APS

Palo Verde Nuclear
Generating Station

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10 CFR 50.55a

102-05046-CDM/SAB/RKR
February 5, 2004

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
10 CFR 50.55a(f)(4)(iv) Request to Use Subsequent Editions and Addenda of American Society of Mechanical Engineers (ASME) Section XI Code for Inservice Testing

Pursuant to 10 CFR 50.55a(f)(4)(iv), Arizona Public Service Company (APS) is proposing to update portions of the Palo Verde Nuclear Generating Station (PVNGS) inservice testing (IST) program second 10-year interval for Units 1, 2, and 3 to later editions and addenda of the ASME Code. APS requests Commission approval of these proposed changes in accordance with 10 CFR 50.55a(f)(4)(iv). The proposed subsequent editions and addenda are incorporated by reference in 10 CFR 50.55a(b), and are described in the enclosure to this letter. Federal Register, Volume 67, Number 187, dated Thursday, September 26, 2002 (67 FR 60520), incorporate by reference the 1997 Addenda, 1998 Edition, 1999 Addenda, and 2000 Addenda of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) for IST programs in 10 CFR 50.55a(b).

The change would extend the exercise interval for manual valves within the scope of the PVNGS IST program from three months to two years. Currently, the PVNGS IST program is committed to the 1989 Edition of the ASME Section XI Code that invokes the 1987 Edition and 1988 Addenda of the OM Code.

This request is similar to a request previously approved by the NRC for Indian Point Unit 3, dated June 20, 2002 (TAC No. MB3865).

APS requests approval by August 31, 2004, in order to implement the change during the summer 2004.

No commitments are being made to the NRC in this letter. Enclosed for information only is the latest revision to the APS Pump and Valve Testing Program. The enclosure is revision 14 to PVNGS procedure 73DP-9XI01, "Pump and Valve Inservice Testing Program - Component Tables." Should you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,

C. K. Peterson
for David Mauldin

CDM/SAB/RKR/kg

Enclosures:
1. Request to Use Subsequent Editions and Addenda of American Society of Mechanical Engineers (ASME) Code for Inservice Testing

2. Revision 14 to PVNGS procedure 73DP-9XI01, "Pump and Valve Inservice Testing Program - Component Tables."

cc:
B. S. Mallett	NRC Region IV Regional Administrator
M. B. Fields	NRC NRR Project Manager
N. L. Salgado	NRC Senior Resident Inspector for PVNGS

ENCLOSURE

Request to Use Subsequent Editions and Addenda of American Society of Mechanical Engineers (ASME) Code for Inservice Testing

Request to Use Subsequent Editions and Addenda of American Society of Mechanical Engineers (ASME) Code for Inservice Testing

1. ASME Code Components Affected

This Request affects all manually-operated valves in the Inservice Testing (IST) Program at Palo Verde Nuclear Generating Station (PVNGS) units 1, 2, and 3.

2. Applicable Code Edition and Addenda

The current Code of record for the PVNGS IST Program is the 1989 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. This Code invokes the 1987 Edition and 1988 Addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code). This Code requires that the manual valves be exercised at a three month interval.

3. Proposed Subsequent Code Edition and Addenda (or Portion)

PVNGS requests approval to use the portions of the 2000 Addenda of the ASME OM Code related to inservice testing of manually-operated valves. Federal Register, Volume 67, Number 187, dated Thursday, September 26, 2002 (67 FR 60520), incorporates by reference the 1997 Addenda, 1998 Edition, 1999 Addenda, and 2000 Addenda of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) for Inservice Testing (IST) programs in 10 CFR 50.55a(b).

Specifically, PVNGS would apply the requirements of ISTC-3540, "Manual Valves", and ISTC-5210, "Manually-Operated Valves", from the 2000 Addenda.

- "ISTC-3540 Manual Valves. Manual valves shall be full-stroke exercised at least once every five years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness. Any increased testing frequency shall be specified by the Owner. The valve shall exhibit the required change of obturator position."

- "ISTC-5210, Manually-Operated Valves. Valve testing shall be in accordance with ISTC-3500. If a valve fails to exhibit the required change of obturator position, the valve shall be immediately declared inoperable. Valves equipped with remote position indication shall be tested in accordance with ISTC-3700."

4. Limitations/Modifications and Related Requirements

10 CFR 50.55a(f)(4)(iv) states:

"Inservice tests of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b) of this section, subject to the limitations and modifications listed in paragraph (b) of this section, and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met."

10 CFR 50.55a(b)(3) states:

"As used in this section, references to the OM Code refer to the ASME Code for Operation and Maintenance of Nuclear Power Plants, and include the 1995 Edition through the 2000 Addenda subject to the following limitations and modifications:"

Limitations and Modifications

In accordance with the limitation imposed by 10 CFR 50.55a(b)(3)(vi), manual valves will be exercised on a 2-year interval rather than the 5-year interval specified in ISTC-3540 of the 2000 Addenda, provided that adverse conditions do not require more frequent testing.

Related Requirements

The other requirements of the 2000 Addenda of the ASME OM Code that are related to the exercising of manual valves are essentially the same as those specified by the 1988 Addenda. Therefore the other requirements of the 1988 Addenda will continue to be applied to manual valves in the PVNGS IST Program.

5. Basis of Using Subsequent Code Editions and Addenda

The ASME OM Code through the 2000 Addenda has been incorporated by reference in 10 CFR 50.55a(b)(3) per 67 FR 60520.

6. Duration of Proposed Request

The duration of the proposed request is the remainder of the PVNGS second 10-year IST interval, which is scheduled to end January 15, 2008.

7. **Precedents**

This request is similar to a request previously approved by the NRC for Indian Point Unit 3, dated June 20, 2002 (TAC No. MB3865).

ENCLOSURE 2

Revision 14 to PVNGS procedure 73DP-9XI01,
"Pump and Valve Inservice Testing Program - Component Tables."
(For information Only)

Procedure Intent

This procedure identifies the pump and valve tests performed to meet the requirements of 10 CFR 50.55a, Section XI of the ASME Boiler and Pressure Vessel Code, and Technical Specification 5.5.8.

Revision 14 Changes

- Updated the "Approval" section of all PRRs and VRRs to reflect approval status from the NRC SER dated July 8, 1999. Added a new PRR, CSJ, ROJ, and VRR summary table. Deleted the PRRs, CSJs, ROJs, and VRRs that are no longer active.

Revision 13 Changes

- Placed a note in the "Remarks" section of the valve table identifying MSIV and Economizer FWIV part-stroke exercise tests as "augmented" tests. Affected EQIDs are: MSIVs SGEUV0170, SGEUV0171, SGEUV0180, SGEUV0181, and Economizer FWIVs SGBUV0132, SGBUV0137, SGAUV0174, and SGAUV0177. Also updated Cold Shutdown Justifications CSJ-18 and CSJ-19 accordingly. Basis: Part-stroke tests are not practical for ASME Section XI testing because of the risk of full closure. However, these part-strokes remain part of the IST Program as "augmented" tests at the request of System Engineering in order to confirm continued operability by periodically exercising the 4-way pilot valves. This clarification in the IST Program was made to allow part-stroke testing to be waived in cases where the MSIVs or FWIVs were recently stoked for other reasons, such as a unit outage. For additional information, see the White Paper that accompanies 73DP-9XI01 rev. 13.
- Reformatted the valve tables to make them more compact.

Introduction

This procedure identifies the pump and valve tests performed to meet the requirements of 10 CFR 50.55a, Section XI of the ASME Boiler and Pressure Vessel Code, and Technical Specification 5.5.8.

This program is applicable to PVNGS Units 1, 2, and 3. The pumps and valves within the scope of this program are identified in the component tables.

The second 10-year IST interval for all three units begins on January 15, 1998, and ends on January 15, 2008. During this interval, inservice testing is performed in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition; and ASME/ANSI OM-1987, "Operation and Maintenance of Nuclear Power Plants", Part 1, Part 6 (with OMa-1988 Addenda), and Part 10 (with OMa-1988 Addenda). Deviations from the requirements of these codes are documented by relief requests.

Component Tables

The Pump Table, Valve Table, and supporting documentation are provided on the following pages:

References

Implementing References

- 73DP-9XI02, "Pump and Valve Inservice Testing Program – Administrative Requirements"
- Surveillance test procedures as listed in the Pump Table and Valve Table

Developmental References

Developmental references for the Pump and Valve IST Program are listed in 73DP-9XI02.

In addition, recent IST Program changes are documented by the following:

- LDCR 00-R003 and 10 CFR 50.59 Evaluation # 00-00033 (Change LTOP PSV testing interval from 18 months to 10 years)
- LDCRs 00-R005 (TRM), 00-F039 (UFSAR), and 10 CFR 50.59 Evaluation # 00-00069 (Delete Type C testing from shutdown cooling CIVs)
- LDCRs 01-R003 (TRM), 01-F009 (UFSAR), and 10 CFR 50.59 Evaluation # 01-00019 rev. 1 (Delete Type C testing from HPSI hot leg injection CIVs)
- CRDR 2410646 (Addition of valves SIEV500 and SIEV501 to the IST Program)
- 50.59 Screening S03-0045 (Delete Appendix J Type C testing on valves SIEV500 and SIEV501)

Pump Table

Pump ID / Description	Code Class	Drawing Coord.	Speed	Press.	Flow Rate	Vibration	Test Procedure	Remarks
AFA-P01 Essential Auxiliary Feedwater Pump (Turbine-Driven)	3	AFP-001 D06	QTR	QTR	NA PRR-01	QTR	73ST-9AF02	Minimum flow recirc test
			CSD	CSD	CSD	CSD	73ST-9AF02	Full-flow test per PRR-01
AFB-P01 Essential Auxiliary Feedwater Pump (Motor-Driven)	3	AFP-001 B06	NA	QTR	NA PRR-01	QTR	73ST-9AF03	Minimum flow recirc test
			NA	CSD	CSD	CSD	73ST-9AF03	Full-flow test per PRR-01
AFN-P01 Non-Class Auxiliary Feedwater Pump (Motor-Driven)	N	AFP-001 H06	NA	QTR	NA PRR-02	QTR	73ST-9AF01	Augmented component, tested pursuant to SR 3.7.5.2
CHA-P01 Charging Pump	2	CHP-002 B03	NA	QTR	QTR PRR-03	QTR PRR-07	73ST-9CH06	
CHB-P01 Charging Pump	2	CHP-002 D03	NA	QTR	QTR PRR-03	QTR PRR-07	73ST-9CH06	
CHE-P01 Charging Pump	2	CHP-002 G03	NA	QTR	QTR PRR-03	QTR PRR-07	73ST-9CH06	
CTA-P01 Condensate Transfer Pump	3	CTP-001 C05	NA	QTR	QTR	QTR	73ST-9CT01	Augmented component
CTB-P01 Condensate Transfer Pump	3	CTP-001 B05	NA	QTR	QTR	QTR	73ST-9CT01	Augmented component
DFA-P01 Diesel Generator Fuel Oil Transfer Pump	3	DFP-001 B06	NA	QTR	QTR	NA*	73ST-9DF01	*Submerged pump - no accessible bearings.
DFB-P01 Diesel Generator Fuel Oil Transfer Pump	3	DFP-001 B02	NA	QTR	QTR	NA*	73ST-9DF01	*Submerged pump - no accessible bearings.
ECA-P01 Essential Chilled Water Circulation Pump	3	ECP-001 B08	NA	QTR	QTR	QTR	73ST-9EC01	
ECB-P01 Essential Chilled Water Circulation Pump	3	ECP-001 B04	NA	QTR	QTR	QTR	73ST-9EC01	
EWA-P01 Essential Cooling Water Pump	3	EWP-001 E06	NA	QTR	QTR	QTR	73ST-9EW01	
EWB-P01 Essential Cooling Water Pump	3	EWP-001 E02	NA	QTR	QTR	QTR	73ST-9EW01	

Pump ID / Description	Code Class	Drawing Coord.	Speed	Press.	Flow Rate	Vibra-tion	Test Procedure	Remarks
PCA-P01 Spent Fuel Pool Cooling Pump	3	PCP-001 D15	NA	QTR	QTR	QTR	73ST-9PC01	Augmented component
PCB-P01 Spent Fuel Pool Cooling Pump	3	PCP-001 B15	NA	QTR	QTR	QTR	73ST-9PC01	Augmented component
SIA-P01 Low Pressure Safety Injection (LPSI) Pump	2	SIP-001 F11	NA	QTR	NA PRR-05	QTR	73ST-9SI11	Minimum flow recirc test
			NA	CSD	CSD	CSD	73ST-9SI14	Full-flow test per PRR-05
SIB-P01 Low Pressure Safety Injection (LPSI) Pump	2	SIP-001 B11	NA	QTR	NA PRR-05	QTR	73ST-9SI11	Minimum flow recirc test
			NA	CSD	CSD	CSD	73ST-9SI14	Full-flow test per PRR-05
SIA-P02 High Pressure Safety Injection (HPSI) Pump	2	SIP-001 E11	NA	QTR	NA PRR-06	QTR	73ST-9SI10	Minimum flow recirc test
			NA	RFO	RFO	RFO	73ST-9XI33	Full-flow test per PRR-06
SIB-P02 High Pressure Safety Injection (HPSI) Pump	2	SIP-001 A11	NA	QTR	NA PRR-06	QTR	73ST-9SI10	Minimum flow recirc test
			NA	RFO	RFO	RFO	73ST-9XI33	Full-flow test per PRR-06
SIA-P03 Containment Spray Pump	2	SIP-001 H11	NA	QTR	NA PRR-11	QTR	73ST-9SI06	Minimum flow recirc test
			NA	CSD	CSD	CSD	73ST-9SI15	Full-flow test per PRR-11
SIB-P03 Containment Spray Pump	2	SIP-001 C11	NA	QTR	NA PRR-11	QTR	73ST-9SI06	Minimum flow recirc test
			NA	CSD	CSD	CSD	73ST-9SI15	Full-flow test per PRR-11
SPA-P01 Essential Spray Pond Pump	3	SPP-001 Sh. 1 C04	NA	QTR	QTR	QTR	73ST-9SP01	Vertical line shaft pump
SPB-P01 Essential Spray Pond Pump	3	SPP-001 Sh. 1 C07	NA	QTR	QTR	QTR	73ST-9SP01	Vertical line shaft pump

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
AFAV007 TURBINE-DRIVEN AFW PUMP SUCTION CHECK VALVE FROM CONDENSATE STORAGE TANK	AFP-001 D07 3	8 CK SA	C A O	FSO PSO	CSD QTR	73ST-9AF02 73ST-9AF02	CSJ-01 CSJ-01	Notes 1, 2, 3
AFAV015 TURBINE-DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK VALVE	AFP-001 E05 3	6 CK SA	C A OC	FSO FSC	CSD CSD	73ST-9AF02 73ST-9XI38	CSJ-03 CSJ-03	Notes 1, 2, 3
AFBV022 MOTOR-DRIVEN AFW PUMP SUCTION CHECK VALVE FROM CONDENSATE STORAGE TANK	AFP-001 C07 3	8 CK SA	C A O	FSO PSO	CSD QTR	73ST-9AF03 73ST-9AF03	CSJ-01 CSJ-01	Notes 1, 2, 3
AFBV024 MOTOR-DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK VALVE	AFP-001 C05 3	6 CK SA	C A OC	FSO FSC	CSD CSD	73ST-9AF03 73ST-9AF02	CSJ-03 CSJ-03	Notes 1, 2, 3
AFBHV0030 MOTOR-DRIVEN AFW PUMP TO SG #1 FLOW CONTROL VALVE	AFP-001 B04 3	6 GL MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFBHV0031 MOTOR-DRIVEN AFW PUMP TO SG #2 FLOW CONTROL VALVE	AFP-001 B04 3	6 GL MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFAHV0032 TURBINE-DRIVEN AFW PUMP TO SG #1 FLOW CONTROL VALVE	AFP-001 D04 3	6 GL MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFCHV0033 TURBINE-DRIVEN AFW PUMP TO SG #2 FLOW CONTROL VALVE	AFP-001 C04 3	6 GL MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFBUV0034 MOTOR-DRIVEN AFW PUMP TO SG #1 ISOLATION VALVE	AFP-001 B03 2	6 GA MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFBUV0035 MOTOR-DRIVEN AFW PUMP TO SG #2 ISOLATION VALVE	AFP-001 C03 2	6 GA MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFCUV0036 TURBINE-DRIVEN AFW PUMP TO SG #1 ISOLATION VALVE	AFP-001 D03 2	6 GA MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFAUV0037 TURBINE-DRIVEN AFW PUMP TO SG #2 ISOLATION VALVE	AFP-001 D03 2	6 GA MO	B A OC	FSO FSC STO STC	QTR QTR 18M 18M	73ST-9XI05 73ST-9XI05 73ST-9XI05 73ST-9XI05	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
AFAHV0054 TURBINE-DRIVEN AFW PUMP TRIP/THROTTLE VALVE	AFP-001 G04 3	4 GL MO	B A O	FSO	QTR	73ST-9AF02	VRR-12	Note 5 QTR FS FOR PRA/RA, PREVIOUSLY TESTED IN 73ST-9XI05.

