDOWN JUSTIFICATION 22

Valve Mark No(s): 1FW-50
1FW-51
1FW-52
1FW-68
1FW-69
1FW-70

Category: C **Class:** 3

System: 24 - Auxiliary Feedwater System

Function: The AFW Pump Lube Oil Cooler Line Check Valves open to allow cooling flow to the lube oil coolers for the AFW pumps.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

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

The guidance in NUREG-1482, Section 3.1.1, "Deferring Valve Testing to Each Cold Shutdown or Refueling Outage," states: "Check valves that can be stroked quarterly, but must be monitored by a nonintrusive technique to verify full stroke, may be full-stroke tested during cold shutdowns or refueling outages if another method of verifying full-stroke exists at these plant conditions. However, the quarterly partial-stroke testing would continue to be required. Also, the NRC would not require a licensee to invest in nonintrusive equipment for the purpose of testing check valves quarterly in lieu of testing during cold shutdowns or refueling outages, though the use of nonintrusive techniques is recommended where practical."

VALVE CSJ 22

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

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

Therefore, because of the increased cost without a compensating increase in reliability, and based on the guidance in NUREG-1482 on the testing of check valves using nonintrusive techniques, the use of ultrasonic flow meters will not be used for quarterly testing of these check valves. Per OM-10, Paragraph 4.3.2.2(b), "If full-stroke exercising during plant operation is not practicable, it may be limited to part-stroke during plant operation and full-stroke during cold shutdowns."

Alternate Test:

Part-stroke exercised open quarterly by measuring lube oil temperature and by monitoring the total dynamic head developed by the pump during the AFW pump tests, 1OST-24.2, 3, 4, "The Motor-Driven and Steam Turbine-Driven Auxiliary Feed Pump Tests."

Full-stroke exercised open during cold shutdowns by installing a temporary ultrasonic flow meter on the lube oil cooling line in 1OST-24.8.9, "The Motor-Driven and Turbine-Driven AFW Pump Check Valves and Flow Tests."

References:

OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(b).
NUREG-1482, Section 3.1.1.
GL 89-04, Position 1.

VALVE COLD SHUTDOWN JUSTIFICATION 23

Valve Mark No(s):	MOV-1FW-150A MOV-1FW-150B
Category: B	Class: 3
System:	24 - Feedwater System
Function:	To open for main feedwater pump discharge and to close for backup feedwater isolation.
Test Requirement:	Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.
Basis for CSJ:	During plant operation, these valves are open to supply feedwater flow to the steam generators. Their safety function is to close for backup feedwater isolation. Part-stroke or full-stroke and time testing cannot be performed at power since this would isolate feedwater resulting in a plant trip and shutdown. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."
Alternate Test:	Full-stroke exercised and timed closed at cold shutdown per 1OST-1.10, "Cold Shutdown Valve Exercise Test."
References:	OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 24

Valve Mark No(s): MOV-1FW-156A
MOV-1FW-156B
MOV-1FW-156C

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

System: 24 - Main Feedwater System

Function: The A, B and C loop feedwater containment isolation check valves close to prevent auxiliary feedwater from being diverted from the S/Gs. They also close on a Feedwater Isolation signal.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months and per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are standard swing check valves with motor operators used to assure positive seating of the disc. The motor operator is not capable of closing the valves against normal feed flow. Full or part-stroke testing of these valves at power is not possible because these valves must be open to allow feed flow to the steam generators. Per both OM-10, Paragraphs 4.3.2.2(c) and 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: The valves are full-stroke exercised in the closed direction by stroking the motor operator on a cold shutdown frequency. To meet the requirements of OM-10, Paragraph 4.3.2.4 and 4.2.1.4, the time required to drive the valve stem onto the back of the valve disk using the control room lights is measured. The stroke test measures the valve stem travel time and length of travel. The stem presses against the valve disk when closed to provide assurance that the valve is closed. The valves are full-stroke exercised and timed closed at cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test." In addition, the closure function of the valves is verified by a leak test at refueling outages per 1OST-24.14A, B and C, "Main Feed Containment Isolation Valve Exercise Verification."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(c), 4.3.2.4, 4.2.1.1, 4.2.1.2(c) and 4.2.1.4.

VALVE COLD SHUTDOWN JUSTIFICATION 25

Valve Mark No(s):	FCV-1FW-478 FCV-1FW-488 FCV-1FW-498
Category: B	**Class:** 2
System:	24 - Main Feedwater System
Function:	The Steam Generator main feedwater regulating valves close for Feedwater Isolation.
Test Requirement:	Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.
Basis for CSJ:	Valves are normally open during power operation. Their safety position is closed for feedwater isolation. Part-stroke and full-stroke and time testing cannot be performed at power since this would isolate feedwater flow to the steam generators resulting in a plant trip and shutdown. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."
Alternate Test:	Full-stroke exercised and timed closed at cold shutdown per 1OST-1.10, "Cold Shutdown Valve Exercise Test."
References:	OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 26

Valve Mark No(s): TV-1SV-100A
1AS-278

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

System: 27 - Auxiliary Steam System

Function: The containment isolation air ejector air discharge trip valve and check valve open to direct steam to containment if high radiation levels are present in the main condenser. They also close for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active Category A valves shall be tested nominally every 3 months and Paragraph 4.3.2.1, Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: These valves are required to open to provide a flow path for radioactive gases from the Condenser Air Ejector effluent line into containment in the event of a S/G tube leak with subsequent contamination of the steam systems. The method used to verify that the check valve has been partial-stroked open is to open the trip valve and then watch for an increase in containment pressure. The reactor containment building at BVPS is maintained sub-atmospheric during power operations. If the containment pressure increases to the T.S. 3.6.1.4 limit, the plant must be shut down. If the trip valve could not be closed after stroking, containment pressure would continue to rise and a plant shutdown could result. Per OM-10, Paragraphs 4.2.1.2(c) and 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed opened during cold shutdowns per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1, 4.2.1.2(c), 4.3.2.1 and 4.3.2.2(c).
Tech Spec 3.6.1.4.

VALVE COLD SHUTDOWN JUSTIFICATION 27

Valve Mark No(s): 1FP-800
1FP-804
1FP-827

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

System: 33 - Fire Protection System

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

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: These valves are normally closed during power operation and are only required to open in the event fire protection water is needed. Full and part-stroke exercising is not possible during power operation due to the inaccessibility of the valves. Per OM-10, Paragraph 4.3.2.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised open and closed by mechanical exerciser utilizing their weighted swing arms at cold shutdown per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 28

Valve Mark No(s): 1VS-D-5-3A
1VS-D-5-3B
1VS-D-5-5A
1VS-D-5-5B

Category: A Class: 2

System: 44C - Area Ventilation Systems - Containment

Function: Containment isolation valves for refueling purge and exhaust lines open to purge containment. They also close for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for CSJ: These dampers are shut during power operation and are required to remain shut to fulfill their safety function. These dampers cannot be full or part-stroke exercised during power operation without the possibility of violating containment integrity per Tech. Spec. 3/4.6.1.1. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed closed at cold shutdown per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1, and 4.2.1.2(c).
Tech. Spec. 3/4.6.1.1.