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
AFAV079 AFW TO SG #1 CHECK VALVE	AFP-001 E02 2	6 CK SA	C A O	FSO	CSD	73ST-9AF02	CSJ-04	Notes 1, 2, 3. Also exercised open in 73ST-9AF03.
AFBV080 AFW TO SG #2 CHECK VALVE	AFP-001 C02 2	6 CK SA	C A O	FSO	CSD	73ST-9AF02	CSJ-04	Notes 1, 2, 3. Also exercised open in 73ST-9AF03.
AFAV096 AUX STEAM SUPPLY CHECK VALVE TO AFW TURBINE	AFP-001 G02 3	4 CK SA	C A C	FSC	RFO	73ST-9XI36	ROJ-13	Notes 1, 2, 3
AFBPSV0106 PRESSURE LOCKING RELIEF VALVE FOR AFBUV0034 BONNET	AFP-001 B03 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
AFBPSV0107 PRESSURE LOCKING RELIEF VALVE FOR AFBUV0035 BONNET	AFP-001 C03 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
AFAPSV0108 PRESSURE LOCKING RELIEF VALVE FOR AFCUV0036 BONNET	AFP-001 D03 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
AFAPSV0109 PRESSURE LOCKING RELIEF VALVE FOR AFAUV0037 BONNET	AFP-001 D03 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
AFAV137 TURBINE DRIVEN AFW PUMP DISCHARGE CHECK VALVE	AFP-001 D06 3	6 CK SA	C A O	FSO PSO	CSD QTR	73ST-9AF02 73ST-9AF02	CSJ-02	Notes 1, 2, 3
AFBV138 MOTOR DRIVEN AFW DISCHARGE CHECK VALVE	AFP-001 C06 3	6 CK SA	C A O	FSO PSO	CSD QTR	73ST-9AF03 73ST-9AF03	CSJ-02	Notes 1, 2, 3
CHEVM70 CHARGING TO REGENERATIVE HEAT EXCHANGER INLET INBOARD CIV (PEN. 41)	CHP-001 F15 2	3 CK SA	AC A OC	FSO FSC AJ	QTR RFO CLR	73ST-9CH06 73ST-9XI28 73ST-9CL01	 ROJ-09	Notes 1, 2, 3
CHNPSV0115 VOLUME CONTROL TANK OUTLET PRESSURE RELIEF VALVE	CHP-002 C06 2	3 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHNV118 VOLUME CONTROL TANK OUTLET CHECK VALVE	CHP-002 B07 2	4 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3
CHNV131 BORIC ACID FILTER DP GAUGE EXCESS FLOW CHECK VALVE MANUAL ISOLATION	CHP-002 C11 3	0.5 DI MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHNV144 MANUAL ISOLATION VALVE FROM RWT TO SPENT FUEL POOL CLEANUP PUMPS	CHP-002 B14 3	3 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHNV154 BORIC ACID MAKEUP PUMP DISCHARGE CHECK VALVE	CHP-002 B13 3	3 CK SA	C A O	FSO PSO	RFO QTR	4xST-xCH04 73ST-9XI06	ROJ-03 ROJ-03	Notes 1, 2, 3
CHNV155 BORIC ACID MAKEUP PUMP DISCHARGE CHECK VALVE	CHP-002 B13 3	3 CK SA	C A O	FSO PSO	RFO QTR	4xST-xCH04 73ST-9XI06	ROJ-03 ROJ-03	Notes 1, 2, 3

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
CHNV164 BORIC ACID MAKEUP FILTER BYPASS LINE ISOLATION VALVE	CHP-002 D11 3	3 DI MA	B A O	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHNV165 BORIC ACID FILTER DP GAUGE EXCESS FLOW CHECK VALVE MANUAL ISOLATION	CHP-002 C11 3	0.5 DI MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHAV177 BORIC ACID MAKEUP CHECK VALVE TO VCT OUTLET	CHP-002 B07 2	3 CK SA	C A O	FSO PSO	RFO CSD	4xST-xCH04 4xST-xCH04	ROJ-01 ROJ-01	Notes 1, 2, 3
CHAV190 RWT TO CHARGING PUMP SUCTION CHECK VALVE	CHP-002 A07 2	3 CK SA	C A O	FSO PSO	RFO CSD	4xST-xCH04 4xST-xCH04	ROJ-01 ROJ-01	Notes 1, 2, 3
CHNPSV0199 RCP SEAL BLEEDOFF RELIEF VALVE	CHP-002 H15 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHBHV0203 AUXILIARY PRESSURIZER SPRAY VALVE	CHP-001 H10 1	2 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI27	CSJ-06 CSJ-06 CSJ-06 CSJ-06 CSJ-06	Cycled every 18 months per TRM TSR 3.4.100.3
CHAHV0205 AUXILIARY PRESSURIZER SPRAY VALVE	CHP-001 H11 1	2 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI27	CSJ-06 CSJ-06 CSJ-06 CSJ-06 CSJ-06	Cycled every 18 months per TRM TSR 3.4.100.3
CHEHV0239 NORMAL CHARGING FLOWPATH ISOLATION VALVE	CHP-001 G11 2	2 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9XI06		
CHEPDV0240 NORMAL CHARGING FLOWPATH ISOLATION VALVE	CHP-001 G11 1	2 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9XI06		
CHBHV0255 RCP SEAL INJECTION OUTBOARD CIV (PEN. 72)	CHP-001 G04 2	1.5 GL MO	A A C	FSC AJ	1CY CLR	73ST-9XI22 73ST-9CL01	VRR-12	Note 5
CHBV305 REFUELING WATER TANK OUTLET CHECK VALVE TO SI SUCTION HEADER	CHP-002 B15 2	20 CK SA	C A OC	FSO FSC PSO	RFO RFO QTR	73ST-9XI29 73ST-9XI39 73ST-9SI11	ROJ-02 ROJ-10 ROJ-02	Notes 1, 2, 3
CHAV306 REFUELING WATER TANK OUTLET CHECK VALVE TO SI SUCTION HEADER	CHP-002 C13 2	20 CK SA	C A OC	FSO FSC PSO	RFO RFO QTR	73ST-9XI29 73ST-9XI39 73ST-9SI11	ROJ-02 ROJ-10 ROJ-02	Notes 1, 2, 3
CHAPSV0315 CHARGING PUMP SUCTION PRESSURE RELIEF VALVE	CHP-002 C05 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
CHAV316 CHARGING PUMP CHA-P01 NORMAL SUCTION FROM VCT MANUAL ISOLATION VALVE	CHP-002 B05 2	4 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHBPSV0318 CHARGING PUMP SUCTION PRESSURE RELIEF VALVE	CHP-002 F05 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHBV319 CHARGING PUMP CHB-P01 NORMAL SUCTION FROM VCT MANUAL ISOLATION VALVE	CHP-002 D05 2	4 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHEPSV0321 CHARGING PUMP SUCTION PRESSURE RELIEF VALVE	CHP-002 H05 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHEV322 CHARGING PUMP CHE-P01 NORMAL SUCTION FROM VCT MANUAL ISOLATION VALVE	CHP-002 G05 2	4 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHEPSV0324 CHARGING PUMP DISCHARGE PRESSURE RELIEF VALVE	CHP-002 G02 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHBPSV0325 CHARGING PUMP DISCHARGE PRESSURE RELIEF VALVE	CHP-002 E02 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHAPSV0326 CHARGING PUMP DISCHARGE PRESSURE RELIEF VALVE	CHP-002 C02 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHBV327 CHARGING PUMP ALTERNATE SUCTION COMMON ISOLATION VALVE	CHP-002 E05 2	3 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHAV328 CHARGING PUMP CHA-P01 DISCHARGE CHECK VALVE	CHP-002 B02 2	2 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3
CHBV331 CHARGING PUMP CHB-P01 DISCHARGE CHECK VALVE	CHP-002 E02 2	2 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3
CHEV334 CHARGING PUMP CHE-P01 DISCHARGE CHECK VALVE	CHP-002 G02 2	2 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3
CHNPSV0345 LETDOWN CONTROL VALVE OUTLET RELIEF VALVE	CHP-001 E12 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHNPSV0354 LETDOWN BACK PRESSURE CONTROL VALVE OUTLET RELIEF VALVE	CHP-001 F9 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
CHEV429 COMMON CHARGING LINE TO REGENERATIVE HEAT EXCHANGER CHECK VALVE	CHP-001 D16 2	2 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
CHEV431 PRESSURIZER AUXILIARY SPRAY CHECK VALVE	CHP-001 G09 1	2 CK SA	C A O	FSO	CSD	73ST-9XI27	CSJ-06	Notes 1, 2, 3
CHEV433 CHARGING LINE CHECK VALVE TO RCS	CHP-001 G09 1	2 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3
CHEV435 REGENERATIVE HEAT EXCHANGER OUTLET CHECK VALVE	CHP-001 F11 1	2 CK SA	C A O	FSO	QTR	73ST-9CH06		Notes 1, 2, 3
CHNV494 REACTOR MAKEUP WATER SUPPLY CHECK VALVE TO RDT INBOARD CIV (PEN. 45)	CHP-003 E15 2	1.5 CK SA	AC A C	FSC AJ	CSD CLR	73ST-9XI28 73ST-9CL01	CSJ-29	Notes 1, 2, 3
CHNUV0501 VOLUME CONTROL TANK OUTLET ISOLATION VALVE	CHP-002 C07 2	4 GA MO	B A C	FSC	1CY	73ST-9XI22	VRR-12	Note 5
CHBUV0505 REACTOR COOLANT SEAL BLEED-OFF OUTBOARD CIV (PEN. 43)	CHP-002 H13 2	1 GL AO	A A C	FSO FSC STO STC FTC AJ VP	CSD CSD CSD CSD CSD CLR 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9CL01 73ST-9XI22	CSJ-32 CSJ-32 CSJ-32 CSJ-32 CSJ-32	
CHAUV0506 REACTOR COOLANT SEAL BLEED-OFF INBOARD CIV (PEN. 43)	CHP-002 H14 2	1 GL AO	A A C	FSO FSC STO STC FTC AJ VP	CSD CSD CSD CSD CSD CLR 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9CL01 73ST-9XI22	CSJ-32 CSJ-32 CSJ-32 CSJ-32 CSJ-32	
CHNUV0514 BORIC ACID MAKEUP TO CHARGING PUMP SUCTION ISOLATION VALVE	CHP-002 B10 3	3 GL MO	B A O	FSO	1CY	73ST-9XI06	VRR-12	Note 5
CHBUV0515 LETDOWN ISOLATION VALVE	CHP-001 H15 1	2 GL AO	B A C	FSC STC FTC VP	CSD CSD CSD 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22	CSJ-09 CSJ-09 CSJ-09	
CHAUV0516 LETDOWN INBOARD CIV (PEN. 40)	CHP-001 G15 1	2 GL AO	A A C	FSC STC FTC AJ VP	CSD CSD CSD CLR 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9CL01 73ST-9XI22	CSJ-09 CSJ-09 CSJ-09	
CHBUV0523 LETDOWN FROM REGENERATIVE HEAT EXCHANGER OUTBOARD CIV (PEN. 40)	CHP-001 F13 2	2 GL AO	A A C	FSC STC FTC AJ VP	CSD CSD CSD CLR 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9CL01 73ST-9XI22	CSJ-09 CSJ-09 CSJ-09	
CHAHV0524 CHARGING LINE OUTBOARD CIV (PEN. 41)	CHP-001 D16 2	2 GL MO	B P O	AJ	CLR	73ST-9CL01		Note 5, NO EXERCISE REQ'T - PASSIVE VALVE (NO PRA OR TS 3.3.5.4 REQ'TS FOR THIS MOV).

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
CHNUV0527 MAKEUP TO CHARGING VCT BYPASS ISOLATION VALVE	CHP-002 B08 3	3 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9XI06		
CHBHV0530 REFUELING WATER TANK OUTLET ISOLATION VALVE	CHP-002 C15 2	20 GA MO	B A OC	FSO FSC	QTR QTR	73ST-9XI06 73ST-9XI06	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA
CHAHV0531 REFUELING WATER TANK OUTLET ISOLATION VALVE	CHP-002 C14 2	20 GA MO	B A OC	FSO FSC	QTR QTR	73ST-9XI06 73ST-9XI06	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA
CHEHV0532 ISOLATION FOR REFUELING WATER TANK TO BORIC ACID MAKEUP PUMPS	CHP-002 E16 2	3 GL AO	B A C	FSO FSC STO STC FTO VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22 73ST-9XI22	CSJ-07 CSJ-07 CSJ-07 CSJ-07 CSJ-07	
CHEHV0536 REFUELING WATER TANK TO CHARGING PUMP SUCTION ISOLATION VALVE	CHP-002 A14 3	3 GL MO	B A O	FSO	1CY	73ST-9XI22	VRR-12	Note 5
CHAUV0560 REACTOR DRAIN TANK OUTLET INBOARD CIV (PEN. 44)	CHP-003 B15 2	3 GL AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
CHBUV0561 REACTOR DRAIN TANK INBOARD CIV (PEN. 44)	CHP-003 A15 2	3 GL AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
CHAUV0580 REACTOR MAKEUP WATER TO RDT OUTBOARD CIV (PEN. 45)	CHP-003 F14 2	1.5 GA AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
CHAUV0715 PASS TO RDT CIV (PEN. 45)	CHP-003 E13 2	0.5 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
CHAV755 CHARGING PUMP CHA-P01 ALTERNATE SUCTION MANUAL ISOLATION VALVE	CHP-002 C05 2	3 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHBV756 CHARGING PUMP CHB-P01 ALTERNATE SUCTION MANUAL ISOLATION VALVE	CHP-002 D05 2	3 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
CHEV757 CHARGING PUMP CHE-P01 ALTERNATE SUCTION MANUAL ISOLATION VALVE	CHP-002 F05 2	3 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		

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CHNV835 RCP SEAL INJECTION SUPPLY LINE CHECK VALVE	CHP-001 G03 2	1.5 CK SA	AC A C	FSC AJ	CSD CLR	73ST-9XI26 73ST-9CL01	CSJ-11	Notes 1, 2, 3
CHEV854 CHARGING LINE CHEMICAL ADDITION ISOLATION VALVE (PEN. 41)	CHP-001 E15 2	0.75 GL MA	A P C	AJ	CLR	73ST-9CL01		
CHBUV0924 LETDOWN TO PASS CIV (PEN. 40)	CHP-001 E14 2	0.5 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
CPAUV0002B CONTAINMENT REFUELING PURGE EXHAUST INBOARD CIV (PEN. 57)	CPP-001 E03 2	42 BF MO	A A C	FSC STC AJ	CSD 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL10	VRR-12 VRR-12	Note 5 18M STC REQ'D FOR TS 3.3.5.4 DURING CSD (see CSJ-10).
CPAUV0002A CONTAINMENT REFUELING PURGE SUPPLY OUTBOARD CIV (PEN. 56)	CPP-001 D06 2	42 BF MO	A A C	FSC STC AJ	CSD 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL06	VRR-12 VRR-12	Note 5 18M STC REQ'D FOR TS 3.3.5.4 DURING CSD (see CSJ-10).
CPBUV0003A CONTAINMENT REFUELING PURGE SUPPLY INBOARD CIV (PEN. 56)	CPP-001 D05 2	42 BF MO	A A C	FSC STC AJ	CSD 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL06	VRR-12 VRR-12	Note 5 18M STC REQ'D FOR TS 3.3.5.4 DURING CSD (see CSJ-10).
CPBUV0003B CONTAINMENT REFUELING PURGE EXHAUST OUTBOARD CIV (PEN. 57)	CPP-001 E02 2	42 BF MO	A A C	FSC STC AJ	CSD 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL10	VRR-12 VRR-12	Note 5 18M STC REQ'D FOR TS 3.3.5.4 DURING CSD (see CSJ-10).
CPAUV0004A CONTAINMENT POWER ACCESS PURGE SUPPLY OUTBOARD CIV (PEN. 78)	CPP-001 D06 2	8 BF AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI15 73ST-9XI15 73ST-9XI15 73ST-9CL07 73ST-9XI15		
CPAUV0004B CONTAINMENT POWER ACCESS PURGE EXHAUST INBOARD CIV (PEN. 79)	CPP-001 D03 2	8 BF AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI15 73ST-9XI15 73ST-9XI15 73ST-9CL07 73ST-9XI15		
CPBUV0005B CONTAINMENT POWER ACCESS PURGE EXHAUST OUTBOARD CIV (PEN. 79)	CPP-001 C02 2	8 BF AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI15 73ST-9XI15 73ST-9XI15 73ST-9CL07 73ST-9XI15		
CPBUV0005A CONTAINMENT POWER ACCESS PURGE SUPPLY INBOARD CIV (PEN. 78)	CPP-001 D05 2	8 BF AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI15 73ST-9XI15 73ST-9XI15 73ST-9CL07 73ST-9XI15		
CTAHV0001 AFN-P01 SUCTION ISOLATION VALVE FROM CONDENSATE STORAGE TANK	CTP-001 E02 3	10 BF MO	B A C	FSO FSC	QTR QTR	73ST-9XI05 73ST-9XI05	VRR-12 VRR-12	The tests in the open direction are for an augmented function Note 5 QTR FS FOR PRA/RA.

Valve ID Description	Drawing Coord/Sht# Code Class	Size (In) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
CTAHV0004 AFN-P01 SUCTION ISOLATION VALVE FROM CONDENSATE STORAGE TANK	CTP-001 E03 3	10 BF MO	B A C	FSO FSC	QTR QTR	73ST-9XI05 73ST-9XI05	VRR-12 VRR-12	The tests in the open direction are for an augmented function Note 5 QTR FS FOR PRA/RA.
CTNPSV0008 COMBINED VACUUM AND PRESSURE RELIEF FOR THE CONDENSATE STORAGE TANK	CTP-001 H05 3	10 SV SA	C A OC	SV	10Y	73ST-9ZZ20		Press/Vacuum Relief
CTAV016 CONDENSATE TRANSFER PUMP DISCHARGE CHECK VALVE	CTP-001 C04 3	3 CK SA	C A O	FSO	QTR	73ST-9CT01		Notes 1, 2, 3. Augmented test requirement.
CTAV018 CONDENSATE TRANSFER TO SPENT FUEL POOL ISOLATION	CTP-001 C03 3	3 GA MA	B P C	FSO FSC	QTR QTR	73ST-9CT01 73ST-9CT01		Augmented testing
CTBV019 CONDENSATE TRANSFER TO SPENT FUEL POOL ISOLATION	CTP-001 B03 3	3 GA MA	B P C	FSO FSC	QTR QTR	73ST-9CT01 73ST-9CT01		Augmented testing
CTBV020 CONDENSATE TRANSFER PUMP DISCHARGE CHECK VALVE	CTP-001 B04 3	3 CK SA	C A O	FSO	QTR	73ST-9CT01		Notes 1, 2, 3. Augmented test requirement.
CTNPSV0023 COMBINED VACUUM AND PRESSURE RELIEF FOR THE CONDENSATE STORAGE TANK	CTP-001 H05 3	10 SV SA	C A OC	SV	10Y	73ST-9ZZ20		Press/Vacuum Relief
CTAV037 CONDENSATE TRANSFER TO SPENT FUEL POOL CHECK VALVE	CTP-001 C04 3	3 CK SA	C A O	FSO	QTR	73ST-9CT01		Notes 1, 2, 3. Augmented test requirement.
CTBV038 CONDENSATE TRANSFER TO SPENT FUEL POOL CHECK VALVE	CTP-001 B04 3	3 CK SA	C A O	FSO	QTR	73ST-9CT01		Notes 1, 2, 3. Augmented test requirement.
DFAV012 FUEL OIL TRANSFER PUMP DISCHARGE CHECK VALVE	DFP-001 D06 3	2 CK SA	C A O	FSO	QTR	73ST-9DF01		Notes 1, 2, 3
DFBV019 FUEL OIL TRANSFER PUMP DISCHARGE CHECK VALVE	DFP-001 D02 3	2 CK SA	C A O	FSO	QTR	73ST-9DF01		Notes 1, 2, 3
DFAV041 DIESEL FUEL OIL FILTER DP GAUGE MANUAL ISOLATION VALVE	DFP-001 H07 3	1 GL MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
DFAV042 DIESEL FUEL OIL FILTER DP GAUGE MANUAL ISOLATION VALVE	DFP-001 G07 3	1 GL MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
DFBV051 DIESEL FUEL OIL FILTER DP GAUGE MANUAL ISOLATION VALVE	DFP-001 H03 3	1 GL MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
DFBV052 DIESEL FUEL OIL FILTER DP GAUGE MANUAL ISOLATION VALVE	DFP-001 G03 3	1 GL MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		

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DGAPSV0005 EDG START AIR RECEIVER SAFETY RELIEF VALVE	DGP-001 H0[illegible] SH9 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
DGBPSV0006 EDG START AIR RECEIVER SAFETY RELIEF VALVE	DGP-001 D0[illegible] SH9 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
DGAPSV0007 EDG START AIR RECEIVER SAFETY RELIEF VALVE	DGP-001 F0[illegible] SH9 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
DGBPSV0008 EDG START AIR RECEIVER SAFETY RELIEF VALVE	DGP-001 C0[illegible] SH9 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
DGAV066 EDG STARTING AIR DRYER OUTLET CHECK VALVE	DGP-001 F0[illegible] SH9 3	1 CK SA	C A C	FSC	QTR	73ST-9XI17		Notes 1, 2, 3. Required in all modes including shutdown.
DGAV067 EDG STARTING AIR DRYER OUTLET CHECK VALVE	DGP-001 G0[illegible] SH9 3	1 CK SA	C A C	FSC	QTR	73ST-9XI17		Notes 1, 2, 3. Required in all modes including shutdown.
DGBV068 EDG STARTING AIR DRYER OUTLET CHECK VALVE	DGP-001 D0[illegible] SH9 3	1 CK SA	C A C	FSC	QTR	73ST-9XI18		Notes 1, 2, 3. Required in all modes including shutdown.
DGBV069 EDG STARTING AIR DRYER OUTLET CHECK VALVE	DGP-001 C0[illegible] SH9 3	1 CK SA	C A C	FSC	QTR	73ST-9XI18		Notes 1, 2, 3. Required in all modes including shutdown.
DGAV317 EDG ENGINE-DRIVEN JACKET WATER CIRC PUMP DISCHARGE CHECK VALVE	DGP-001 F0[illegible] SH4 3	6 CK SA	C A OC	FSO	QTR	40ST-9DG01	VRR-01	Notes 1, 2, 3
DGAV318 EDG MOTOR-DRIVEN JACKET WATER CIRC PUMP DISCHARGE CHECK VALVE	DGP-001 D0[illegible] SH4 3	3 CK SA	C A OC	FSO	QTR	40ST-9DG01	VRR-01	Notes 1, 2, 3
DGAV364 EDG PRE-LUBE PUMP AND HEATER CHECK VALVE	DGP-001 C0[illegible] SH3 3	3 CK SA	C A OC	FSO	QTR	40ST-9DG01	VRR-01	Notes 1, 2, 3
DGBV417 EDG ENGINE-DRIVEN JACKET WATER CIRC PUMP DISCHARGE CHECK VALVE	DGP-001 F02 SH4 3	6 CK SA	C A OC	FSO	QTR	40ST-9DG02	VRR-01	Notes 1, 2, 3
DGBV418 EDG MOTOR-DRIVEN JACKET WATER CIRC PUMP DISCHARGE CHECK VALVE	DGP-001 D0[illegible] SH4 3	3 CK SA	C A OC	FSO	QTR	40ST-9DG02	VRR-01	Notes 1, 2, 3
DGBV464 EDG PRE-LUBE PUMP AND HEATER CHECK VALVE	DGP-001 C0[illegible] SH3 3	3 CK SA	C A OC	FSO	QTR	40ST-9DG02	VRR-01	Notes 1, 2, 3
DWEV061 DW SUPPLY HEADER OUTSIDE CONTAINMENT ISOLATION VALVE (PEN. 6)	DWP-002 C03 2	2 GL MA	A P C	AJ	CLR	73ST-9CL01		
DWEV062 DW SUPPLY HEADER INSIDE CONTAINMENT ISOLATION VALVE (PEN. 6)	DWP-002 C02 2	2 GL MA	A P C	AJ	CLR	73ST-9CL01		

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ECAV038 MAKEUP LINE CHECK VALVE FROM DW	ECP-001 D07 3	1.5 CK SA	C A C	CMI	CMP	73ST-9ZZ25	VRR-13	Notes 1, 3, 4
ECAV041 MAKEUP LINE CHECK VALVE FROM CT	ECP-001 C07 3	1.5 CK SA	C A C	CMI	CMP	73ST-9ZZ25	VRR-13	Notes 1, 3, 4
ECAV043 NITROGEN SUPPLY CHECK VALVE TO EC EXPANSION TANK	ECP-001 C07 3	1 CK SA	C A C	CMI	CMP	73ST-9ZZ25	VRR-13	Notes 1, 3, 4
ECBV060 MAKEUP LINE CHECK VALVE FROM DW	ECP-001 D03 3	1.5 CK SA	C A C	CMI	CMP	73ST-9ZZ25	VRR-13	Notes 1, 3, 4
ECBV064 NITROGEN SUPPLY CHECK VALVE TO EC EXPANSION TANK	ECP-001 C03 3	1 CK SA	C A C	CMI	CMP	73ST-9ZZ25	VRR-13	Notes 1, 3, 4
ECBV072 MAKEUP LINE CHECK VALVE FROM CT	ECP-001 D03 3	1.5 CK SA	C A C	CMI	CMP	73ST-9ZZ25	VRR-13	Notes 1, 3, 4
ECAPSV0075 EC EXPANSION TANK RELIEF VALVE	ECP-001 D06 3	1.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0076 EC EXPANSION TANK RELIEF VALVE	ECP-001 D03 3	1.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0095 ESF SWITCHGEAR ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 E05 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0096 ESF SWITCHGEAR ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 E02 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0097 CONTROL ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 E07 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0098 CONTROL ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 E04 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0099 WEST ELECTRICAL PENETRATION ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 F07 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0100 EAST ELECTRICAL PENETRATION ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 F03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0101 EW PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 F06 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0102 EW PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 F02 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		

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ECAPSV0103 CS PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 H07 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0104 CS PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 H04 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0105 HPSI PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 H06 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0106 HPSI PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 H03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0107 LPSI PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 H05 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0108 LPSI PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 H02 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0109 AFW PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 F04 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0117 AFW PUMP ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 F05 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECBPSV0120 DC EQUIPMENT ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 E03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
ECAPSV0121 DC EQUIPMENT ROOM ESSENTIAL ACU RELIEF VALVE	ECP-001 E06 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWAPSV0047 SHUTDOWN HEAT EXCHANGER RELIEF VALVE	EWP-001 B07 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWBPSV0048 SHUTDOWN HEAT EXCHANGER PRESSURE RELIEF VALVE	EWP-001 B03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWAPSV0061 ESSENTIAL CHILLER OUTLET LINE RELIEF VALVE	EWP-001 D07 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWBPSV0062 ESSENTIAL CHILLER OUTLET LINE RELIEF VALVE	EWP-001 E03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWAUV0065 EW TO NUCLEAR COOLING WATER RETURN ISOLATION VALVE	EWP-001 C08 3	12 BF MO	B A C	FSC STC	1CY 18M	73ST-9XI23 73ST-9XI23	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
EWAHCV0067 FUEL POOL HEAT EXCHANGER RETURN ISOLATION VALVE	EWP-001 E08 3	10 BF MA	B P C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		Passive closed valve, exercising is augmented testing because of Important (but non-safety) function to open

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
EWBHCV0068 FUEL POOL HEAT EXCHANGER RETURN ISOLATION VALVE	EWP-001 E04 3	10 BF MA	B P C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		Passive closed valve, exercising is augmented testing because of important (but non-safety) function to open
EWAPSV0079 ESSENTIAL CHILLED WATER HEAT EXCHANGER A PRESSURE RELIEF VALVE	EWP-001 F07 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWBPSV0080 ESSENTIAL CHILLED WATER HEAT EXCHANGER B PRESSURE RELIEF VALVE	EWP-001 F03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWAPSV0103 ESSENTIAL COOLING WATER SURGE TANK A PRESSURE RELIEF VALVE	EWP-001 H06 3	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWBPSV0104 ESSENTIAL COOLING WATER SURGE TANK B PRESSURE RELIEF VALVE	EWP-001 H02 3	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWAPSV0105 EW SURGE TANK VACUUM RELIEF VALVE	EWP-001 H06 3	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWBPSV0106 EW SURGE TANK VACUUM RELIEF VALVE	EWP-001 H02 3	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
EWAHCV0133 FUEL POOL HEAT EXCHANGER SUPPLY ISOLATION VALVE	EWP-001 D06 3	10 BF MA	B P C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		Passive closed valve, exercising is augmented testing because of important (but non-safety) function to open
EWBHCV0134 FUEL POOL HEAT EXCHANGER SUPPLY ISOLATION VALVE	EWP-001 D02 3	10 BF MA	B P C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		Passive closed valve, exercising is augmented testing because of important (but non-safety) function to open
EWAUV0145 EW TO NUCLEAR COOLING WATER SUPPLY ISOLATION VALVE	EWP-001 C04 3	12 BF MO	B A C	FSC STC	1CY 18M	73ST-9XI23 73ST-9XI23	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
EWAV234 EW SURGE TANK INSTRUMENTATION EXCESS FLOW CHECK VALVE MANUAL ISOLATION VALVE	EWP-001 G07 3	2 GL MA	B A C	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
EWAV235 EW SURGE TANK INSTRUMENTATION EXCESS FLOW CHECK VALVE MANUAL ISOLATION VALVE	EWP-001 F07 3	2 GL MA	B A C	FSO FSC	QTR QTR	3ST-9XI31 3ST-9XI31		
EWBV238 EW SURGE TANK INSTRUMENTATION EXCESS FLOW CHECK VALVE MANUAL ISOLATION VALVE	EWP-001 G03 3	2 GL MA	B A C	FSO FSC	QTR QTR	3ST-9XI31 3ST-9XI31		
EWBV239 EW SURGE TANK INSTRUMENTATION EXCESS FLOW CHECK VALVE MANUAL ISOLATION VALVE	EWP-001 F03 3	2 GL MA	B A C	FSO FSC	QTR QTR	3ST-9XI31 3ST-9XI31		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
FPEV089 FIRE WATER OUTSIDE CONTAINMENT ISOLATION VALVE (PEN. 7)	FPP-006 E08 2	6 GL MA	A P C	AJ	CLR	73ST-9CL01		
FPEV090 FIRE WATER INSIDE CONTAINMENT ISOLATION VALVE (PEN. 7)	FPP-006 F09 2	6 CK SA	AC P C	AJ	CLR	73ST-9CL01		Notes 1, 2, 3
GAAUV0001 HIGH PRESSURE NITROGEN SUPPLY HEADER OUTSIDE CIV (PEN. 30)	GAP-001 E07 2	1 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI07 73ST-9XI07 73ST-9XI07 73ST-9CL01 73ST-9XI07		
GAAUV0002 LOW PRESSURE NITROGEN SUPPLY HEADER OUTSIDE CIV (PEN. 29)	GAP-001 F03 2	1 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI07 73ST-9XI07 73ST-9XI07 73ST-9CL01 73ST-9XI07		
GAEV011 HIGH PRESSURE NITROGEN SUPPLY INSIDE CONTAINMENT ISOLATION CHECK VALVE (PEN. 30)	GAP-001 D06 2	1 CK SA	AC P C	FSC AJ	CSD CLR	73ST-9XI28 73ST-9CL01		Notes 1, 2, 3. Considered active during first IST interval, re-evaluated as passive during 10-year update, further reviews being performed before dis-continuing exercise testing.
GAEV015 LOW PRESSURE NITROGEN SUPPLY INSIDE CONTAINMENT ISOLATION CHECK VALVE (PEN. 29)	GAP-001 E02 2	1 CK SA	AC A C	FSC AJ	CSD CLR	73ST-9XI28 73ST-9CL01	CSJ-23	Notes 1, 2, 3
GRAUV0001 CONTAINMENT ISOLATION BETWEEN RDT AND GAS SURGE HEADER (PEN 52)	GRP-001 H07 2	1 GL MO	A A C	FSC STC AJ	QTR 18M CLR	73ST-9XI07 73ST-9XI07 73ST-9CL01	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
GRBUV0002 CONTAINMENT ISOLATION (SOV) BETWEEN RDT AND GAS SURGE HEADER (PEN 52)	GRP-001 H07 2	1 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI07 73ST-9XI07 73ST-9XI07 73ST-9CL01 73ST-9XI07		
HCBUV0044 CONTAINMENT ATMOSPHERE RADIATION MONITOR INLET CIV (PEN 25A)	HCP-001 E03 2	1 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI40 73ST-9XI40 73ST-9XI40 73ST-9CL01 73ST-9XI40		
HCAUV0045 CONTAINMENT ATMOSPHERE RADIATION MONITOR INLET CIV (PEN. 25A)	HCP-001 E02 2	1 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI40 73ST-9XI40 73ST-9XI40 73ST-9CL01 73ST-9XI40		
HCAUV0046 CONTAINMENT ATMOSPHERE RADIATION MONITOR OUTLET CIV (PEN. 25B)	HCP-001 D02 2	1 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI40 73ST-9XI40 73ST-9XI40 73ST-9CL01 73ST-9XI40		