VALVE COLD SHUTDOWN JUSTIFICATION 29

Valve Mark No(s): 1RW-57
1RW-58
1RW-59

Category: C **Class:** 3

System: 30 - River Water System

Function: These River Water (RW) Pump discharge check valves must open to allow cooling water from the river to flow to station loads required during an accident. They must close to prevent reverse flow through an idle RW Pump.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for CSJ: These check valves are normally open when a River Water pump is in service. Their safety positions are open to provide RW cooling to station loads required during an accident, and closed to prevent reverse flow through an idle RW Pump. In order to test these valves in the reverse direction, two of the three pumps must be cross-connected. This can only be done with pumps on the same electrical bus or during a Cold Shutdown Outage when RW is not required to be operable. Quarterly full-stroke exercising in the closed direction may not be possible if one RW Pump is out of service for maintenance. OM-10, Paragraph 4.3.2.2(c) states, "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised closed quarterly, or when the idle RW Pump is returned to service, or at least during cold shutdowns per 1OST-30.6, "Reactor Plant River Water Pump 1C Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 30

Valve Mark No(s): MOV-1RW-102C1
MOV-1RW-102C2

Category: B **Class:** 3

System: 30 - River Water System

Function: These discharge isolation valves for the 1C River Water (RW) Pump must be open to permit the river water to be supplied to the station loads required during an accident.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active Category B valves shall be tested nominally every 3 months.

Basis for CSJ: These valves open to align the 1C River Water pump to the appropriate RW header. Their safety positions are open to provide RW cooling to station loads required during an accident. In order to test these valves, two of the three pumps must be cross-connected. This can only be done with pumps on the same electrical bus or during a cold shutdown outage when RW is not required to be operable. Quarterly full-stroke testing may not be possible if one RW Pump is out of service for maintenance. OM-10, Paragraph 4.2.1.2(c) states, "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns".

Alternate Test: Full-stroke exercised and timed open quarterly, or when the idle RW Pump is returned to service, or at least during cold shutdowns per 1OST-30.6, "Reactor Plant River Water Pump 1C Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c).

VALVE COLD SHUTDOWN JUSTIFICATION 31

Valve Mark No(s): MOV-1CC-112A2
MOV-1CC-112A3
MOV-1CC-112B2
MOV-1CC-112B3

Category: A **Class:** 2

System: 15 - Reactor Plant Component Cooling Water System

Function: The RHR Heat Exchanger CCR supply and return containment isolation valves are opened to supply component cooling water to the RHR heat exchangers and the RHR pump seal water coolers. They are closed for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active Category A valves shall be tested nominally every 3 months.

Basis for CSJ: These valves are stroked and timed quarterly during power operation. During cold shutdowns, however, the quarterly testing frequency will not be maintained.

During cold shutdowns, these valves are opened to place the RHR System in service. Once the RHR System is in service, the safety function of these valves is to remain open to supply cooling water to the RHR heat exchangers and to the RHR pump seals. Per NUREG-1449, "Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States," at PWRs, the RHR System is essential to maintaining shutdown safety. In order to maintain the "Defense in Depth" strategy for shutdown safety, these valves cannot be stroked quarterly during cold shutdowns. In addition, if the RHR system is inservice as the operable RCS loops per Tech Spec 3/4.4.1.3, these valves cannot be tested without entering the action statement which requires immediate restoration of the RCS loop. Failure of these valves during testing at that time would cause loss of cooling flow for one of the required RCS Loops.

VALVE CSJ 31

Once the RHR system is not required to be inservice as the operable RCS loops. Tech Specs would permit the exercising of these valves. However, these valves can only be stroked and timed if their associated RHR pump is not operating. Therefore, while the plant is in mode 5 or 6, the RHR pumps would have to be swapped to exercise all of the valves. However, as a result of excessive seal leakage on a RHR pump at Unit 2 during 2R6, the Maintenance Rule (a)(1) Disposition Review recommended that a review of operating practices/procedures be performed to determine a means to reduce the frequency of pump cycling. Therefore, in order to minimize the number of pump cycles, these valves will not be stroked if either of the RHR pumps is operating. They will be stroked and timed prior to placing the RHR system in service and when removing the system from service or when the plant is defueled, not more often than once per 92 days.

Alternate Test:

Full stroke exercised and timed open and closed quarterly per 1OST-47.3B, "Containment Isolation and ASME Section XI Test," during power operation. Full stroke exercised and timed open and closed when placing the RHR System in service or removing it from service during cold shutdowns or when defueled, not more often than once per 92 days, per 1OST-10.4, "Residual Heat Removal System Valve Exercise" and 1OM-10.4.C, "Residual Heat Removal System Shutdown (Plant Startup)."

References:

OM-10, Paragraphs 4.2.1.1
NUREG-1449

SECTION X: VALVE REFUELING OUTAGE JUSTIFICATIONS

VALVE REFUELING OUTAGE JUSTIFICATION 1

Valve Mark No(s): 1RC-68

Category: A/C Class: 2

System: 6 - Reactor Coolant System

Function: The inside containment isolation check valve on the N2 makeup line to the Pressurizer Relief Tank closes for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency", check valves shall be exercised nominally every 3 months.

Basis for ROJ: This check valve is physically located in the subatmospheric containment building. This valve is normally closed and remains closed to fulfill its safety function of containment isolation. It is only opened during nitrogen makeup to the PRT. Due to the physical location of this valve, the relative pressures of the N2 header and the containment and lack of instrumentation, the only means for verifying closure is during the 10CFR50, Appendix J, Option B leak rate test performed at refuelings. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means are available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Valve closure is verified by a leak test during each refueling outage per 1BVT 1.47.5, "Type-C Leak Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 2

Valve Mark No(s): 1RC-72

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

System: 6 - Reactor Coolant System

Function: The inside containment isolation check valve on the primary grade water supply line to the Pressurizer Relief Tank closes for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: This check valve is physically located in the subatmospheric containment building. This valve is normally closed and remains closed to fulfill its safety function of containment isolation. It is only opened during makeup to or while depressurizing the PRT. Due to the physical location of this valve, the only means for verifying closure is during the 10CFR50, Appendix J, Option B leak rate test performed at refuelings. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means are available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Valve closure is verified by a leak test during each refueling outage per 1BVT 1.47.5, "Type-C Leak Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 3

Valve Mark No(s):	SOV-1RC-455C1	SOV-1RC-455D2
	SOV-1RC-455C2	SOV-1RC-456-1
	SOV-1RC-455D1	SOV-1RC-456-2

Category: B **Class:** 3

System: 6 - Reactor Coolant System

Function: These are the Power Operated Relief Valve (PORV) Air Control SOVs. They must open to allow air to the PORV to open and close to the vent position to allow the PORV to close.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for ROJ: These series SOVs are located inside the subatmospheric containment building and do not have position indication. There are no individual control switches or lights associated with the valves. Individual operation of these valves can only be monitored by locally disconnecting a lead for one of the SOVs and observing the PORV stroke. The SOV stroke cannot be timed directly, because the valves cannot be stroked without stroking the PORVs, therefore, quarterly full or part-stroke and time testing at power is impractical. In addition, stroking the SOVs associated with the low-temperature overpressure protection system cannot be performed while it is in service, therefore, cold shutdown stroke and time testing is also impractical. Per OM-10, Paragraph 4.2.1.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: These valves will be stroked on a refueling frequency per 1OST-6.12, "Power Operator Relief Valve Test." The valve opening stroke time will be indirectly measured by timing the PORV stroke. An acceptable PORV stroke time will indicate an acceptable SOV opening stroke time. Valve closure will be individually verified by lifting a lead on one of the SOVs and verifying that the PORV will not stroke. Then a lead on the other SOV will be lifted. The closing time of the PORV will be measured as an indirect measure of the SOV stroke time. This time, however, will not be the individual closing stroke time of the SOVs, because they are in series.