Valve ID / Description	Drawing Coord/Sht# / Code Class	Size (in) / Type / Act.	Cat. / A/P / S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
HCBUV0047 CONTAINMENT ATMOSPHERE RADIATION MONITOR OUTLET CIV (PEN. 25B)	HCP-001 D03 2	1 GA SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI40 73ST-9XI40 73ST-9XI40 73ST-9CL01 73ST-9XI40		
HCAHV0074 CONTAINMENT PRESSURE TRANSMITTER CIV (PEN. 54A)	HCP-001 D08 2	0.75 GL SO	B P O	VP	2YR	73ST-9XI40		
HCBHV0075 CONTAINMENT PRESSURE TRANSMITTER CIV (PEN. 55A)	HCP-001 C02 2	0.75 GL SO	B P O	VP	2YR	73ST-9XI40		
HCCHV0076 CONTAINMENT PRESSURE TRANSMITTER CIV (PEN. 32A)	HCP-001 C08 2	0.75 GL SO	B P O	VP	2YR	73ST-9XI40		
HCDHV0077 CONTAINMENT PRESSURE TRANSMITTER CIV (PEN. 62A)	HCP-001 C02 2	0.75 GL SO	B P O	VP	2YR	73ST-9XI40		
HPAUV0001 H2 CONTROL SYSTEM SUPPLY FROM CONTAINMENT INBOARD CIV (PEN. 35)	HPP-001 E15 2	2 GL MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
HPBUV0002 H2 CONTROL SYSTEM SUPPLY FROM CONTAINMENT INBOARD CIV (PEN. 36)	HPP-001 C15 2	2 GL MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
HPAV002 H2 CONTROL SYSTEM RETURN LINE TO CONTAINMENT INBOARD CIV (PEN. 38)	HPP-001 F15 2	2 CK SA	AC A OC	FSO FSC AJ	QTR CSD CLR	73ST-9XI09 73ST-9XI28 73ST-9CL01	 CSJ-24	Notes 1, 2, 3
HPAUV0003 H2 CONTROL SYSTEM RETURN TO CONTAINMENT OUTBOARD CIV (PEN. 35)	HPP-001 E14 2	2 GL MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
HPBUV0004 H2 CONTROL SYSTEM RETURN TO CONTAINMENT OUTBOARD CIV (PEN. 36)	HPP-001 C14 2	2 GL MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
HPBV004 H2 CONTROL SYSTEM RETURN LINE TO CONTAINMENT INBOARD CIV (PEN. 39)	HPP-001 C15 2	2 CK SA	AC A OC	FSO FSC AJ	QTR CSD CLR	73ST-9XI10 73ST-9XI28 73ST-9CL01	 CSJ-24	Notes 1, 2, 3
HPAUV0005 H2 CONTROL SYSTEM RETURN TO CONTAINMENT OUTBOARD CIV (PEN 33)	HPP-001 E14 2	2 GL MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4

Valve ID Description	Drawing Coord/Sht#	Size (in) Type	Cat. A/P	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
HPBUV0006 H2 CONTROL SYSTEM RETURN TO CONTAINMENT OUTBOARD CIV (PEN. 39)	HPP-001 C14 2	2 GL MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
HPAHV0007B POST-LOCA H2 MONITOR OUTLET CIV (PEN. 38)	HPP-001 G14 2	1 GL SO	A A OC	FSO FSC STO STC FTC AJ VP	QTR QTR QTR QTR QTR CLR 2YR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01 73ST-9XI08		
HPAHV0007A POST-LOCA H2 MONITOR INLET CIV (PEN. 35)	HPP-001 F14 2	1 GL SO	A A OC	FSO FSC STO STC FTC AJ VP	QTR QTR QTR QTR QTR CLR 2YR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01 73ST-9XI08		
HPBHV0008A POST-LOCA H2 MONITOR INLET CIV (PEN. 36)	HPP-001 C13 2	1 GL SO	A A OC	FSO FSC STO STC FTC AJ VP	QTR QTR QTR QTR QTR CLR 2YR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01 73ST-9XI08		
HPBHV0008B POST-LOCA H2 MONITOR OUTLET CIV (PEN. 39)	HPP-001 B14 2	1 GL SO	A A OC	FSO FSC STO STC FTC AJ VP	QTR QTR QTR QTR QTR CLR 2YR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01 73ST-9XI08		
HPAUV0023 CONTAINMENT H2 MONITORING SYSTEM RETURN FROM PASS OUTBOARD CIV (PEN. 38)	HPP-001 G14 2	0.5 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01 73ST-9XI08		Valve size is 1" in Units 2 and 3.
HPAUV0024 CONTAINMENT H2 MONITORING SYSTEM TO PASS ISOLATION VALVE	HPP-001 F12 2	0.5 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI08 73ST-9XI08 73ST-9XI08 73ST-9CL01 73ST-9XI08		Valve size is 1" in Units 2 and 3.
IAAUV0002 INSTRUMENT AIR SUPPLY OUTSIDE CONTAINMENT ISOLATION VALVE (PEN. 31)	IAP-003 G07 2	2 GA SO	A A C	FSC STC FTC AJ VP	CSD CSD CSD CLR 2YR	73ST-9XI23 73ST-9XI23 73ST-9XI23 73ST-9CL01 73ST-9XI23	CSJ-13 CSJ-13 CSJ-13	
IAEV021 INSTRUMENT AIR SUPPLY INSIDE CONTAINMENT ISOLATION VALVE (PEN. 31)	IAP-003 G05 2	2 CK SA	AC A C	FSC AJ	CSD CLR	73ST-9XI28 73ST-9CL01	CSJ-13	Notes 1, 2, 3

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
IAEV072 BREATHING AIR CONTAINMENT ISOLATION VALVE (PEN. 59)	IAP-002 G09 2	3 GL MA	A P C	AJ	CLR	73ST-9CL01		
IAEV073 BREATHING AIR SUPPLY INSIDE CONTAINMENT ISOLATION VALVE (PEN. 59)	IAP-002 H07 2	3 CK SA	AC P C	AJ	CLR	73ST-9CL01		Notes 1, 2, 3
NCEV118 NUCLEAR COOLING WATER SUPPLY TO RCP COOLER INBOARD CIV (PEN. 33)	NCP-003 E06 2	10 CK SA	AC A C	FSC AJ	CSD CLR	73ST-9XI26 73ST-9CL01	CSJ-30	Notes 1, 2, 3
NCAHCV0244 NUCLEAR COOLING WATER TO SPENT FUEL POOL HEAT EXCHANGER ISOLATION VALVE	NCP-002 B04 3	10 BF MA	B A C	FSC	QTR	73ST-9XI31		Augmented
NCBHCV0245 NUCLEAR COOLING WATER TO SPENT FUEL POOL HEAT EXCHANGER ISOLATION VALVE	NCP-002 B04 3	10 BF MA	B A C	FSC	QTR	73ST-9XI31		Augmented
NCAPSV0250 FUEL POOL COOLING HEAT EXCHANGER RELIEF VALVE	NCP-002 E02 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		Augmented
NCBPSV0251 FUEL POOL COOLING HEAT EXCHANGER RELIEF VALVE	NCP-002 D02 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		Augmented
NCAHCV0258 NUCLEAR COOLING WATER TO SPENT FUEL POOL HEAT EXCHANGER ISOLATION VALVE	NCP-002 C04 3	10 BF MA	B A C	FSC	QTR	73ST-9XI31		Augmented
NCBHCV0259 NUCLEAR COOLING WATER TO SPENT FUEL POOL HEAT EXCHANGER ISOLATION VALVE	NCP-002 B04 3	10 BF MA	B A C	FSC	QTR	73ST-9XI31		Augmented
NCBUV0401 NUCLEAR COOLING WATER SUPPLY TO RCP COOLER OUTBOARD CIV (PEN. 33)	NCP-003 E07 2	10 BF MO	A A C	FSC STC AJ	1CY 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL01	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
NCAUV0402 NUCLEAR COOLING WATER SUPPLY TO RCP COOLER OUTBOARD CIV (PEN. 34)	NCP-003 F07 2	10 BF MO	A A C	FSC STC AJ	1CY 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL01	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
NCBUV0403 NUCLEAR COOLING WATER SUPPLY TO RCP COOLER INBOARD CIV (PEN. 34)	NCP-003 F06 2	10 BF MO	A A C	FSC STC AJ	1CY 18M CLR	73ST-9XI23 73ST-9XI23 73ST-9CL01	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
NCEPSV0614 NC CONTAINMENT ISOLATION VALVE RELIEF VALVE	NCP-003 E05 2	6 SV SA	C A O	SV	10Y	73ST-9ZZ20		Augmented
NCEPSV0615 NC CONTAINMENT ISOLATION VALVE RELIEF VALVE	NCP-003 E05 2	6 SV SA	C A O	SV	10Y	73ST-9ZZ20		Augmented
NCEPSV0617 NC CONTAINMENT PENETRATION RELIEF VALVE (PEN 34)	NCP-003 E07 2	0.75 SV SA	AC A OC	AJ SV	CLR 10Y	73ST-9CL01 73ST-9ZZ20		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
PCAV013 SPENT FUEL POOL COOLING PUMP DISCHARGE CHECK VALVE	PCP-001 D15 3	8 CK SA	C A OC	FSO FSC	QTR QTR	73ST-9PC01 73ST-9PC01		Notes 1, 2, 3. Augmented.
PCBV017 SPENT FUEL POOL COOLING PUMP DISCHARGE CHECK VALVE	PCP-001 B15 3	8 CK SA	C A OC	FSO FSC	QTR QTR	73ST-9PC01 73ST-9PC01		Notes 1, 2, 3. Augmented.
PCAPSV0035 SPENT FUEL POOL COOLING HEAT EXCHANGER PRESSURE RELIEF VALVE	PCP-001 E13 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		Augmented
PCBPSV0036 SPENT FUEL POOL COOLING HEAT EXCHANGER PRESSURE RELIEF VALVE	PCP-001 B13 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		Augmented
PCEV070 REFUELING POOL PURIFICATION RETURN CONTAINMENT ISOLATION VALVE (PEN 51)	PCP-001 E10 2	4 GA MA	A P C	AJ	CLR	73ST-9CL01		
PCEV071 REFUELING POOL PURIFICATION RETURN CONTAINMENT ISOLATION VALVE (PEN 51)	PCP-001 E09 2	4 GA MA	A P C	AJ	CLR	73ST-9CL01		
PCEV075 REFUELING POOL PURIFICATION SUPPLY CONTAINMENT ISOLATION VALVE (PEN 50)	PCP-001 G06 2	4 GA MA	A P C	AJ	CLR	73ST-9CL01		
PCEV076 REFUELING POOL PURIFICATION SUPPLY CONTAINMENT ISOLATION VALVE (PEN 50)	PCP-001 G05 2	4 GA MA	A P C	AJ	CLR	73ST-9CL01		
PCNV215 RWT TO SPENT FUEL POOL MANUAL ISOLATION VALVE	CHP-002 A11 3	3 DI MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
RCAHV0101 REACTOR VESSEL HEAD VENT VALVE	RCP-001 G15 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	
RCBHV0102 REACTOR VESSEL HEAD VENT VALVE	RCP-001 G15 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	
RCAHV0103 PRESSURIZER VENT VALVE	RCP-001 G14 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
RCBHV0105 PRESSURIZER/REACTOR VESSEL HEAD VENT VALVE TO REACTOR DRAIN TANK	RCP-001 G13 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	
RCAHV0106 PRESSURIZER/REACTOR VESSEL HEAD VENT VALVE TO CONTAINMENT	RCP-001 G13 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	
RCBHV0108 PRESSURIZER VENT VALVE	RCP-001 G13 1	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	
RCBHV0109 PRESSURIZER VENT VALVE	RCP-001 G13 1	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24 73ST-9XI24	CSJ-15 CSJ-15 CSJ-15 CSJ-15 CSJ-15	
RCEPSV0200 PRESSURIZER SAFETY VALVE	RCP-001 F12 1	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 040634)
RCEPSV0201 PRESSURIZER SAFETY VALVE	RCP-001 F12 1	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 040634)
RCEPSV0202 PRESSURIZER SAFETY VALVE	RCP-001 F12 1	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 040634)
RCEPSV0203 PRESSURIZER SAFETY VALVE	RCP-001 F12 1	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 040634)
RDAV020 CONTAINMENT SPRAY PUMP ROOM FLOOR DRAIN CHECK VALVE TO ESF SUMP	RDP-002 B14 SH2 3	4 CK SA	C A OC	FSO FSC	STF STF	73ST-9ZZ25 73ST-9ZZ25	VRR-04 VRR-04	Notes 1, 3. Disassembled on a sampling basis.
RDAV021 HPSI PUMP ROOM FLOOR DRAIN CHECK VALVE TO ESF SUMP	RDP-002 B05 SH2 3	4 CK SA	C A OC	FSO FSC	STF STF	73ST-9ZZ25 73ST-9ZZ25	VRR-04 VRR-04	Notes 1, 3. Disassembled on a sampling basis.
RDAV022 LPSI PUMP ROOM FLOOR DRAIN CHECK VALVE TO ESF SUMP	RDP-002 B14 SH2 3	4 CK SA	C A OC	FSO FSC	STF STF	73ST-9ZZ25 73ST-9ZZ25	VRR-04 VRR-04	Notes 1, 3. Disassembled on a sampling basis.
RDAUV0023 CONTAINMENT RADWASTE SUMP OUTLET INBOARD CIV (PEN. 9)	RDP-001 G04 2	3 GA MO	A A C	FSC STC AJ	QTR 18M CLR	73ST-9XI07 73ST-9XI07 73ST-9CL01	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
RDBUV0024 CONTAINMENT RADWASTE SUMP OUTLET OUTBOARD CIV (PEN. 9)	RDP-001 G04 2	3 GA AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI07 73ST-9XI07 73ST-9XI07 73ST-9CL01 73ST-9XI07		
RDBV040 CONTAINMENT SPRAY PUMP ROOM FLOOR DRAIN CHECK VALVE TO ESF SUMP	RDP-002 B05 SH3 3	4 CK SA	C A OC	FSO FSC	STF STF	73ST-9ZZ25 73ST-9ZZ25	VRR-04 VRR-04	Notes 1, 3. Disassembled on a sampling basis.
RDBV041 HPSI PUMP ROOM FLOOR DRAIN CHECK VALVE TO ESF SUMP	RDP-002 B05 SH3 3	4 CK SA	C A OC	FSO FSC	STF STF	73ST-9ZZ25 73ST-9ZZ25	VRR-04 VRR-04	Notes 1, 3. Disassembled on a sampling basis.
RDBV042 LPSI PUMP ROOM FLOOR DRAIN CHECK VALVE TO ESF SUMP	RDP-002 B05 SH3 3	4 CK SA	C A OC	FSO FSC	STF STF	73ST-9ZZ25 73ST-9ZZ25	VRR-04 VRR-04	Notes 1, 3. Disassembled on a sampling basis.
RDBUV0407 CONTAINMENT RADWASTE SUMP OUTLET TO POST ACCIDENT SAMPLING CIV (PEN. 9)	RDP-001 G04 2	0.5 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI07 73ST-9XI07 73ST-9XI07 73ST-9CL01 73ST-9XI07		
SGEV003 ECONOMIZER FEEDWATER LINE CHECK VALVE	SGP-002 E10 2	24 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEV005 ECONOMIZER FEEDWATER LINE CHECK VALVE	SGP-002 A10 2	24 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEV006 ECONOMIZER FEEDWATER LINE CHECK VALVE	SGP-002 A10 2	24 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEV007 ECONOMIZER FEEDWATER LINE CHECK VALVE	SGP-002 E10 2	24 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEVA19 MSIV 170 INSTRUMENT AIR CHECK VALVE	VM M234A- NA 2	0.5 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
SGEVA20 MSIV 170 INSTRUMENT AIR CHECK VALVE	VM M234A- NA 2	0.5 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
SGEVA21 MSIV 180 INSTRUMENT AIR CHECK VALVE	VM M234A- NA 2	0.5 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
SGEVA22 MSIV 180 INSTRUMENT AIR CHECK VALVE	VM M234A- NA 2	0.5 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
SGEVA23 MSIV 171 INSTRUMENT AIR CHECK VALVE	VM M234A- NA 2	0.5 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGEVA24	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
MSIV 171 INSTRUMENT AIR CHECK VALVE	2	SA	C					
SGEVA25	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
MSIV 181 INSTRUMENT AIR CHECK VALVE	2	SA	C					
SGEVA26	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9SG01 73ST-9SG01		Notes 1, 2, 3
MSIV 181 INSTRUMENT AIR CHECK VALVE	2	SA	C					
SGAVA27	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9XI16 73ST-9XI16		Notes 1, 2, 3
ECONOMIZER FWIV 174 INSTRUMENT AIR CHECK VALVE	2	SA	C					
SGAVA28	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9XI16 73ST-9XI16		Notes 1, 2, 3
ECONOMIZER FWIV 177 INSTRUMENT AIR CHECK VALVE	2	SA	C					
SGBVA29	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9XI16 73ST-9XI16		Notes 1, 2, 3
ECONOMIZER FWIV 132 INSTRUMENT AIR CHECK VALVE	2	SA	C					
SGBVA30	VM M234A- NA	0.5 CK	AC A	FSC LT	QTR 2YR	73ST-9XI16 73ST-9XI16		Notes 1, 2, 3
ECONOMIZER FWIV 137 INSTRUMENT AIR CHECK VALVE		SA	C					
SGAV043	SGP-001	6	C	FSO	CSD	73ST-9AF02	CSJ-17	Notes 1, 2, 3
STEAM SUPPLY CHECK VALVE TO	E12 SH1	CK	A	FSC	QTR	73ST-9AF02		
TURBINE-DRIVEN AFW PUMP	3	SA	OC	PSO	QTR	73ST-9AF02	CSJ-17	
SGAV044	SGP-001	6	C	FSO	CSD	73ST-9AF02	CSJ-17	Notes 1, 2, 3
STEAM SUPPLY CHECK VALVE TO	C12 SH1	CK	A	FSC	QTR	73ST-9AF02		
TURBINE-DRIVEN AFW PUMP	3	SA	OC	PSO	QTR	73ST-9AF02	CSJ-17	
SGBUV0130	SGP-002	8	B	FSC	CSD	73ST-9XI19	CSJ-18	Fails closed on loss of air only
SG 1 DOWNCOMER FEEDWATER	G11	GA	A	STC	CSD	73ST-9XI19	CSJ-18	
DOWNSTREAM ISOLATION VALVE	2	AO	C	FTC	CSD	73ST-9XI19	CSJ-18	
				VP	2YR	73ST-9XI19		
SGBUV0132	SGP-002	24	B	FSC	CSD	73ST-9XI16	CSJ-18	PSC is an Augmented Test (see CSJ-18)
SG 1 ECONOMIZER FEEDWATER	E12	GA	A	PSC	QTR	73ST-9XI16		
DOWNSTREAM ISOLATION VALVE	2	HY	C	STC	CSD	73ST-9XI16	CSJ-18	
				FTC	CSD	73ST-9XI16	CSJ-18	
				VP	2YR	73ST-9XI16		
SGAUV0134A	SGP-001	1	B	FSO	QTR	73ST-9AF02		
TDAFW PUMP STEAM SUPPLY WARM-UP	E13 SH1	GL	A	FSC	QTR	73ST-9AF02		
LINE ISOLATION VALVE	2	SO	OC	STO	QTR	73ST-9AF02		
				STC	QTR	73ST-9AF02		
				FTC	QTR	73ST-9AF02		
				LT	RFO	73ST-9XI34		
				VP	2YR	73ST-9AF02		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGAUV0134 SG 1 STEAM SUPPLY TO AUX FEED PUMP TURBINE ISOLATION VALVE	SGP-001 E14 SH1 2	6 GA MO	B A OC	FSO FSC STO STC LT	QTR QTR 18M 18M RFO	73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9XI34	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SGBUV0135 SG 2 DOWNCOMER FEEDWATER DOWNSTREAM ISOLATION VALVE	SGP-002 C11 2	8 GA AO	B A C	FSC STC FTC VP	CSD CSD CSD 2YR	73ST-9XI19 73ST-9XI19 73ST-9XI19 73ST-9XI19	CSJ-18 CSJ-18 CSJ-18	Fails closed on loss of air only
SGBUV0137 SG 2 ECONOMIZER FEEDWATER DOWNSTREAM ISOLATION VALVE	SGP-002 A12 2	24 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9XI16 73ST-9XI16 73ST-9XI16 73ST-9XI16 73ST-9XI16	CSJ-18 CSJ-18 CSJ-18	PSC is an Augmented Test (see CSJ-18)
SGAUV0138 SG 2 STEAM SUPPLY TO AUX FEED PUMP TURBINE ISOLATION VALVE	SGP-001 C1[illegible] SH1 2	6 GA MO	B A OC	FSO FSC STO STC LT	QTR QTR 18M 18M RFO	73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9XI34	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SGAUV0138A TDAFW PUMP STEAM SUPPLY WARM-UP LINE ISOLATION VALVE	SGP-001 C1[illegible] SH1 2	1 GL SO	B A OC	FSO FSC STO STC FTC LT VP	QTR QTR QTR QTR QTR RFO 2YR	73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9AF02 73ST-9XI34 73ST-9AF02		
SGEUV0169 MSIV BYPASS VALVE	SGP-001 D11 SH1 2	4 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGEUV0170 MAIN STEAM ISOLATION VALVE	SGP-001 G1[illegible] SH1 2	28 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01	CSJ-19 CSJ-19 CSJ-19	PSC is an Augmented Test (see CSJ-19)
SGEUV0171 MAIN STEAM ISOLATION VALVE	SGP-001 D1[illegible] SH1 2	28 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01	CSJ-19 CSJ-19 CSJ-19	PSC is an Augmented Test (see CSJ-19)
SGAUV0172 SG 1 DOWNCOMER FEEDWATER UPSTREAM ISOLATION VALVE	SGP-002 G12 2	8 GA AO	B A C	FSC STC FTC VP	CSD CSD CSD 2YR	73ST-9XI19 73ST-9XI19 73ST-9XI19 73ST-9XI19	CSJ-18 CSJ-18 CSJ-18	Fails closed on loss of air only
SGAUV0174 SG 1 ECONOMIZER FEEDWATER UPSTREAM ISOLATION VALVE	SGP-002 E12 2	24 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9XI16 73ST-9XI16 73ST-9XI16 73ST-9XI16 73ST-9XI16	CSJ-18 CSJ-18 CSJ-18	PSC is an Augmented Test (see CSJ-18)