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).

VALVE REFUELING OUTAGE JUSTIFICATION 4

Valve Mark No(s): 1CH-22
1CH-23
1CH-24

Category: C Class: 2

System: 7 - Chemical and Volume Control System

Function: The discharge check valves for the Charging pumps open to allow charging/HHSI flow and close to prevent "short-circuiting" through a non-running pump.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves can only be full-stroke exercised open by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1. Testing using full design HHSI flow at power, however, is not possible. During power operations the charging pump will not develop the required flow. During cold shutdowns full-flow testing could result in a low temperature overpressurization of the RCS. Therefore, it is not practical to use the recirc line for either quarterly or cold shutdown full-stroke testing in the open direction. Per OM-10, Paragraph 4.3.2.2(d), "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns and full-stroke during refueling outages."

Alternate Test: Part-stroke exercised open and full-stroke exercised closed quarterly per 1OST-7.4, 5 & 6, "Centrifugal Charging Pump Test." Full-stroke exercised open at refueling outages per 1OST-11.14B, "HHSI Full Flow Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(d).
GL 89-04, Position 1.

VALVE REFUELING OUTAGE JUSTIFICATION 5

Valve Mark No(s): 1CH-31

Category: A/C Class: 2

System: 7 - Chemical and Volume Control System

Function: The charging header inside containment isolation check valve opens to allow normal charging flow to the RCS and closes to fulfill its safety function of containment isolation.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: The safety function of this check valve is to close to provide containment isolation. During plant operation, normal charging flow is present through this check valve and a reverse direction test cannot be performed. There is no installed instrumentation to monitor upstream pressure and the only method for testing this valve is by leak test. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Check valve closure is verified by a leak test during refueling outages per 1BVT 1.47.11, "Safety Injection and Charging System Containment Penetration Integrity Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 6

Valve Mark No(s): MOV-1CH-115C
MOV-1CH-115E

Category: B **Class:** 2

System: 7 - Chemical and Volume Control System

Function: To isolate the Volume Control Tank on a safety injection signal to ensure the Charging/HHSI suction is switched from the VCT to the RWST.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for ROJ: These valves are normally open and cannot be exercised during power operation without isolating the Volume Control Tank from the charging pumps. This would result in a loss of normal Reactor Coolant System makeup and reactor coolant pump seal injection water causing possible pump and system degradation. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns." In addition, full or part-stroke exercising in the closed direction may not be possible during cold shutdown if the charging system is in service to support operation of a RCP. Shutting down the charging system during RCP operation while in cold shutdown would secure seal injection water to the RCP seals, creating a challenge to long-term seal life. In order to stroke these valves, the charging system and RCP's would have to be shutdown. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing," the RCP's need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCP's are secured and during refueling outages, but not more often than once every 92 days. OM-10, Paragraph 4.2.1.2(e) states, "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised and timed closed during cold shutdowns when the charging system and the RCP's are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c) and 4.2.1.2(e). NUREG-1482, Section 3.1.1.4

VALVE REFUELING OUTAGE JUSTIFICATION 7

Valve Mark No(s): 1CH-181
1CH-182
1CH-183

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

System: 7 - Chemical and Volume Control System

Function: The reactor coolant seal injection inside containment isolation check valves are normally open to supply the RCP seals from the charging pumps. They close to provide containment isolation.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves are open during power operation but are required to close to fulfill their safety function. Closing the valves during power operation, or anytime the system is pressurized to greater than 100 psig, would secure seal injection water to the reactor coolant pump seals, resulting in seal damage. In addition, valve closure can only be checked by leak testing since they have no position indication or weighted arms. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Therefore, quarterly and cold shutdown exercising is not practical. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Valve closure is verified by a leak test during refueling outages per 1BVT 1.47.11, "Safety Injection and Charging System Containment Penetration Integrity Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 8

Valve Mark No(s): TV-1CH-204
MOV-1CH-289
MOV-1CH-310
LCV-1CH-460A
LCV-1CH-460B

Category: A, B Class: 1, 2

System: 7 - Chemical and Volume Control System

Function: To isolate normal reactor coolant makeup and letdown on a safety injection signal.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A and B valves shall be tested nominally every 3 months.

Basis for ROJ: These valves are normally open to provide a flow path for charging and letdown, but close for containment isolation. Quarterly stroking at power to their closed position would cause an undesirable transient in the reactor coolant makeup and letdown systems. A failure of one or more valves in the closed position could lead to a loss of pressurizer level control and require a plant shutdown. In addition, testing during cold shutdowns when the Charging system is in service supporting operation of the reactor coolant pumps (RCPs) would be impractical. A failure of the valves in the closed position would lead to the shut down of the charging pump and unnecessary shut down of the RCPs. Shutting down the charging system during RCP operation while in cold shutdown would secure seal injection water to the RCP seals, creating a challenge to long-term seal life. In order to stroke this valve, the charging system and RCPs would both have to be shutdown. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing," the RCPs need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCPs are secured and during refueling outages, but not more often than once every 92 days. Per OM-10, Paragraph 4.2.1.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Full-stroke exercised and timed closed during cold shutdowns when the charging system and the RCPs are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).
NUREG-1482, Section 3.1.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 9

Valve Mark No(s): MOV-1CH-308A
MOV-1CH-308B
MOV-1CH-308C

Category: A **Class:** 2

System: 7 - Chemical and Volume Control System

Function: The reactor coolant seal injection outside containment isolation motor-operated valves are open to provide seal water to the RCPs and close for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency, " active category A valves shall be tested nominally every 3 months.

Basis for ROJ: These valves are open during power operation but are required to close to fulfill their safety function. Closing the valves during power operation would secure seal injection water to the reactor coolant pump seals, resulting in seal damage. In addition, seal injection flow is required anytime the system is pressurized to greater than 100 psig. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing," the Reactor Coolant Pumps (RCP) need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCPs are secured and at refueling outages, but not more often than once every 92 days. Per OM-10, Paragraph 4.2.1.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised and timed closed during cold shutdowns when the reactor coolant pumps are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).
NUREG-1482, Section 3.1.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 10

Valve Mark No(s): 1CH-369

Category: A/C Class: 2

System: 7 - Chemical and Volume Control System

Function: The Penetration 19 pressure relief check around [MOV-1CH-378] opens to allow excess pressure trapped in the containment penetration due to thermal expansion to be equalized with the pressure inside the seal return line, inside containment. In the reverse direction, this valve is a containment isolation valve.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: This pressure relief check valve is normally closed during power operation and is required to remain closed to fulfill its containment isolation function. It is located inside the subatmospheric containment building on the RCP seal water return line. During power operation and any time the RCS is pressurized to greater than 100 psig this line is in service with the RCP seal water. Valve exercising can only be checked by leak testing since this valve does not have position indication or a weighted arm. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Check valve opening and closure is verified by a leak test during refueling outages per 1BVT 1.47.5, "Type-C Leak Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 11

Valve Mark No(s): MOV-1CH-378
MOV-1CH-381

Category: A **Class:** 2

System: 7 - Chemical and Volume Control System

Function: The RCP seal water return line inside and outside containment isolation valves are open to provide seal water return for the RCPs, and close for containment.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency, " active category A valves shall be tested nominally every 3 months.

Basis for ROJ: These valves are open during power operation, but are required to close to fulfill their safety function. Exercising at power would secure RCP seal water return causing seal damage. In addition, seal injection flow is required any time the RCS is pressurized to greater than 100 psig. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing," the reactor coolant pumps (RCPs) need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCPs are secured and at refueling outages, but not more often than once every 92 days. Per OM-10, Paragraph 4.2.1.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised and timed closed during cold shutdowns when the charging system and the reactor coolant pumps are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).
NUREG-1482, Section 3.1.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 12

Valve Mark No(s): 1SI-5

Category: C **Class:** 2

System: 11 - Safety Injection System

Function: The LHSI pump suction check valve from the RWST opens to allow flow from the RWST to the LHSI pumps.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: The function of this normally closed check valve is to open to permit flow from the RWST to the LHSI pump suctions. Per GL 89-04 Position 1, full stroke capability can only be verified by rated safety injection flow, therefore, quarterly full-stroke exercising is impractical. Cold shutdown full-stroke exercising is also impractical because testing would require full flow injection to the RCS where there is insufficient volume to receive the additional inventory. Per OM-10, Paragraph 4.3.2.2(d), "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns and full-stroke during refueling outages."

Alternate Test: Part-stroke exercised open quarterly per 1OST-11.1 and 2, "Safety Injection Pump Tests." Full-stroked exercised open at refueling outages per 1OST-11.14A, "LHSI Full Flow Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(d).
GL 89-04, Position 1.

VALVE REFUELING OUTAGE JUSTIFICATION 13

Valve Mark No(s): 1SI-6
1SI-7

Category: C **Class:** 2

System: 11 - Safety Injection System

Function: The LHSI pump discharge check valves open to allow LHSI flow to the RCS in an accident and close to prevent "short-circuiting" flow through the non-running LHSI pump.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ:: These check valves close when the opposite LHSI pump is operating to prevent damaging the non-running pump seals and pump suction piping and to ensure total LHSI flow is directed to the RCS. They also must open fully to allow LHSI flow to the RCS. Per GL 89-04, Position 1, full stroke in the open direction may be verified by initiating the maximum required accident condition flow. Full and part-stroke exercising to the open position is not possible during power operation due to the inability of the LHSI pumps to overcome RCS pressure. Cold shutdown exercising is also impractical because testing would require full flow injection to the RCS where there is insufficient volume to receive the additional inventory. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Full-stroke exercised closed quarterly per 1OST-11.1 and 2, "Safety Injection Pump Tests." Full-stroked exercised open at refueling outages per 1OST-11.14A, "LHSI Full Flow Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
GL 89-04, Position 1.

VALVE REFUELING OUTAGE JUSTIFICATION 14

Valve Mark No(s):	1SI-10	1SI-23
	1SI-11	1SI-24
	1SI-12	1SI-25

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

System: 11 - Safety Injection System

Function: The LHSI cold leg branch line check valves open to allow LHSI discharge to the RCS cold leg and close to prevent high pressure RCS from entering the low pressure SI piping.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves are normally closed during power operation to prevent reverse flow from the higher pressure RCS and HHSI systems to the LHSI low pressure system, but are required to open in the event of a safety injection. Per GL 89-04, Position 1, full-stroke exercise in the open direction may be achieved by initiating the maximum required accident condition flow. Due to the lack of installed instrumentation, and the relative system pressures, forward flow through these valves cannot be initiated during power operation. Quarterly full and part-stroke exercising is impractical. In addition, full or part-stroke exercising at cold shutdown is also impractical because testing would require full flow injection to the RCS where there is insufficient volume to receive the additional inventory. In the reverse direction, these valves do not have installed instrumentation, or weighted arms. Therefore, the only way to verify closure is with the leak test during refuelings. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

VALVE ROJ 14

Alternate Test: Full-stroke exercised open during refueling outages per 1OST-11.14A, "LHSI Full Flow Test." One or both LHSI pumps will be aligned to the cold legs. Portable Ultrasonic flow meters will be mounted on the lines. Flows through each of the three branch lines will be measured. If the acceptance criteria is not met, the check valves in the suspect line would be disassembled and inspected, and then partial-stroke exercised open per Position 2 of GL 89-04. Full-stroke exercised closed by leakage testing during refueling outages per 1OST-11.16, "Leakage Testing RCS Pressure Isolation Valves."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
NUREG-1482, Section 4.1.4.
GL 89-04, Position 1 and 2.

VALVE REFUELING OUTAGE JUSTIFICATION 15

Valve Mark No(s):	1SI-20	1SI-100
	1SI-21	1SI-101
	1SI-22	1SI-102

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

System: 11 - Safety Injection System

Function: The SI hot and cold leg branch line check valves open to supply HHSI to the RCS.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves are normally closed but their safety function is to open in the event of a safety injection. They can only be full-stroke exercised by initiating the maximum required accident condition flow in accordance with GL 89-04, Position 1. These check valves cannot be full or part-stroked open at power due to the potential for a premature failure of the injection nozzles caused by the thermal shock from a cold water injection. Stroke testing at cold shutdowns is also impractical since this could result in a low temperature overpressurization of the RCS. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practical during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised open during refueling outages per 1OST-11.14B, "HHSI Full Flow Test," per GL 89-04, Position 1.

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
GL 89-04, Position 1.

VALVE REFUELING OUTAGE JUSTIFICATION 16

Valve Mark No(s): 1SI-27

Category: A/C Class: 2

System: 11 - Safety Injection System

Function: The High head safety injection pump suction from the RWST check valve opens to supply RWST water to the suction of the HHSI pumps and closes when the RWST is empty to prevent sump water from entering the RWST.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: This check valve is normally closed during power operation. Its safety function is to open for HHSI and to close during transfer to recirc to prevent reverse flow to the RWST. Per GL 89-04, Position 1, full-stroke exercise open may be achieved by initiating the maximum required accident condition flow. 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. Partial stroking of this valve is impractical because in order to stroke this valve, the charging pumps must be aligned to the RWST. The boron concentration of the RWST water could cause reactivity transients in the reactor and force a plant shutdown. In addition, the injection of relatively cold water from the RWST would 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 a low temperature overpressurization of the RCS. Per OM-10, Paragraph 4.3.2.2(d), "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns and full-stroke during refueling outages."