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGAUV0175 SG 2 DOWNCOMER FEEDWATER UPSTREAM ISOLATION VALVE	SGP-002 C12 2	8 GA AO	B A C	FSC STC FTC VP	CSD CSD CSD 2YR	73ST-9XI19 73ST-9XI19 73ST-9XI19 73ST-9XI19	CSJ-18 CSJ-18 CSJ-18	Fails closed on loss of air only
SGAUV0177 SG 2 ECONOMIZER FEEDWATER UPSTREAM ISOLATION VALVE	SGP-002 A12 2	24 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9XI16 73ST-9XI16 73ST-9XI16 73ST-9XI16 73ST-9XI16	CSJ-18 CSJ-18 CSJ-18	PSC is an Augmented Test (see CSJ-18)
SGBHV0178 STEAM GENERATOR ATMOSPHERIC DUMP VALVE (ADV)	SGP-001 E02 SH2 2	12 GL AO	B A OC	FSO FSC STO STC FTC VP	QTR QTR QTR QTR QTR 2YR	73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20		
SGAHV0179 STEAM GENERATOR ATMOSPHERIC DUMP VALVE (ADV)	SGP-001 B02 SH2 2	12 GL AO	B A OC	FSO FSC STO STC FTC VP	QTR QTR QTR QTR QTR 2YR	73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20		
SGEUV0180 MAIN STEAM ISOLATION VALVE	SGP-001 F10 SH1 2	28 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01	CSJ-19 CSJ-19 CSJ-19	PSC is an Augmented Test (see CSJ-19)
SGEUV0181 MAIN STEAM ISOLATION VALVE	SGP-001 B10 SH1 2	28 GA HY	B A C	FSC PSC STC FTC VP	CSD QTR CSD CSD 2YR	73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01 73ST-9SG01	CSJ-19 CSJ-19 CSJ-19	PSC is an Augmented Test (see CSJ-19)
SGEUV0183 MSIV BYPASS VALVE	SGP-001 C11 SH1 2	4 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGAHV0184 STEAM GENERATOR ATMOSPHERIC DUMP VALVE (ADV)	SGP-001 G02 SH2 2	12 GL AO	B A OC	FSO FSC STO STC FTC VP	QTR QTR QTR QTR QTR 2YR	73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20		
SGBHV0185 STEAM GENERATOR ATMOSPHERIC DUMP VALVE (ADV)	SGP-001 D02 SH2 2	12 GL AO	B A OC	FSO FSC STO STC FTC VP	QTR QTR QTR QTR QTR 2YR	73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20 73ST-9XI20		
SGBHV0200 CHEMICAL INJECTION ISOLATION VALVE (PEN. 11)	SGP-002 F11 2	0.38 GA SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGBHV0201 CHEMICAL INJECTION ISOLATION VALVE (PEN. 12)	SGP-002 B11 2	0.38 GA SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGAUV0204 SG 1 HOT LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 37B)	SGP-002 F03 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGAUV0211 SG 1 COLD LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 37A)	SGP-002 G03 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGBUV0219 SG 1 HOT LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 37B)	SGP-002 G03 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGAUV0220 SG 1 DOWNCOMER BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 49)	SGP-002 G06 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGBUV0221 SG 1 DOWNCOMER BLOWDOWN SAMPLE LINE ISOLATION VALVE PEN. 49)	SGP-002 G05 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGBUV0222 SG 2 COLD LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 63B)	SGP-002 C04 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGAUV0223 SG 2 COLD LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 63B)	SGP-002 C03 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGBUV0224 SG 2 HOT LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 63A)	SGP-002 D04 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGAUV0225 SG 2 HOT LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 63A)	SGP-002 D02 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGBUV0226 SG 2 DOWNCOMER BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 48)	SGP-002 C05 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGAUV0227 SG 2 DOWNCOMER BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 48)	SGP-002 C05 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGBUV0228 SG 1 COLD LEG BLOWDOWN SAMPLE LINE ISOLATION VALVE (PEN. 37A)	SGP-002 G03 2	0.5 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGBPSV0302 ADV SGBHV178 NITROGEN ACCUMULATOR PRESSURE RELIEF VALVE	SGP-001 F06 SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGBPSV0305 ADV SGBHV178 NITROGEN SUPPLY PRESSURE RELIEF VALVE	SGP-001 F05 SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGBPV0306A ADV NITROGEN SOLENOID VALVE	SGP-001 F05 SH2 3	1 GA SO	B A O	FSO	QTR	73ST-9XI20	VRR-02	
SGBPV0306B ADV NITROGEN SOLENOID VALVE	SGP-001 E05 SH2 3	1 GA SO	B A O	FSO	QTR	73ST-9XI20	VRR-02	
SGAPSV0309 ADV SGAHV179 NITROGEN ACCUMULATOR PRESSURE RELIEF VALVE	SGP-001 C0[illegible] SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGAPSV0312 ADV SGAHV179 NITROGEN SUPPLY PRESSURE RELIEF VALVE	SGP-001 C05 SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGAPV0313A ADV NITROGEN SOLENOID VALVE	SGP-001 C05 SH2 3	1 GA SO	B A O	FSO	QTR	73ST-9XI20	VRR-02	
SGAPV0313B ADV NITROGEN SOLENOID VALVE	SGP-001 H05 SH2 3	1 GA SO	B A O	FSO	QTR	73ST-9XI20	VRR-02	
SGAPSV0316 ADV SGAHV184 NITROGEN ACCUMULATOR PRESSURE RELIEF VALVE	SGP-001 H0[illegible] SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGAPSV0319 ADV SGAHV184 NITROGEN SUPPLY PRESSURE RELIEF VALVE	SGP-001 H05 SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGBPSV0322 ADV SGBHV185 NITROGEN ACCUMULATOR PRESSURE RELIEF VALVE	SGP-001 E0[illegible] SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGBPSV0325 ADV SGBHV185 NITROGEN SUPPLY PRESSURE RELIEF VALVE	SGP-001 E05 SH2 3	1 SV SA	AC A OC	LT SV	2YR 10Y	73ST-9SG05 73ST-9ZZ20		
SGEV334 NITROGEN CHECK VALVE TO ADV 179	SGP-001 C04 SH2 3	1 CK SA	C A O	FSO	QTR	73ST-9XI20		Notes 1, 2, 3
SGEV339 NITROGEN CHECK VALVE TO ADV 184	SGP-001 H05 SH2 3	1 CK SA	C A O	FSO	QTR	73ST-9XI20		Notes 1, 2, 3