In the reverse direction, these valves do not have installed instrumentation, or weighted arms. Therefore, the only way to verify closure is with the leak test during refuelings. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

VALVE ROJ 16

Alternate Test: Part-stroke exercised open during cold shutdowns per 1OST-11.20, "Partial Stroke of SIS Check Valves." Full-stroke exercised open during refueling outages per 1OST-11.14B, "HHSI Full Flow Test." Full-stroke exercised closed by leakage testing during refueling outages per 1BVT 1.47.11, "Safety Injection and Charging System Containment Penetration Integrity Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(d) and 4.3.2.2.(e).
GL 89-04, Position 1.
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 17

Valve Mark No(s): 1SI-83
1SI-84
1SI-95

Category: A/C Class: 1, 2

System: 11 - Safety Injection System

Function: The HHSI hot leg branch line and SI fill header line inside containment isolation check valves open to permit HHSI flow from the RCS fill line BIT line to the hot legs. They close for their containment isolation function.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves can only be full-stroke exercised open by initiating the maximum required accident condition flow, in accordance with GL 89-04, Position 1. Testing using full design HHSI flow at power, however, is not possible. During power operations the charging pump will not develop the required flow. They cannot be part-stroked open at power due to the potential for thermal shock on the injection nozzles from a cold water injection. During cold shutdowns full-flow testing could result in a low temperature overpressurization of the RCS. Per OM-10, Paragraph 4.3.2.2(d), "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns and full-stroke during refueling outages."

In the reverse direction, these valves do not have installed instrumentation, or weighted arms. Therefore, the only way to verify closure is with the leak test during refuelings. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Part-stroke exercised open during cold shutdowns per 1OST-11.20, "Partial Stroke of SIS Check Valves." Full-stroke exercised open during refueling outages per 1OST-11.14B, "HHSI Full Flow test." Full-stroke exercised closed by leakage testing during refueling outages per 1BVT 1.47.11, "Safety Injection and Charging System Containment Penetration Integrity Test."

VALVE ROJ 17

References:

OM-10, Paragraphs 4.3.2.1, 4.3.2.2(d) and 4.3.2.2(e).
GL 89-04, Position 1.
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 18

Valve Mark No(s): 1SI-94

Category: A/C Class: 2

System: 11 - Safety Injection System

Function: BIT injection line inside containment isolation check valve opens to allow HHSI supply to the RCS cold legs and to close for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: This check valve is normally shut during power operation but is required to open to fulfill its safety function in the event of a safety injection. Per GL 89-04, Position 1, full-stroke exercise in the open direction may be achieved by initiating the maximum required accident condition flow. This check valve cannot be full or part-stroked at power due to the potential for thermal shock of the injection nozzles from a cold water injection. Full-stroke testing at cold shutdowns also cannot be performed since this could result in a low temperature overpressurization of the RCS. In addition, part-stroke testing during CSD is not possible because the only flow path available is through the BIT. Stroking the BIT outlet isolation valves could result in borated, oxygenated water from the BIT entering the downstream piping. With no means to flush these lines, stagnant conditions develop upon valve closure. IE Bulletin 79-17 has identified the combination of these three factors as one which promotes Intergranular Stress Corrosion Cracking (IGSCC). The ability to flush out the downstream piping to minimize the probability of Intergranular Stress Corrosion Cracking (IGSCC) formation is only possible during refueling outages in conjunction with the SI full flow test, 1OST-11.14B. In addition, valve exercising in the closed direction can only be checked by leak testing since this valve does not have position indication or a weighted arm. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

VALVE ROJ 18

Alternate Test: Full-stroke exercised open during refueling outages per 1OST-11.14B," HHSI Full Flow Test." Full-stroke exercised closed by leak test during refueling outages per 1BVT 1.47.11, "Safety Injection and Charging System Containment Penetration Integrity Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
GL 89-04, Position 1.
NUREG-1482, Section 4.1.4.
IE Bulletin 79-17.

VALVE REFUELING OUTAGE JUSTIFICATION 19

Valve Mark No(s): 1SI-115
1SI-116

Category: C **Class:** 2

System: 11 - Safety Injection System

Function: The Boron Injection Recirc Pump Discharge Check Valves close to isolate The BIT Recirc piping in an accident.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: The function of these check valves is to prevent reverse flow through the BIT recirc pumps during an accident when the HHSI is flowing through the BIT. The normal test method to prove closure of these discharge check valves for parallel pumps is to monitor flow with one pump operating in NSA, isolate the non-running pump, then record flow again. If the check valve on the non-running pump is not seated, the flow will vary after the valve is isolated. If one of the recirc pumps is Out of Service (OOS) for an extended period, there is no method to prove closure of the operating check valve. The piping configuration does not contain vents, drains or test connections. Therefore, if one of the recirc pumps is OOS, full and partial stroke testing in the reverse direction cannot be performed for either check valve. Per OM-10, paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Perform quarterly reverse direction testing per 1OST-1.47.3A, "Three Month Containment Isolation and ASME Section XI Test," unless one of the recirc pumps is OOS. If one of the pumps is OOS, reverse direction testing will be performed when the pump is returned to service, or at least during refueling outages, per 1OST-47.3B, "Refueling Containment Isolation and ASME Section XI Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).

VALVE REFUELING OUTAGE JUSTIFICATION 20

Valve Mark No(s):	MOV-1SI-836 MOV-1SI-869A MOV-ISI-869B
Category: A	Class: 2
System:	11 - Safety Injection System
Function:	The Outside Containment Isolation valves from the fill and charging headers to the RCS hot and cold legs open to establish a redundant flow path to the RCS when transferring to cold and hot leg recirculation.
Test Requirement:	Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.
Basis for ROJ:	These valves are closed during normal operation. Cycling them at power would thermal shock the RCS hot and cold leg nozzles and compromise system integrity. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns." In addition, full-stroke exercising in the open and closed directions may not be possible during cold shutdown if the charging system is in service to support operation of a Reactor Coolant Pump (RCP). Cycling these valves open and closed with a Charging Pump operating to support RCP operation would cause significant changes in pressures and flows to the RCP seals, creating a challenge to long-term seal life. Shutting down the charging system during RCP operation while in cold shutdown would secure seal injection water to the RCP seals, resulting in seal damage. In order to stroke these valves, the charging system and RCPs would both have to be shutdown. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing," the RCPs need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCPs are secured and during refueling outages, but not more often than once every 92 days. OM-10, Paragraph 4.2.1.2(e) states, "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."
Alternate Test:	Full-stroke exercised and timed open and closed during cold shutdowns when the charging system and the RCPs are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."
References:	OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(c) and 4.2.1.2(e). NUREG-1482, Section 3.1.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 21

Valve Mark No(s): MOV-1SI-867A
MOV-1SI-867B

Category: B **Class:** 2

System: 11 - Safety Injection System

Function: The Boron Injection Tank (BIT) inlet isolation valves open to allow HHSI flow to the BIT.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category B valves shall be tested nominally every 3 months.

Basis for ROJ: These valves are shut at power but are required to open to fulfill their safety function in the event of a safety injection. Stroking these valves at power has historically caused leakage past the BIT manway flange and the other valves in the system. In addition, stroking these valves would dilute the boron concentration of the BIT, potentially causing entry into a technical specification action statement. Therefore, full and part stroking at power is considered impractical. Per OM-10, Paragraph 4.2.1.2(c), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns." In addition, stroking these valves at cold shutdown may not be possible if the charging system is in service to support operation of a Reactor Coolant Pump (RCP). With the charging system in service, the problems experienced by stroking these valves at power are also present during cold shutdowns - the possibility of causing leakage past the BIT manway flange and the dilution of the boron concentration of the BIT. In order to stroke these valves, the charging system and RCPs would both have to be shutdown. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing," the RCPs need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCPs and charging system are secured and during refueling outages, but not more often than once every 92 days. OM-10, Paragraph 4.2.1.2(e) states, "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised and timed open during cold shutdowns when the charging system and the RCPs are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1, 4.2.1.2(c) and 4.2.1.2(e). NUREG-1482, Section 3.1.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 22

Valve Mark No(s): MOV-1SI-867C
MOV-1SI-867D

Category: A **Class:** 2

System: 11 - Safety Injection System

Function: The Boron Injection Tank (BIT) outlet isolation and outside containment isolation valves open to allow HHSI flow from the BIT to the RCS and close for containment isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A valves shall be tested nominally every 3 months.

Basis for ROJ: These valves are shut at power but are required to open to fulfill their safety function in the event of a safety injection. Quarterly stroking of these valves to their open safety position could result in some borated, oxygenated water from the BIT entering the piping downstream of these valves. With no means to flush out these lines, valve closure would then cause a stagnant condition to develop. IE Bulletin 79-17 has identified the combination of these three factors as one which promotes Intergranular Stress Corrosion Cracking (IGSCC). The ability to flush out the downstream piping to minimize the probability of IGSCC formation is only possible during refueling outages in conjunction with the SI full flow test, 1OST-11.14B. Per OM-10, Paragraph 4.2.1.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised and timed open and closed during refueling outages per 1OST-11.14B, "HHSI Full Flow Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).
IE Bulletin 79-17.

VALVE REFUELING OUTAGE JUSTIFICATION 23

Valve Mark No(s):

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

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

System: 15 - Reactor Plant Component Cooling Water System.

Function: The Component cooling to reactor coolant pump, stator, bearing and thermal barrier isolation valves are open to supply cooling water and close for containment and thermal barrier isolation.

Test Requirement: Per OM-10, Paragraph 4.2.1.1, "Exercising Test Frequency," active category A and B valves shall be tested nominally every 3 months.

Basis for ROJ: Stroking these valves with the reactor coolant pumps running could cause damage to pump bearings, stator and thermal barrier if the valves would fail to reopen. Full or part-stroke exercising is not possible during power operation and cold shutdown when the pump is running. Per NUREG-1482, Section 3.1.1.4, "Stopping Reactor Coolant Pumps for Cold Shutdown Valve Testing." The reactor coolant pumps (RCPs) need not be stopped for cold shutdown valve testing. The affected valves should be tested during outages when the RCPs are secured and at refueling outages, but not more often than once every 92 days. Per OM-10, Paragraph 4.2.1.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised and timed closed during cold shutdowns when the reactor coolant pumps are secured, or at least during refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).
NUREG-1482, Section 3.1.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 24

Valve Mark No(s): 1CCR-289
1CCR-290
1CCR-291

Category: A/C Class: 3

System: 15 - Reactor Plant Component Cooling Water System

Function: The reactor coolant pump thermal barrier supply check valves are open to allow cooling water to the RCP thermal barriers and close to protect the low pressure CCR piping from RCS pressure in the event of a thermal barrier rupture.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves are normally open to supply cooling water to the RCP thermal barriers. The safety function of these valves is to close to prevent reverse flow to the low pressure CCR system in the event of a thermal barrier leak. These valves cannot be stroked closed during power operation or during cold shutdowns when the reactor coolant pumps are operating. In addition, valve closure can only be checked by leak testing during refueling outages since they have no position indication or weighted arms. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Full-stroke exercised closed by leakage testing during refueling outage per 1BVT 1.60.7, "ASME XI Check Valve Reverse Flow Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 25

Valve Mark No(s): 1MS-18
1MS-19
1MS-20

Category: C Class: 2

System: 21 - Main Steam System

Function: The main steam to auxiliary feed pump check valves open to allow steam flow to the turbine-driven auxiliary feed pumps and close to prevent steam generator cross-connection in the event of a high energy line break.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: The function of these check valves is to open to allow steam flow to run the turbine-driven AFW pump and to close to prevent S/G cross connection in the event of a high energy line break. In accordance with Position 1 of GL 89-04, a full-stroke exercise in the open direction may be achieved by initiating the maximum required accident condition flow. A full-stroke open exercise can only be verified by a full-flow test of the turbine-driven AFW pump, which is performed during start-up from cold shutdowns. The quarterly pump test is run on recirculation only, and does not require full steam flow. Per OM-10, Paragraph 4.3.2.2(b), "If full-stroke exercising during plant operation is not practicable, it may be limited to part-stroke during plant operation and full-stroke during cold shutdowns."

Note: To prevent the loss of all three S/Gs in the event of a line break, one of the manual isolation valves upstream of the check valves is locked shut during normal operations.

In the reverse direction, these valves do not have installed instrumentation, or weighted arms. Therefore, the only way to verify closure is with the leak test during refuelings. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage, if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

VALVE ROJ 25

Alternate Test:

Two of the valves will be part-stroked exercised open during the quarterly pump test per 1OST-24.4, "Steam Turbine-Driven Aux Feed Pump Test." The third valve will not be part-stroke exercised because the manual isolation valve is locked closed.

All three valves will be full-stroke exercised open each startup from cold shutdown when the turbine-driven auxiliary feed pump is full flow tested per 1OST-24.9, "Turbine-Driven AFW Pump [1FW-P-2] Operability Test."

The valves will be full-stroke exercised closed during refueling outages by leak test per 1BVT 1.60.7, ASME XI Check Valve Reverse Flow Test."

References:

OM-10, Paragraphs 4.3.2.1, 4.3.2.2(b) and 4.3.2.2(e).
GL 89-04, Position 1.
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 26

Valve Mark No(s): 1MS-80
1MS-81
1MS-82

Category: C **Class:** 2

System: 21 - Main Steam System

Function: The A, B and C loop residual heat release reverse flow check valves open to allow steam flow to the RHR header. Their safety function is to close to prevent steam generator cross connection in the event of a high energy line break.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: The safety function of these check valves is to close to prevent S/G cross connection in the event of a high energy line break. Exercising at power and cold shutdown testing in the reverse direction cannot be performed because there is no installed instrumentation to check for reverse flow and no way to isolate the normally cross-connected and pressurized headers. No way exists to isolate and systematically check operation of these valves. Per OM-10, Paragraph 4.3.2.4(c), "As an alternative to the testing in 4.3.2.4(a) or (b), disassembly every refueling outage to verify operability of check valves may be used." In addition, per GL 89-04, Position 2, "Where the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage, a sample disassembly and inspection plan for groups of identical valves in similar applications may be employed."