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGEV346 INSTRUMENT AIR CHECK VALVE TO ADV 184	SGP-001 B04 SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV348 INSTRUMENT AIR CHECK VALVE TO ADV 179	SGP-001 G0[illegible] SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV350 NITROGEN CHECK VALVE TO ADV 178	SGP-001 F04 SH2 3	1 CK SA	C A O	FSO	QTR	73ST-9XI20		Notes 1, 2, 3
SGEV357 INSTRUMENT AIR CHECK VALVE TO ADV 178	SGP-001 F04 SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV358 INSTRUMENT AIR CHECK VALVE TO ADV 185	SGP-001 D0[illegible] SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV360 NITROGEN CHECK VALVE TO ADV 185	SGP-001 E0[illegible] SH2 3	1 CK SA	C A O	FSO	QTR	73ST-9XI20		Notes 1, 2, 3
SGBUV0500Q STEAM GENERATOR BLOWDOWN SAMPLE CIV (PEN. 46)	SGP-002 E02 2	6 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGAUV0500P STEAM GENERATOR BLOWDOWN SAMPLE CIV (PEN. 46)	SGP-002 E03 2	6 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI01		
SGBUV0500R STEAM GENERATOR BLOWDOWN SAMPLE CIV (PEN. 47)	SGP-002 A03 2	6 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGAUV0500S STEAM GENERATOR BLOWDOWN SAMPLE CIV (PEN. 47)	SGP-002 A02 2	6 GA AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI02		
SGEPSV0554 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 1	SGP-001 D1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0555 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 1	SGP-001 D1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0556 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 1	SGP-001 D1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0557 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 1	SGP-001 D1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGEPSV0558 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 2	SGP-001 A15 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0559 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 2	SGP-001 A14 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0560 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 2	SGP-001 A13 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0561 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 2	SGP-001 A12 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0572 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 1	SGP-001 H12 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0573 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 1	SGP-001 H13 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0574 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 1	SGP-001 H14 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0575 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 1	SGP-001 H14 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0576 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 2	SGP-001 F15 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0577 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 2	SGP-001 F14 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0578 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 2	SGP-001 F13 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0579 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 2	SGP-001 F12 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEV642 DOWNCOMER FEEDWATER LINE CHECK VALVE	SGP-002 G11 2	8 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEV652 DOWNCOMER FEEDWATER LINE CHECK VALVE	SGP-002 G10 2	8 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEV653 DOWNCOMER FEEDWATER LINE CHECK VALVE	SGP-002 C10 2	8 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEPSV0691 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 2	SGP-001 F15 SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGEPSV0692 MAIN STEAM SAFETY VALVE SG1 STEAM LINE 1	SGP-001 H1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEV693 DOWNCOMER FEEDWATER LINE CHECK VALVE	SGP-002 C11 2	8 CK SA	C A C	CM	CMP	73ST-9XI32	VRR-13	Notes 1, 2, 3, 4
SGEPSV0694 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 2	SGP-001 A1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEPSV0695 MAIN STEAM SAFETY VALVE SG2 STEAM LINE 1	SGP-001 D1[illegible] SH1 2	6 SV SA	C A OC	SV	RFO	73ST-9ZZ18		Tested each refueling (ref. RCTS 038788)
SGEV887 WARM-UP LINE CHECK VALVE TO TURBINE-DRIVEN AFW PUMP	SGP-001 D1[illegible] SH1 3	2 CK SA	C A OC	FSO FSC	QTR RFO	73ST-9AF02 73ST-9XI36	 ROJ-13	Notes 1, 2, 3
SGEV888 WARM-UP LINE CHECK VALVE TO TURBINE-DRIVEN AFW PUMP	SGP-001 C1[illegible] SH1 3	2 CK SA	C A OC	FSO FSC	QTR RFO	73ST-9AF02 73ST-9XI36	 ROJ-13	Notes 1, 2, 3
SGEV982 ADV NITROGEN SUPPLY CHECK VALVE	SGP-001 B0[illegible] SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV985 ADV NITROGEN SUPPLY CHECK VALVE	SGP-001 G0[illegible] SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV988 ADV NITROGEN SUPPLY CHECK VALVE	SGP-001 D0[illegible] SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGEV991 ADV NITROGEN SUPPLY CHECK VALVE	SGP-001 F06 SH2 3	1 CK SA	AC A C	FSC LT	QTR 2YR	73ST-9SG05 73ST-9SG05		Notes 1, 2, 3
SGAUV1133 STEAM TRAP SGN-M23 ISOLATION VALVE	SGP-001 E1[illegible] SH1 2	1 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI32		
SGAUV1134 STEAM TRAP SGN-M24 ISOLATION VALVE	SGP-001 C1[illegible] SH1 2	1 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI32		
SGBUV1135A STEAM TRAP SGN-M01 ISOLATION VALVE	SGP-001 H11 SH1 2	1 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI32		
SGBUV1135B STEAM TRAP SGN-M02 ISOLATION VALVE	SGP-001 F11 SH1 2	1 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI01 73ST-9XI01 73ST-9XI01 73ST-9XI32		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SGBUV1136B STEAM TRAP SGN-M04 ISOLATION VALVE	SGP-001 A11 SH1 2	1 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI32		
SGBUV1136A STEAM TRAP SGN-M03 ISOLATION VALVE	SGP-001 D11 2	1 GL SO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI02 73ST-9XI02 73ST-9XI02 73ST-9XI32		
SGEPSE1183 ADV NITROGEN SUPPLY RUPTURE DISK	SGP-001 F05 2 3	1 RD SA	AC A OC	LT	2YR	73ST-9SG05		Replaced every 5 years per OM-1 1.3.4.2
SGEPSE1184 ADV NITROGEN SUPPLY RUPTURE DISK	SGP-001 D05 2 3	1 RD SA	AC A OC	LT	2YR	73ST-9SG05		Replaced every 5 years per OM-1 1.3.4.2
SGEPSE1185 ADV NITROGEN SUPPLY RUPTURE DISK	SGP-001 B05 2 3	1 RD SA	AC A OC	LT	2YR	73ST-9SG05		Replaced every 5 years per OM-1 1.3.4.2
SGEPSE1186 ADV NITROGEN SUPPLY RUPTURE DISK	SGP-001 G05 2 3	1 RD SA	AC A OC	LT	2YR	73ST-9SG05		Replaced every 5 years per OM-1 1.3.4.2
SIAVA10 PRESSURE LOCKING CHECK VALVE FOR SIAUV0655 BONNET	SIP-002 G03 2	1 CK SA	C A OC	FSO FSC	RFO RFO	73ST-9XI21 73ST-9XI21	ROJ-12 ROJ-12	Notes 1, 2, 3
SIBVA15 PRESSURE LOCKING CHECK VALVE FOR SIBUV0656 BONNET	SIP-002 G10 2	1 CK SA	C A OC	FSO FSC	RFO RFO	73ST-9XI21 73ST-9XI21	ROJ-12 ROJ-12	Notes 1, 2, 3
SIEV113 HPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F14 2	3 CK SA	C A OC	FSO FSC	RFO CSD	73ST-9XI33 73ST-9SI05	ROJ-04 CSJ-20	Notes 1, 2, 3
SIEV114 LPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F13 2	12 CK SA	C A OC	FSO FSC	CSD CSD	73ST-9XI27 73ST-9SI05	CSJ-21 CSJ-21	Notes 1, 2, 3
SIEV123 HPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F12 2	3 CK SA	C A OC	FSO FSC	RFO CSD	73ST-9XI33 73ST-9SI05	ROJ-04 CSJ-20	Notes 1, 2, 3
SIEV124 LPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F11 2	12 CK SA	C A OC	FSO FSC	CSD CSD	73ST-9XI27 73ST-9SI05	CSJ-21 CSJ-21	Notes 1, 2, 3
SIEV133 HPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F07 2	3 CK SA	C A OC	FSO FSC	RFO CSD	73ST-9XI33 73ST-9SI05	ROJ-04 CSJ-20	Notes 1, 2, 3
SIEV134 LPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F06 2	12 CK SA	C A OC	FSO FSC	CSD CSD	73ST-9XI26 73ST-9SI05	CSJ-21 CSJ-21	Notes 1, 2, 3
SIBPSV0140 SI PUMP SUCTION LINE FROM CONTAINMENT SUMP PRESSURE RELIEF VALVE (PEN. 24)	SIP-001 B15 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIBPSV0141 PRESSURE RELIEF VALVE BETWEEN ISOLATION VALVES TO FUEL POOL COOLING	SIP-001 B15 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEV143 HPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F04 2	3 CK SA	C A OC	FSO FSC	RFO CSD	73ST-9XI33 73ST-9SI05	ROJ-04 CSJ-20	Notes 1, 2, 3
SIEV144 LPSI CHECK VALVE TO RCS COLD LEG INJECTION HEADER	SIP-002 F04 2	12 CK SA	C A OC	FSO FSC	CSD CSD	73ST-9XI26 73ST-9SI05	CSJ-21 CSJ-21	Notes 1, 2, 3
SIAPSV0150 PRESSURE RELIEF VALVE BETWEEN ISOLATION VALVES TO FUEL POOL COOLING	SIP-001 H15 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAPSV0151 SI PUMP SUCTION LINE FROM CONTMT SUMP PRESSURE RELIEF VALVE (PEN. 23)	SIP-001 G15 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAV157 CONTAINMENT SPRAY PUMP SUCTION LINE CHECK VALVE	SIP-001 G13 2	18 CK SA	C A O	FSO PSO	RFO QTR	73ST-9XI29 73ST-9SI06	ROJ-11 ROJ-11	Notes 1, 2, 3
SIBV158 CONTAINMENT SPRAY PUMP SUCTION LINE CHECK VALVE	SIP-001 B13 2	18 CK SA	C A O	FSO PSO	RFO QTR	73ST-9XI29 73ST-9SI06	ROJ-11 ROJ-11	Notes 1, 2, 3
SIAPSV0161 LPSI/SDC LINE PRESSURE RELIEF VALVE	SIP-001 H06 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAPSV0162 PRESSURE RELIEF VALVE BETWEEN ISOLATION VALVES TO FUEL POOL COOLING	SIP-001 G05 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAV164 CONTAINMENT SPRAY HEADER CHECK VALVE AND INBOARD CIV (PEN. 21)	SIP-002 F08 2	10 CK SA	AC A OC	CM AJ	CMP CLR	73ST-9CL01 73ST-9CL01	VRR-13	Notes 1, 3, 4
SIBV165 CONTAINMENT SPRAY HEADER CHECK VALVE AND INBOARD CIV (PEN. 22)	SIP-002 F06 2	10 CK SA	AC A OC	CM AJ	CMP CLR	73ST-9CL01 73ST-9CL01	VRR-13	Notes 1, 3, 4
SIBPSV0166 HPSI LONG TERM RECIRC PRESSURE RELIEF VALVE	SIP-002 G09 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBPSV0169 SHUTDOWN COOLING LINE PRESSURE RELIEF VALVE	SIP-002 D10 1	0.75 SV SA	C A OC	SV	5YR	73ST-9ZZ20		
SIAPSV0179 SHUTDOWN COOLING RETURN LINE LTOP RELIEF VALVE	SIP-002 G03 2	6 SV SA	C A OC	SV	10Y	73ST-9ZZ19		
SIBPSV0189 SHUTDOWN COOLING RETURN LINE LTOP RELIEF VALVE	SIP-002 F11 2	6 SV SA	C A OC	SV	10Y	73ST-9ZZ19		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIBPSV0191 SHUTDOWN COOLING HEAT EXCHANGER OUTLET PRESSURE RELIEF VALVE	SIP-001 D07 2	1.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBPSV0192 PRESSURE RELIEF VALVE BETWEEN ISOLATION VALVES TO FUEL POOL COOLING	SIP-001 C05 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBPSV0193 LPSI/SDC LINE PRESSURE RELIEF VALVE	SIP-001 D06 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAPSV0194 SHUTDOWN COOLING HEAT EXCHANGER OUTLET PRESSURE RELIEF VALVE	SIP-001 H07 2	1.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBV200 LPSI PUMP SUCTION LINE CHECK VALVE	SIP-001 B12 2	20 CK SA	C A O	FSO PSO	RFO QTR	73ST-9XI29 73ST-9XI10	ROJ-11 ROJ-11	
SIAV201 LPSI PUMP SUCTION LINE CHECK VALVE	SIP-001 F13 2	20 CK SA	C A O	FSO PSO	RFO QTR	73ST-9XI29 73ST-9XI09	ROJ-11 ROJ-11	
SIAV205 CONTAINMENT RECIRCULATION SUMP CHECK VALVE TO SI SUPPLY HEADER	SIP-001 F14 2	24 CK SA	C A O	CMO CMC	CMP CMP	73ST-9ZZ25 73ST-9XI39	VRR-13 VRR-13	Notes 1, 3, 4
SIBV206 CONTAINMENT RECIRCULATION SUMP CHECK VALVE TO SI SUPPLY HEADER	SIP-001 A14 2	24 CK SA	C A O	CMO CMC	CMP CMP	73ST-9ZZ25 73ST-9XI39	VRR-13 VRR-13	Notes 1, 3, 4
SIEPSV0211 SAFETY INJECTION TANK 2A PRESSURE RELIEF VALVE	SIP-002 E15 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEV215 SAFETY INJECTION TANK DISCHARGE CHECK VALVE	SIP-002 A15 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI25 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIEV217 COLD LEG SAFETY INJECTION LOOP CHECK VALVE	SIP-002 A13 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI27 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIEPSV0221 SAFETY INJECTION TANK 2B PRESSURE RELIEF VALVE	SIP-002 E12 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEV225 SAFETY INJECTION TANK DISCHARGE CHECK VALVE	SIP-002 A12 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI25 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIEV227 COLD LEG SAFETY INJECTION LOOP CHECK VALVE	SIP-002 A10 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI27 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIEPSV0231 SAFETY INJECTION TANK 1A PRESSURE RELIEF VALVE	SIP-002 E08 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEV235 SAFETY INJECTION TANK DISCHARGE CHECK VALVE	SIP-002 A07 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI25 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIEV237 COLD LEG SAFETY INJECTION LOOP CHECK VALVE	SIP-002 A06 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI26 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIEPSV0241 SAFETY INJECTION TANK 1B PRESSURE RELIEF VALVE	SIP-002 E05 2	2 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEV245 SAFETY INJECTION TANK DISCHARGE CHECK VALVE	SIP-002 A05 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI25 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIEV247 COLD LEG SAFETY INJECTION LOOP CHECK VALVE	SIP-002 A04 1	14 CK SA	AC A OC	CMO CMC LT	CMP CMP 18M	73ST-9XI26 73ST-9SI03 73ST-9SI03	VRR-13 VRR-13	Notes 1, 2, 3, 4 Leak test frequency is 18 months per TS SR 3.4.15.1.
SIAPSV0285 SI PUMP COMBINED RECIRC PRESSURE RELIEF VALVE	SIP-001 F09 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBPSV0286 SI PUMP COMBINED RECIRC PRESSURE RELIEF VALVE	SIP-001 B09 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBPSV0287 CONTAINMENT SPRAY LINE PRESSURE RELIEF VALVE	SIP-001 C09 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEPSV0288 SI MAXIFLOW RECIRC LINE RELIEF VALVE	SIP-001 E05 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAPSV0289 CONTAINMENT SPRAY LINE PRESSURE RELIEF VALVE	SIP-001 G09 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAHV0306 LPSI DISCHARGE HEADER ISOLATION VALVE	SIP-001 G05 2	10 GL MO	B A OC	FSO FSC	1CY 1CY	73ST-xXI11 73ST-xXI11	VRR-12 VRR-12	FSO Includes position stop verification per TS SR 3.5.3.7 Note 5
SIBHV0307 LPSI HEADER DISCHARGE ISOLATION VALVE	SIP-001 B04 2	10 GL MO	B A OC	FSO FSC	1CY 1CY	73ST-xXI12 73ST-xXI12	VRR-12 VRR-12	FSO Includes position stop verification per TS SR 3.5.3.7 Note 5
SICHV0321 HPSI LONG TERM RECIRCULATION CIV (PEN. 77)	SIP-002 G02 2	3 GL MO	B A OC	FSO FSC	QTR QTR	73ST-xXI11 73ST-xXI11	VRR-12 VRR-12	FSO Includes position stop verification per TS SR 3.5.3.7 Note 5 QTR FS FOR PRA/RA.
SIBUV0322 HOT LEG INJECTION CHECK VALVE LEAK ISOLATION VALVE	SIP-002 E02 1	1 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI13 73ST-9XI13 73ST-9XI13 73ST-9XI13		
SIDHV0331 HPSI LONG TERM RECIRCULATION CIV (PEN. 67)	SIP-002 G09 2	3 GL MO	B A OC	FSO FSC	QTR QTR	73ST-xXI12 73ST-xXI12	VRR-12 VRR-12	FSO Includes position stop verification per TS SR 3.5.3.7 Note 5 QTR FS FOR PRA/RA.
SIBUV0332 HOT LEG INJECTION CHECK VALVE LEAK ISOLATION VALVE	SIP-002 E10 1	1 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI14 73ST-9XI14 73ST-9XI14 73ST-9XI14		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIAV404 HPSI PMP DISCHARGE CHECK VALVE	SIP-001 F06 2	4 CK SA	C A OC	FSO FSC	RFO RFO	73ST-9XI33 73ST-9XI33	ROJ-05 ROJ-05	Notes 1, 2, 3 FSC also performed in 73ST-9XI35
SIBV405 HPSI PMP DISCHARGE CHECK VALVE	SIP-001 B04 2	4 CK SA	C A OC	FSO FSC	RFO RFO	73ST-9XI33 73ST-9XI33	ROJ-05 ROJ-05	Notes 1, 2, 3 FSC also performed in 73ST-9XI35
SIEPSV0407 SAFETY INJECTION TANK FILL LINE RELIEF VALVE	SIP-001 E08 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBPSV0409 HPSI LINE PRESSURE RELIEF VALVE	SIP-001 B02 2	1.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAPSV0417 HPSI LINE PRESSURE RELIEF VALVE	SIP-001 F02 2	1.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAV424 HPSI PUMP RECIRC LINE CHECK VALVE	SIP-001 F10 2	2 CK SA	C A O	FSO	QTR	73ST-9SI10		Notes 1, 2, 3
SIBV426 HPSI PUMP RECIRC LINE CHECK VALVE	SIP-001 A10 2	2 CK SA	C A O	FSO	QTR	73ST-9SI10		Notes 1, 2, 3
SIAV434 LPSI PUMP DISCHARGE CHECK VALVE	SIP-001 F09 2	10 CK SA	C A O	FSO PSO	CSD QTR	73ST-9XI26 73ST-9XI09	CSJ-05 CSJ-05	Notes 1, 2, 3
SIAPSV0439 LPSI LINE PRESSURE RELIEF VALVE	SIP-001 H02 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIBV446 LPSI PUMP DISCHARGE CHECK VALVE	SIP-001 B09 2	10 CK SA	C A O	FSO PSO	CSD QTR	73ST-9XI27 73ST-9XI10	CSJ-05 CSJ-05	Notes 1, 2, 3
SIBV448 LPSI PMP RECIRC LINE CHECK VALVE	SIP-001 B10 2	2 CK SA	C A O	FSO	QTR	73ST-9SI11		Notes 1, 2, 3
SIBPSV0449 LPSI LINE PRESSURE RELIEF VALVE	SIP-001 D02 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAV451 LPSI PMP RECIRC LINE CHECK VALVE	SIP-001 G11 2	2 CK SA	C A O	FSO	QTR	73ST-9SI11		Notes 1, 2, 3
SIEV463 SAFETY INJECTION TANK FILL/DRAIN HEADER OUTBOARD CIV (PEN. 28)	SIP-001 D08 2	2 GL MA	A P C	AJ	CLR	73ST-9CL01		
SIAPSV0468 HPSI LONG TERM RECIRC PRESSURE RELIEF VALVE	SIP-002 G02 2	0.75 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIAPSV0469 SHUTDOWN COOLING LINE PRESSURE RELIEF VALVE	SIP-002 D03 1	0.75 SV SA	C A OC	SV	5YR	73ST-9ZZ20		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIEPSV0473 SAFETY INJECTION TANK FILL/DRAIN LINE PRESSURE RELIEF VALVE	SIP-001 E10 2	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SIEPSV0474 SAFETY INJECTION TANK FILL/DRAIN LINE PRESSURE RELIEF VALVE	SIP-001 D09 2	0.75 SV SA	AC A OC	AJ SV	CLR 10Y	73ST-9CL01 73ST-9ZZ20		
SIBV484 CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE	SIP-001 C10 2	10 CK SA	C A O	FSO PSO	CSD QTR	73ST-9XI27 73ST-9SI06	CSJ-05 CSJ-05	Notes 1, 2, 3
SIAV485 CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE	SIP-001 H10 2	10 CK SA	C A O	FSO PSO	CSD QTR	73ST-9XI26 73ST-9SI06	CSJ-05 CSJ-05	Notes 1, 2, 3
SIAV486 CONTAINMENT SPRAY PMP RECIRC LINE CHECK VALVE	SIP-001 G10 2	2 CK SA	C A O	FSO	QTR	73ST-9SI06		Notes 1, 2, 3
SIBV487 CONTAINMENT SPRAY PMP RECIRC LINE CHECK VALVE	SIP-001 C10 2	2 CK SA	C A O	FSO	QTR	73ST-9SI06		Notes 1, 2, 3
SIAV522 HPSI LONG-TERM RECIRC CHECK VALVE	SIP-002 C02 1	3 CK SA	AC A OC	FSO FSC LT	RFO STF 18M	73ST-9XI33 73ST-9SI03 73ST-9SI03	ROJ-06 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIAV523 HPSI LONG-TERM RECIRC INBOARD CIV (PEN. 77)	SIP-002 F02 1	3 CK SA	AC A OC	FSO FSC LT	RFO STF 18M	73ST-9XI33 73ST-9SI03 73ST-9SI03	ROJ-06 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIBV532 HPSI LONG-TERM RECIRC CHECK VALVE	SIP-002 B10 1	3 CK SA	AC A OC	FSO FSC LT	RFO STF 18M	73ST-9XI33 73ST-9SI03 73ST-9SI03	ROJ-06 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIBV533 HPSI LONG-TERM RECIRC INBOARD CIV (PEN. 67)	SIP-002 F09 1	3 CK SA	AC A OC	FSO FSC LT	RFO STF 18M	73ST-9XI33 73ST-9SI03 73ST-9SI03	ROJ-06 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIEV540 COLD LEG SAFETY INJECTION CHECK VALVE	SIP-002 B13 1	12 CK SA	AC A OC	FSO FSC LT	CSD STF 18M	73ST-9XI27 73ST-9SI03 73ST-9SI03	CSJ-31 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIEV541 COLD LEG SAFETY INJECTION CHECK VALVE	SIP-002 B11 1	12 CK SA	AC A OC	FSO FSC LT	CSD STF 18M	73ST-9XI27 73ST-9SI03 73ST-9SI03	CSJ-31 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIEV542 COLD LEG SAFETY INJECTION CHECK VALVE	SIP-002 C06 1	12 CK SA	AC A OC	FSO FSC LT	CSD STF 18M	73ST-9XI26 73ST-9SI03 73ST-9SI03	CSJ-31 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIEV543 COLD LEG SAFETY INJECTION CHECK VALVE	SIP-002 C04 1	12 CK SA	AC A OC	FSO FSC LT	CSD STF 18M	73ST-9XI26 73ST-9SI03 73ST-9SI03	CSJ-31 VRR-08	Notes 1, 2, 3. Leak test frequency is 18 months per TS SR 3.4.15.1
SIAHV0604 HPSI LONG TERM RECIRC ISOLATION VALVE	SIP-001 G03 2	3 GA MO	B A OC	FSO FSC	QTR QTR	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA.