Alternate Test: Maintenance is to disassemble and inspect one valve per the sample frequency of GL 89-04, Position 2, per 1CMP-75-CRANE CHECK-1M. A part-stroke exercise in the open direction will be performed after valve reassembly per 1OM-50.4.C, "Instruction to Heat Up Plant From Mode 4 to Mode 3."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.4(c).
GL 89-04, Position 2.

VALVE REFUELING OUTAGE JUSTIFICATION 27

Valve Mark No(s): 1RW-106
1RW-107

Category: C **Class:** 3

System: 30 - River Water System

Function: The river water header supply check valves open to supply river water to the safety-related components during an accident and close to prevent reverse flow by the auxiliary river water pumps when they are supplying the river water headers.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: The safety function of these check valves is to open to supply river water to the safety-related components during an accident and to close to prevent reverse flow by the auxiliary river water pumps when they are supplying the river water headers. These valves are stroked open quarterly. Valve closure, however, is verified by leak test performed with the Auxiliary river water pumps supplying the RW headers during refueling outages. In order to provide a leakage path for the check valves, both of the river water headers must be cross-connected at the pumps, which is not practical at cold shutdown outages or during normal operations. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Full-stroke exercised closed by leakage testing during refueling outage per 1OST-30.8, "Auxiliary River Water System Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 28

Valve Mark No(s): 1RW-193
1RW-194
1RW-195
1RW-196

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

System: 30 - River Water System

Function: The River Water supply check valves to the Recirculation spray heat exchangers open to supply river water to the Recirc Spray heat exchangers.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: These check valves are normally closed during power operation. To fulfill their safety function, the valves must open to ensure a cooling water flow path through the Recirculation Spray (RS) heat exchangers during a DBA. To test these valves quarterly, River Water (RW) flow must be initiated through the RS heat exchangers. Plant operating experience has shown that this unnecessarily degrades the operational readiness of the heat exchangers by depositing Asiatic clams, other marine life, river mud and silt in the heat exchangers. To alleviate this, the RW side of the heat exchangers have been placed in a chemical wet layup. The heat exchangers are maintained in wet layup during normal plant operation and chemically treated on a periodic basis to maintain their operational readiness in the event of an accident. Because these valves are within the layup boundaries, quarterly and cold shutdown valve stroke testing is not possible. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised open during refueling outages by initiating maximum accident condition flow through the RW side of the RS heat exchangers in accordance with GL 89-04, Position 1, per 1OST-30.12A(B), "Auxiliary River Water System Test."

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.2(e).
GL 89-04, Position 1.

VALVE REFUELING OUTAGE JUSTIFICATION 29

Valve Mark No(s):

DELETED

Category:

System:

Function:

Test Requirement:

Basis for ROJ:

Alternate Test:

References:

VALVE REFUELING OUTAGE JUSTIFICATION 30

Valve Mark No(s): 1WT-382
1WT-383
1WT-387
1WT-388

Category: C **Class:** 3

System: 30 - River Water System

Function: Class break check valves to isolate the chlorine injection line from the river water line.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for ROJ: The safety function of these check valves is to remain closed to prevent river water from being diverted to the chlorine injection line during an accident. Because of the physical arrangement of these valves, a pair of series check valves without a vent or drain in between, off each RW header, the valves cannot be individually verified to close by using flow or by leak test. Per OM-10, Paragraph 4.3.2.4(c), "As an alternative to the testing in 4.3.2.4(a) or (b), disassembly every refueling outage to verify operability of check valves may be used." In addition, per GL 89-04, Position 2, "Where the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage, a simple disassembly and inspection plan for groups of identical valves in similar applications may be employed."

Alternate Test: Maintenance is to disassemble and inspect one set of valves per refueling outage per 1CMP-75-Pacific SW Check-1M. A part-stroke exercise in the open direction will be performed after valve reassembly by initiating a chlorine injection.

References: OM-10, Paragraphs 4.3.2.1, 4.3.2.4(c).
GL 89-04, Position 2.

VALVE REFUELING OUTAGE JUSTIFICATION 31

Valve Mark No(s):	1IA-116 1IA-117 1IA-378
Category: A/C	**Class:** 3
System:	34 - Compressed Air System
Function:	The air supply isolation check valve for the Power Operated Relief Valves (PORVs) closes on loss of instrument air to allow the back-up nitrogen accumulators to supply the control air for the PORVs.
Test Requirement:	Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.
Basis for ROJ:	The safety function of these check valves is to close to allow the back-up nitrogen accumulators to supply the control air system for the PORVs. These check valves are located inside the subatmospheric containment building. Valve closure can only be checked by a leak test during refueling outages. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."
Alternate Test:	Full-stroke exercised closed by leakage testing during refueling outages per IBVT 2.34.4, "Accumulator and Check Valve Verification Test."
References:	OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e). NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 32

Valve Mark No(s): 1NG-518
1NG-519
1NG-520

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

System: 11 - Safety Injection, Gaseous Nitrogen System

Function: PORV Nitrogen Supply Check Valves remain closed to maintain Nitrogen Pressure in the back-up nitrogen accumulators to supply the control air for the PORVs.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for ROJ: The safety function of these check valves is to remain closed to maintain nitrogen pressure in the back-up nitrogen accumulators to supply the control air system for the PORVs. These check valves are located inside the subatmospheric containment building. Valve closure can only be checked by a leak test during refueling outages. Per NUREG-1482, Section 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing," it is acceptable to verify that check valves are capable of closing by performing leak-rate testing at each refueling outage if no other practical means is available. Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Full-stroke exercised closed by leakage testing during refueling outages per 1BVT 2.34.4, "Accumulator and Check Valve Verification Test."

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
NUREG-1482, Section 4.1.4.

VALVE REFUELING OUTAGE JUSTIFICATION 33

Valve Mark No(s):	1SI-48	1SI-51
	1SI-49	1SI-52
	1SI-50	1SI-53

Category: C **Class:** 2

System: 11 - Safety Injection System

Function: The safety injection accumulator series discharge check valves open to allow the water from the SI accumulator to be injected into the RCS during an accident when the RCS pressure drops below the accumulator pressure.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months, and Paragraph 4.3.2.4(a) "Valve Obturator Movement," the necessary valve obturator movement shall be demonstrated by exercising the valve and observing that the obturator opens to the position required to fulfill its function.

Basis for ROJ: These check valves are closed during power operation preventing the higher RCS pressure from entering the low pressure accumulators, but are required to open to fulfill their safety function of allowing the accumulators to discharge for core flooding. Due to the high pressure differential between the RCS and the accumulators, full and part-stroke exercising of these check valves is not possible during power operations. Full-stroke exercising of all 6 valves and part-stroke exercising of 4 of the six during cold shutdowns is also impractical due to a lack of installed instrumentation and an uncontrolled test volume change if the MOV isolation valve is opened at low RCS pressure. This could also delay startup from cold shutdown while the SI accumulators are re-filled and pressurized. The other 2 valves [1SI-52, 53] are part-stroke exercised in the open direction during RHR system operation during cold shutdowns.