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIAHV0605 SAFETY INJECTION TANK 2A ATMOSPHERIC VENT VALVE	SIP-002 F15 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIAHV0606 SAFETY INJECTION TANK 2B ATMOSPHERIC VENT VALVE	SIP-002 F12 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIAHV0607 SAFETY INJECTION TANK 1A ATMOSPHERIC VENT VALVE	SIP-002 F07 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIAHV0608 SAFETY INJECTION TANK 1B ATMOSPHERIC VENT VALVE	SIP-002 F04 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIBHV0609 HPSI LONG TERM RECIRC ISOLATION VALVE	SIP-001 C03 2	3 GA MO	B A OC	FSO FSC	QTR QTR	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA.
SIBUV0611 SAFETY INJECTION TANK 2A FILL/DRAIN ISOLATION VALVE	SIP-002 B16 2	2 GL AO	B P C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9XI04		Considered active during first IST interval, re-evaluated as passive during 10-year update, further reviews being performed before discontinuing exercise testing
SIBHV0613 SAFETY INJECTION TANK 2A ATMOSPHERIC VENT VALVE	SIP-002 E15 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIBUV0614 SAFETY INJECTION TANK 2A DISCHARGE ISOLATION VALVE	SIP-002 A15 1	14 GA MO	B A O	FSO STO	1CY 18M	73ST-9XI25 73ST-9XI25	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
SIBUV0615 LPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 17)	SIP-002 G14 2	12 GL MO	B A O	FSO	1CY	73ST-xXI12	VRR-12	FSO includes position stop verification per SR 3.5.3.7 Note 5
SIBUV0616 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 13)	SIP-002 G14 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIAUV0617 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 13)	SIP-002 G15 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIBUV0618 SAFETY INJECTION TANK 2A CHECK VALVE LEAKAGE TEST LINE ISOLATION VALVE	SIP-002 B16 1	1 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9XI04		
SIAHV0619 SIT NITROGEN SUPPLY ISOLATION VALVE	SIP-002 D15 2	1 GL AO	B P C	VP	2YR	73ST-9XI25		
SIBUV0621 SAFETY INJECTION TANK 2B FILL/DRAIN ISOLATION VALVE	SIP-002 B12 2	2 GL AO	B P C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9XI04		Considered active during first IST Interval, re-evaluated as passive during 10-year update, further reviews being performed before discontinuing exercise testing
SIBHV0623 SAFETY INJECTION TANK 2B ATMOSPHERIC VENT VALVE	SIP-002 E12 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIBUV0624 SAFETY INJECTION TANK 2B DISCHARGE ISOLATION VALVE	SIP-002 A12 1	14 GA MO	B A O	FSO STO	1CY 18M	73ST-9XI25 73ST-9XI25	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
SIBUV0625 LPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 18)	SIP-002 G11 2	12 GL MO	B A O	FSO	1CY	73ST-xXI12	VRR-12	FSO includes position stop verification per SR 3.5.3.7 Note 5
SIBUV0626 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 14)	SIP-002 G11 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIAUV0627 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 14)	SIP-002 G12 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIBUV0628 SAFETY INJECTION TANK 2B CHECK VALVE LEAKAGE TEST LINE ISOLATION VALVE	SIP-002 B13 1	1 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9XI04		
SIAHV0629 SIT NITROGEN SUPPLY ISOLATION VALVE	SIP-002 D12 2	1 GL AO	B P C	VP	2YR	73ST-9XI25		
SIBUV0631 SAFETY INJECTION TANK 1A FILL/DRAIN ISOLATION VALVE	SIP-002 C08 2	2 GL AO	B P C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9XI03		Considered active during first IST Interval, re-evaluated as passive during 10-year update, further reviews being performed before discontinuing exercise testing
SIBHV0633 SAFETY INJECTION TANK 1A ATMOSPHERIC VENT VALVE	SIP-002 E07 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIAUV0634 SAFETY INJECTION TANK 1A DISCHARGE ISOLATION VALVE	SIP-002 B07 1	14 GA MO	B A O	FSO STO	1CY 18M	73ST-9XI25 73ST-9XI25	VRR-12 VRR-12	Note 5 18M ST FOR TS 3.3.5.4
SIAUV0635 LPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 19)	SIP-002 G06 2	12 GL MO	B A O	FSO	1CY	73ST-xXI11	VRR-12	FSO includes position stop verification per SR 3.5.3.7 Note 5
SIBUV0636 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 15)	SIP-002 G07 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIAUV0637 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 15)	SIP-002 G08 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIBUV0638 SAFETY INJECTION TANK 1A CHECK VALVE LEAKAGE TEST LINE ISOLATION VALVE	SIP-002 B09 1	1 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9XI03		
SIAHV0639 SIT NITROGEN SUPPLY ISOLATION VALVE	SIP-002 D07 2	1 GL AO	B P C	VP	2YR	73ST-9XI25		
SIBUV0641 SAFETY INJECTION TANK 1B FILL/DRAIN ISOLATION VALVE	SIP-002 B06 2	2 GL AO	B P C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9XI03		Considered active during first IST interval, re-evaluated as passive during 10-year update, further reviews being performed before discontinuing exercise testing
SIBHV0643 SAFETY INJECTION TANK 1B ATMOSPHERIC VENT VALVE	SIP-002 E04 2	1 GL SO	B A OC	FSO FSC STO STC FTC VP	CSD CSD CSD CSD CSD 2YR	73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37 73ST-9XI37	CSJ-26 CSJ-26 CSJ-26 CSJ-26 CSJ-26	
SIAUV0644 SAFETY INJECTION TANK 1B DISCHARGE ISOLATION VALVE	SIP-002 B04 1	14 GA MO	B A O	FSO STO	1CY 18M	73ST-9XI25 73ST-9XI25	VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIAUV0645 LPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 20)	SIP-002 G04 2	12 GL MO	B A O	FSO	1CY	73ST-xXI11	VRR-12	FSO includes position stop verification per SR 3.5.3.7 Note 5
SIBUV0646 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 16)	SIP-002 G04 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIAUV0647 HPSI DISCHARGE HEADER OUTBOARD CIV (PEN. 16)	SIP-002 G05 2	2 GL MO	B A O	FSO STO	QTR 18M	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIBUV0648 SAFETY INJECTION TANK 1B CHECK VALVE LEAKAGE TEST LINE ISOLATION VALVE	SIP-002 B06 1	1 GL AO	B A C	FSC STC FTC VP	QTR QTR QTR 2YR	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9XI03		
SIAHV0649 SIT NITROGEN SUPPLY ISOLATION VALVE	SIP-002 D05 2	1 GL AO	B P C	VP	2YR	73ST-9XI25		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIAUV0651 SHUTDOWN COOLING SUCTION ISOLATION VALVE	SIP-002 C03 1	16 GA MO	A A OC	FSO FSC LT	1CY 1CY 18M	73ST-9XI21 73ST-9XI21 73ST-9SI03	VRR-12 VRR-12	Leak test frequency is 18 months per TS SR 3.4.15.1 Note 5
SIBUV0652 SHUTDOWN COOLING SUCTION ISOLATION VALVE	SIP-002 C10 1	16 GA MO	A A OC	FSO FSC LT	1CY 1CY 18M	73ST-9XI21 73ST-9XI21 73ST-9SI03	VRR-12 VRR-12	Leak test frequency is 18 months per TS SR 3.4.15.1 Note 5
SICUV0653 SHUTDOWN COOLING SUCTION INBOARD CIV (PEN. 27)	SIP-002 D03 1	16 GA MO	A A OC	FSO FSC LT	CSD CSD 18M	73ST-9XI21 73ST-9XI21 73ST-9SI03	VRR-12 VRR-12	Leak test frequency is 18 months per TS SR 3.4.15.1 Note 5 PRA/RA REQ'D QTR EXERCISING IS N/A PER CSJ-27.
SIDUV0654 SHUTDOWN COOLING SUCTION INBOARD CIV (PEN. 26)	SIP-002 D10 1	16 GA MO	A A OC	FSO FSC LT	CSD CSD 18M	73ST-9XI21 73ST-9XI21 73ST-9SI03	VRR-12 VRR-12	Leak test frequency is 18 months per TS SR 3.4.15.1 Note 5 PRA/RA REQ'D QTR EXERCISING IS N/A PER CSJ-27.
SIAUV0655 SHUTDOWN COOLING SUCTION OUTBOARD CIV (PEN. 27)	SIP-002 G03 2	16 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 (PREVIOUSLY TESTED IN 73ST-9XI21.)
SIBUV0656 SHUTDOWN COOLING SUCTION OUTBOARD CIV (PEN. 26)	SIP-002 G10 2	16 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 PREVIOUSLY TESTED IN 73ST-9XI21.
SIAHV0657 SHUTDOWN COOLING HEAT EXCHANGER OUTLET THROTTLE VALVE	SIP-001 H03 2	16 BF MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5
SIBHV0658 SHUTDOWN COOLING HEAT EXCHANGER OUTLET THROTTLE VALVE	SIP-001 C03 2	16 BF MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5
SIBUV0659 SI COMBINED RECIRC TO RWT ISOLATION VALVE	SIP-001 B06 2	4 GL SO	B A OC	FSO FSC STO STC FTC VP	QTR QTR QTR QTR QTR 2YR	73ST-9XI14 73ST-9XI14 73ST-9XI14 73ST-9XI14 73ST-9XI14 73ST-9XI14		
SIAUV0660 SI COMBINED RECIRC TO RWT ISOLATION VALVE	SIP-001 F06 2	4 GL SO	B A OC	FSO FSC STO STC FTC VP	QTR QTR QTR QTR QTR 2YR	73ST-9XI13 73ST-9XI13 73ST-9XI13 73ST-9XI13 73ST-9XI13 73ST-9XI13		
SIAUV0664 CONTAINMENT SPRAY PUMP RECIRC TO RWT ISOLATION VALVE	SIP-001 G10 2	2 GL MO	B A OC	FSO FSC STO STC	1CY 1CY 18M 18M	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9XI03	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIBUV0665 CONTAINMENT SPRAY PUMP RECIRC TO RWT ISOLATION VALVE	SIP-001 B10 2	2 GL MO	B A OC	FSO FSC STO STC	1CY 1CY 18M 18M	73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9XI04	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIAUV0666 HPSI PUMP RECIRC TO RWT ISOLATION VALVE	SIP-001 F10 2	2 GL MO	B A OC	FSO FSC STO STC	1CY 1CY 18M 18M	73ST-9XI13 73ST-9XI13 73ST-9XI13 73ST-9XI13	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIBUV0667 HPSI PUMP RECIRC TO RWT	SIP-001 A10 2	2 GL MO	B A OC	FSO FSC STO STC	1CY 1CY 18M 18M	73ST-9XI14 73ST-9XI14 73ST-9XI14 73ST-9XI14	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIBUV0668 LPSI PUMP RECIRC TO RWT ISOLATION VALVE	SIP-001 B10 2	2 GL MO	B A OC	FSO FSC STO STC	1CY 1CY 18M 18M	73ST-9XI14 73ST-9XI14 73ST-9XI14 73ST-9XI14	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIAUV0669 LPSI PUMP RECIRC TO RWT ISOLATION VALVE	SIP-001 G10 2	2 GL MO	B A OC	FSO FSC STO STC	1CY 1CY 18M 18M	73ST-9XI13 73ST-9XI13 73ST-9XI13 73ST-9XI13	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIBUV0671 CONTAINMENT SPRAY CONTROL VALVE AND OUTBOARD CIV (PEN. 22)	SIP-001 C06 2	8 GA MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9XI04 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIAUV0672 CONTAINMENT SPRAY CONTROL VALVE AND OUTBOARD CIV (PEN. 21)	SIP-001 G06 2	8 GA MO	A A OC	FSO FSC STO STC AJ	1CY 1CY 18M 18M CLR	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9CL01	VRR-12 VRR-12 VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
SIAUV0673 CONTAINMENT SUMP TO SI PUMP SUCTION INBOARD CIV (PEN. 23)	SIP-001 G16 2	24 BF MO	B A O	FSO STO	QTR 18M	73ST-9XI03 73ST-9XI03	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIAUV0674 CONTAINMENT SUMP TO SI PUMP SUCTION OUTBOARD CIV (PEN. 23)	SIP-001 G14 2	24 BF MO	B A O	FSO STO	QTR 18M	73ST-9XI03 73ST-9XI03	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIBUV0675 CONTAINMENT SUMP TO SI PUMP SUCTION INBOARD CIV (PEN. 24)	SIP-001 A16 2	24 BF MO	B A O	FSO STO	QTR 18M	73ST-9XI04 73ST-9XI04	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIBUV0676 CONTAINMENT SUMP TO SI PUMP SUCTION OUTBOARD CIV (PEN. 24)	SIP-001 A14 2	24 BF MO	B A O	FSO STO	QTR 18M	73ST-9XI04 73ST-9XI04	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA 18M ST FOR TS 3.3.5.4
SIAHV0678 S/D COOLING HEAT EXCHANGER ISOLATION TRAIN A	SIP-001 H09 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI03 73ST-9XI03	VRR-12 VRR-12	Note 5
SIBHV0679 S/D COOLING HEAT EXCHANGER ISOLATION TRAIN B	SIP-001 C09 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI04 73ST-9XI04	VRR-12 VRR-12	Note 5
SIAUV0682 SAFETY INJECTION TANK FILL LINE CIV (PEN. 28)	SIP-001 D10 2	2 GL AO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI03 73ST-9XI03 73ST-9XI03 73ST-9CL01 73ST-9XI03		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIAHV0683 LPSI PUMP SUCTION ISOLATION TRAIN A	SIP-001 F13 2	20 GA MO	B A OC	FSO FSC	QTR QTR	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA - PREVIOUSLY TESTED IN 73ST-9XI03.
SIAHV0684 CTMT SPRAY TO S/D COOLING HEAT EXCHANGER ISOLATION TRAIN A	SIP-001 H09 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI03 73ST-9XI03	VRR-12 VRR-12	Note 5
SIAHV0685 LPSI PUMP TO SHUTDOWN COOLING HEAT EXCHANGER ISOLATION VALVE	SIP-001 G08 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 PREVIOUSLY TESTED IN 73ST-9XI13
SIAHV0686 SHUTDOWN COOLING HEAT EXCHANGER OUTLET TO LPSI ISOLATION VALVE	SIP-001 H06 2	20 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI13 73ST-9XI13	VRR-12 VRR-12	Note 5
SIAHV0687 CTMT SPRAY ISOLATION TRAIN A	SIP-001 G06 2	10 GA MO	B P O					Note 5 PASSIVE VALVE - NO CC EXERCISE REQT.
SIAHV0688 CONTAINMENT SPRAY BYPASS VALVE	SIP-001 G09 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI03 73ST-9XI03	VRR-12 VRR-12	Note 5
SIBHV0689 CTMT SPRAY TO S/D COOLING HEAT EXCHANGER ISOLATION TRAIN B	SIP-001 C09 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI04 73ST-9XI04	VRR-12 VRR-12	Note 5
SIBHV0690 SHUTDOWN COOLING WARMUP BYPASS CONTAINMENT ISOLATION VALVE	SIP-002 H13 2	10 GL MO	B A OC	FSO FSC	QTR QTR	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA - PREVIOUSLY TESTED IN 73ST-9XI04.
SIAHV0691 SHUTDOWN COOLING WARMUP BYPASS CONTAINMENT ISOLATION VALVE	SIP-002 H03 2	10 GL MO	B A OC	FSO FSC	QTR QTR	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA - PREVIOUSLY TESTED IN 73ST-9XI03.
SIBHV0692 LPSI PUMP SUCTION ISOLATION TRAIN B	SIP-001 B13 2	20 GA MO	B A OC	FSO FSC	QTR QTR	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 QTR FS FOR PRA/RA - PREVIOUSLY TESTED IN 73ST-9XI04.
SIBHV0693 CONTAINMENT SPRAY BYPASS VALVE	SIP-001 C09 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI04 73ST-9XI04	VRR-12 VRR-12	Note 5
SIBHV0694 LPSI CROSS CONNECT VALVE TO SHUTDOWN COOLING HEAT EXCHANGER	SIP-001 C08 2	10 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9SI11 73ST-9SI11	VRR-12 VRR-12	Note 5 PREVIOUSLY TESTED IN 73ST-9XI14
SIBHV0695 CTMT SPRAY ISOLATION TRAIN B	SIP-001 C06 2	10 GA MO	B P O					Note 5 PASSIVE VALVE - NO CC EXERCISE REQT.
SIBHV0696 SHUTDOWN COOLING HEAT EXCHANGER OUTLET TO LPSI ISOLATION VALVE	SIP-001 C06 2	20 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI14 73ST-9XI14	VRR-12 VRR-12	Note 5
SIAHV0698 HPSI HEADER DISCHARGE ISOLATION VALVE	SIP-001 F04 2	4 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI33 73ST-9XI33	VRR-12 VRR-12	Note 5 PREVIOUSLY TESTED IN 73ST-9XI13.