These check valves will be full stroke exercised open during refueling outages using a method similar to the test used at the Ft. Calhoun Nuclear Station. The test method will measure a flow coefficient value (Cv) during a blowdown at reduced accumulator pressure. The SER for the Ft. Calhoun test method will be followed and the recommendations incorporated.

Per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages."

Alternate Test: Full-stroke exercised open during refueling outages per 1BVT 1.11.3, "SI Accumulator Discharge Check Valves Full Stroke Test." As a special test after maintenance, 1OST-11.15 may be performed to part-stroke open exercise the applicable valves.

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e).
NUREG-1482, Section 4.1.2(1).

VALVE REFUELING OUTAGE JUSTIFICATION 34

Valve Mark No(s):	1QS-3 1QS-4 1RS-100 1RS-101
Category: A/C	Class: 2
System:	13 - Quench Spray System and Recirculation Spray System
Function:	The inside containment isolation discharge check valves for the quench spray and outside recirculation spray pumps open to allow containment spray flow. They also close for containment isolation function.
Test Requirement:	Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.
Basis for ROJ:	These valves are weighted arm check valves. They cannot be exercised with flow without injecting water through the spray nozzles and spraying down containment. In addition, in order to mechanically stroke them, scaffolding must be erected in the subatmospheric containment building. Therefore, it is not practical to part or full-stroke exercise these check valves in either the open or closed direction quarterly. Also, erecting the scaffolding during cold shutdowns could result in delayed plant startup. Per NUREG-1482, Section 3.1.1.1, "IST Cold Shutdown Testing", plant startup need not be delayed to complete inservice testing during cold shutdowns. Therefore, per OM-10, Paragraph 4.3.2.2(e), "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."
Alternate Test:	Full-stroke exercised open and closed by mechanical exerciser utilizing their weighted swing arms at refueling outages per 1OST-1.10, "Cold Shutdown Valve Exercise Test."
References:	OM-10, Paragraphs 4.3.2.1 and 4.3.2.2(e). NUREG-1482, Section 3.1.1.1

SECTION XI: VALVE TESTING RELIEF REQUESTS

VALVE RELIEF REQUEST 1

Valve Mark No(s): 1SI-1
1SI-2

Category: C **Class:** 2

System: 11 - Safety Injection System

Function: The LHSI pump suction check valves from the containment sump open to allow the LHSI pumps to take suction off the containment sump.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months.

Basis for Relief: These check valves are normally closed during power operation but must open to fulfill their safety function for long-term core cooling. Full or part-stroke exercising these valves with flow would involve simulating an actual safety injection long-term cooling event by taking suction from the containment sump and delivering contaminated/dirty water to RWST or RCS. Therefore, per OM-10, Paragraph 4.3.2.4(c), "As an alternative to the testing in 4.3.2.4(a) or (b), disassembly every refueling outage to verify operability of check valves may be used." In addition, per GL 89-04, Position 2, "Where the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage, a sample disassembly and inspection plan for groups of identical valves in similar applications may be employed." For the reasons stated above, however, it is impractical to perform a part-stroke exercise of these valves after valve reassembly. Therefore, relief from all full or part-stroke exercising is requested, in accordance with 10CFR50.55a(f)(5)(iii), on the basis that compliance with the code requirement is impractical for BVPS-1.

Alternate Test: Maintenance is to disassemble and inspect one valve per refueling outage per the sample frequency of GL 89-04, Position 2, per 1/2CMP-75-ALOYCO CHECK-1M.

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.4(c).
GL 89-04, Position 2.

VALVE RELIEF REQUEST 2

DELETED

This Relief Request was converted into VROJ33 per the NRC SER for the Third 10-year interval for Pumps and Valves Inservice Testing (IST) Programs - BVPS1, dated September 4, 1997.

VALVE RELIEF REQUEST 3

Valve Mark No(s): 1RS-158
1RS-160

Category: C Class: 2

System: 13 - Containment Spray System

Function: The LHSI pump and outside RS pump cross connection check valves open to allow the outside recirc spray pumps to provide the HHSI pumps with water from the containment sump if the LHSI pumps are inoperable.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency, " check valves shall be exercised nominally every 3 months.

Basis for Relief: These check valves are normally closed during power operation but must open to fulfill their safety function in the unlikely event that the LHSI pumps are unable to supply the HHSI pumps. No practical method of testing these valves exists. The volume of water used to test the outside RS pumps is insufficient to full-stroke exercise the check valves even if it could be directed to the suction of the HHSI pumps. Part-stroke exercising these valves with flow is also impractical. A part-stroke test would introduce PG water with entrained air, a potential chemistry problem, into the Charging/RCS. Therefore, per OM-10, paragraph 4.3.2.4(c), "As an alternative to the testing in 4.3.2.4(a) or (b), disassembly every refueling outage to verify operability of check valves may be used." In addition, per GL 89-04, Position 2, "Where the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage, a sample disassembly and inspection plan for groups of identical valves in similar applications may be employed." For the reasons stated above, however, it is impractical to perform a full or part-stroke exercise of these valves after valve reassembly. Therefore, relief from all full or part-stroke exercising is requested, in accordance with 10CFR50.55a(f)(5)(iii), on the basis that compliance with the code requirement is impractical for BVPS-1.

Alternate Test: Maintenance is to disassemble and inspect one valve per refueling outage per the sample frequency of GL 89-04, Position 2, per 1/2CMP-75-VELAN CHECK-1M.

References: OM-10, Paragraphs 4.3.2.1 and 4.3.2.4(c).
GL 89-04, Position 2.

VALVE RELIEF REQUEST 4

Valve Mark No(s): SOV-1EE-101
SOV-1EE-102
SOV-1EE-103
SOV-1EE-104

Category: B **Class:** 3

System: 36 - 4KV Station Service System

Function: The Diesel Generator Air Start SOVs open to permit starting air to start the diesel generator.

Test Requirement: Per OM-10, Paragraph 4.2.1.4(b), "Power-Operated Valve Stroke Testing." The stroke time of all power-operated valves shall be measured to at least the nearest second.

Basis for Relief: In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the code requirement is impractical for BVPS-1.

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

1. Engine fails to crank above 40 RPM within 3 seconds after a start signal is received or

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

Individual valves will be tested monthly on an alternating frequency by using a different set of air starting motors each month to crank the engine. This will ensure each bank is capable of starting the diesel generator in the required time and that the air start SOVs are not degrading. Per NUREG-1482, Section 3.4, "Skid-Mounted Components and Component Subassemblies," "The staff has determined that the testing of the major component is an acceptable means for verifying the operational readiness of the skid-mounted and component subassemblies if the licensee documents this approach in the IST Program."

Alternate Test: Stroked and indirectly timed by the START FAILURE annunciator on an alternating frequency in conjunction with 1OST-36.1 & 2, "The Diesel Generator Monthly Test."

References: OM-10, Paragraph 4.2.1.1.
NUREG-1482, Section 3.4.