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SIBHV0699 HPSI HEADER DISCHARGE ISOLATION VALVE	SIP-001 B03 2	4 GA MO	B A OC	FSO FSC	1CY 1CY	73ST-9XI33 73ST-9XI33	VRR-12 VRR-12	Note 5 PREVIOUSLY TESTED IN 73ST-9XI14.
SIAUV0708 CONTAINMENT SUMP TRAIN A SAMPLE TO PASS ISOLATION VALVE (PEN. 23)	SIP-001 G15 2	0.5 GL SO	B P C	STC VP	RFO 2YR	73ST-9XI21 73ST-9XI21		STC is an augmented test, performed at RFO to satisfy ESF response time testing per SR 3.3.5.4 and CIV isolation time testing per SR 3.6.3.5.
SIAUV0709 MINI-FLOW RECIRC LINE SAMPLE ISOLATION VALVE	SIP-001 E08 2	0.5 GL SO	B P C	STC VP	RFO 2YR	73ST-9XI21 73ST-9XI21		STC is an augmented test, performed at RFO to satisfy ESF response time testing per SR 3.3.5.4.
SIBUV0710 MINI-FLOW RECIRC LINE SAMPLE ISOLATION VALVE	SIP-001 B07 2	0.5 GL SO	B P C	STC VP	RFO 2YR	73ST-9XI21 73ST-9XI21		STC is an augmented test, performed at RFO to satisfy ESF response time testing per SR 3.3.5.4.
SIAPSV0754 PRESSURE LOCKING RELIEF VALVE FOR SIAUV0651 BONNET	SIP-002 B03 1	0.5 SV SA	C A OC	SV	5YR	73ST-9ZZ20		
SIBPSV0755 PRESSURE LOCKING RELIEF VALVE FOR SIBUV0652 BONNET	SIP-002 B03 1	0.5 SV SA	C A OC	SV	5YR	73ST-9ZZ20		
SIAV997 PRESSURE LOCKING CHECK VALVE FOR SICUV0653 BONNET	SIP-002 E03 1	1 CK SA	C A OC	FSO FSC	RFO RFO	73ST-9XI21 73ST-9XI21	ROJ-12 ROJ-12	Notes 1, 2, 3
SIBV998 PRESSURE LOCKING CHECK VALVE FOR SIDUV0654 BONNET	SIP-002 D10 1	1 CK SA	C A OC	FSO FSC	RFO RFO	73ST-9XI21 73ST-9XI21	ROJ-12 ROJ-12	Notes 1, 2, 3
SPBV012 ESSENTIAL SPRAY POND PUMP DISCHARGE CHECK VALVE	SPP-001 C06 3	24 CK SA	C A O	FSO	QTR	73ST-9SP01		Notes 1, 2, 3
SPAPSV0029 ESSENTIAL COOLING WATER HEAT EXCHANGER PRESSURE RELIEF VALVE	SPP-002 D03 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPBPSV0030 ESSENTIAL COOLING WATER HEAT EXCHANGER PRESSURE RELIEF VALVE	SPP-002 D06 3	1 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPAV041 ESSENTIAL SPRAY POND PUMP DISCHARGE CHECK VALVE	SPP-001 C04 3	24 CK SA	C A O	FSO	QTR	73ST-9SP01		Notes 1, 2, 3
SPAPSV0137 EDG FUEL OIL COOLER PRESSURE RELIEF VALVE	SPP-002 G02 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPBPSV0138 EDG LUBE OIL COOLER PRESSURE RELIEF VALVE	SPP-002 G06 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPAPSV0139 EDG JACKET WATER COOLER PRESSURE RELIEF VALVE	SPP-002 F02 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SPBPSV0140 EDG AIR INTERCOOLER PRESSURE RELIEF VALVE	SPP-002 F06 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPAPSV0141 EDG AIR INTERCOOLER PRESSURE RELIEF VALVE	SPP-002 F02 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPBPSV0142 EDG JACKET WATER COOLER PRESSURE RELIEF VALVE	SPP-002 F06 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPAPSV0143 EDG LUBE OIL COOLER PRESSURE RELIEF VALVE	SPP-002 E02 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPBPSV0144 EDG FUEL OIL COOLER PRESSURE RELIEF VALVE	SPP-002 F06 3	2.5 SV SA	C A OC	SV	10Y	73ST-9ZZ20		
SPEHCV0207 SPRAY POND CROSSCONNECT VALVE	SPP-001 E05 3	10 BF MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
SPEHCV0208 SPRAY POND CROSSCONNECT VALVE	SPP-001 E04 3	10 BF MA	B A OC	FSO FSC	QTR QTR	73ST-9XI31 73ST-9XI31		
SSBUV0200 HOT LEG SAMPLE LINE OUTBOARD CIV (PEN. 42C)	SSP-001 G05 2	0.38 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
SSBUV0201 PRESSURIZER SURGE LINE SAMPLE LINE OUTBOARD CIV (PEN. 42A)	SSP-001 F05 2	0.38 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
SSBUV0202 PRESSURIZER STEAM SPACE SAMPLE LINE OUTBOARD CIV (PEN. 42B)	SSP-001 F05 2	0.38 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
SSAUV0203 HOT LEG SAMPLE LINE INBOARD CIV (PEN. 42C)	SSP-001 G07 2	0.38 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
SSAUV0204 PRESSURIZER SURGE LINE SAMPLE LINE INBOARD CIV (PEN. 42A)	SSP-001 F07 2	0.38 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		

Valve ID Description	Drawing Coord/Sht# Code Class	Size (in) Type Act.	Cat. A/P S.P.	Test	Freq	Procedure	CSJ/ ROJ/ VRR	Remarks
SSAUV0205 PRESSURIZER STEAM SPACE SAMPLE LINE INBOARD CIV (PEN. 42B)	SSP-001 E07 2	0.38 GL SO	A A C	FSC STC FTC AJ VP	QTR QTR QTR CLR 2YR	73ST-9XI06 73ST-9XI06 73ST-9XI06 73ST-9CL01 73ST-9XI06		
WCEV039 NORMAL CHILLED WATER SUPPLY TO CONTAINMENT INBOARD CIV (PEN. 60)	WCP-001 E05 2	10 CK SA	AC A C	FSC AJ	CSD CLR	73ST-9XI28 73ST-9CL01	CSJ-28	Notes 1, 2, 3
WCBUV0061 NORMAL CHILLED WATER RETURN FROM CONTAINMENT INBOARD CIV (PEN. 61)	WCP-001 G05 2	10 GA MO	A A C	FSC STC AJ	1CY 18M CLR	73ST-9XI07 73ST-9XI07 73ST-9CL01	VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
WCAUV0062 NORMAL CHILLED WATER RETURN FROM CONTAINMENT OUTBOARD CIV (PEN. 61)	WCP-001 G05 2	10 GA MO	A A C	FSC STC AJ	1CY 18M CLR	73ST-9XI07 73ST-9XI07 73ST-9CL01	VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4
WCBUV0063 NORMAL CHILLED WATER SUPPLY TO CONTAINMENT OUTBOARD CIV (PEN. 60)	WCP-001 G06 2	10 GA MO	A A C	FSC STC AJ	1CY 18M CLR	73ST-9XI07 73ST-9XI07 73ST-9CL01	VRR-12 VRR-12	Note 5 18M ST REQ'D FOR TS 3.3.5.4

PRRs, CSJs, ROJs, and VRRs

The following table lists the Pump Relief Requests (PRRs), Cold Shutdown Justifications (CSJs), Refueling Outage Justifications (ROJs), and Valve Relief Requests (VRRs) in the PVNGS Pump and Valve Inservice Testing Program. Items that have been deleted are shaded.

Identifier	Subject (and Notes)
PRR-01	Essential Auxiliary Feedwater Pump Flow Rate Measurement
PRR-02	Non-Essential Auxiliary Feedwater Pump Flow Rate Measurement
PRR-03	Charging Pump Flow Rate Measurement
PRR-04	(Not used)
PRR-05	LPSI Pump Flow Rate Measurement
PRR-06	HPSI Pump Flow Rate Measurement
PRR-07	Charging Pump Vibration Measurement
PRR-08	Smooth-Running Pumps
PRR-09	Evaluation as Corrective Action
PRR-10	ANII Involvement in Pump Inservice Testing
PRR-11	Containment Spray Pump Flow Rate Measurement
CSJ-01	Auxiliary Feedwater Pump Suction Check Valve Open Exercising
CSJ-02	AFW Pump Discharge Check Valve Open Exercising
CSJ-03	AFW Discharge Header Check Valve Open and Closed Exercising
CSJ-04	AFW Header Check Valve Open Exercising
CSJ-05	LPSI and CS Pump Discharge Check Valve Open Exercising
CSJ-06	Auxiliary Pressurizer Spray Valve Exercising
CSJ-07	Boration Flowpath Isolation Valve Exercising
CSJ-08	VCT Outlet Valve Closed Exercising (Deleted during the implementation of ASME OM Code Case OMN-1 per VRR-12.)
CSJ-09	Letdown Isolation Valve Closed Exercising
CSJ-10	Containment Refueling Purge Valve Closed Exercising
CSJ-11	RCP Seal Injection Containment Isolation Valve Closed Exercising
CSJ-12	EW/NC Crosstie Valves Closed Exercising (Deleted during the implementation of ASME OM Code Case OMN-1 per VRR-12.)
CSJ-13	Instrument Air Containment Isolation Valve Closed Exercising
CSJ-14	NC Containment Isolation Valve Closed Exercising (Deleted during the implementation of ASME OM Code Case OMN-1 per VRR-12.)
CSJ-15	Reactor Head Vent and Pressurizer Vent Valve Exercising
CSJ-16	Feedwater Economizer Check Valve Closed Exercising (Deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
CSJ-17	Turbine-Driven AFW Pump Steam Supply Check Valve Exercising
CSJ-18	Feedwater Isolation Valve Closed Exercising
CSJ-19	Main Steam Isolation Valve Closed Exercising
CSJ-20	HPSI Header Check Valve Closed Exercising
CSJ-21	LPSI Header Check Valve Open and Closed Exercising
CSJ-22	AFW Turbine Steam Supply Check Valve Closed Exercising (Superseded by ROJ-13)
CSJ-23	Nitrogen Containment Isolation Check Valve Closed Exercising
CSJ-24	Hydrogen Return Containment Isolation Check Valve Closed Exercising
CSJ-25	Shutdown Cooling Isolation Valve Bonnet Vent Check Valve Open and Closed Exercising (Superseded by ROJ-12)
CSJ-26	SIT Vent Valve Exercising
CSJ-27	Shutdown Cooling Suction Isolation Valve Exercising

Identifier	Subject (and Notes)
CSJ-28	Normal Chilled Water Containment Isolation Check Valve Closed Exercising
CSJ-29	RMW Supply to RDT Containment Isolation Check Valve Closed Exercising
CSJ-30	NC to Containment Check Valve Closed Exercising
CSJ-31	SI Header Check Valve Open Exercising
CSJ-32	RCP Seal Bleed-Off Isolation Valve Closed Exercising
CSJ-33	SIT Outlet MOV Open Exercising (Deleted during the implementation of ASME OM Code Case OMN-1 per VRR-12.)
ROJ-01	Boration Flow Path Check Valve Open Exercising
ROJ-02	RWT Outlet Check Valve Open Exercising
ROJ-03	BAMP Discharge Check Valve Open Exercising
ROJ-04	HPSI Header Check Valve Open Exercising
ROJ-05	HPSI Pump Discharge Check Valve Open and Closed Exercising
ROJ-06	HPSI Long-Term Recirculation Check Valve Open Exercising
ROJ-07	SIT Discharge Check Valve Open Exercising (Deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
ROJ-08	SI/RCS Check Valve Open Exercising (Deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
ROJ-09	Regenerative Heat Exchanger Inlet Check Valve Closed Exercising
ROJ-10	Safety Injection Pump Suction Flowpath Check Valve Closed Exercising
ROJ-11	LPSI and CS Pump Suction Check Valve Open Exercising
ROJ-12	Shutdown Cooling Isolation Valve Bonnet Vent Check Valve Open and Closed Exercising
ROJ-13	AFW Turbine Steam Supply Check Valve Closed Exercising
VRR-01	Emergency Diesel Generator Skid-Mounted Check Valve Open Exercising
VRR-02	ADV Nitrogen Solenoid Valve Stroke Timing
VRR-03	EC Surge Tank Nitrogen Supply Check Valve Closed Exercising (Deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
VRR-04	SI Pump Room Floor Drain Check Valve Exercising
VRR-05	Downcomer Feedwater Check Valve Closed Exercising (Deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
VRR-06	Containment Spray Check Valve Open and Closed Exercising (Deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
VRR-07	Containment Sump Discharge Check Valve Open Exercising (Denied by the NRC because of insufficient justification for extreme hardship, per NRC SER dated July 8, 1999. VRR subsequently deleted during implementation of Check Valve Condition Monitoring Program per VRR-13)
VRR-08	SI Check Valve Closed Exercising
VRR-09	Verification of Thermal Equilibrium During Safety/Relief Valve Testing
VRR-10	Accumulator Volume for Safety/Relief Valve Testing
VRR-11	ANII Involvement in Valve Inservice Testing
VRR-12	MOV Exercising and Stroke Timing
VRR-13	Check Valve Condition Monitoring

Pump Relief Request No. 1 (PRR-01)

Essential Auxiliary Feedwater Pump Flow Rate Measurement

Pump ID	Pump Description	Code Class	Drawing / Coord.
AFA-P01	Essential Auxiliary Feedwater Pump (Turbine-Driven)	3	AFP-001 / D06
AFB-P01	Essential Auxiliary Feedwater Pump (Motor-Driven)	3	AFP-001 / B06

Function

The essential auxiliary feedwater pumps supply water to the steam generators during an accident. They also can be used to supply feedwater to the steam generators during plant startup and shutdown.

Test Requirement

Pump flow rate shall be measured and compared with its reference value. (OM-6 para. 5.2)

Alternate Testing

AFA-P01 and AFB-P01 will be tested at mini-flow conditions during plant operation, but flow rate will not be measured. AFA-P01 and AFB-P01 will be tested at design flow on a Cold Shutdown frequency, with all Code-required parameters measured.

Basis for Relief

There are only two practical flow paths available for testing AFA-P01 and AFB-P01. The primary flow path is into the main feedwater lines to the steam generators. The other flow path is the minimum flow recirculation line that recirculates back to the condensate storage tank. The flow path to the steam generators is equipped with flow instrumentation, but the recirculation line is a fixed-resistance circuit with no provisions for flow indication.

Use of the primary flow path at power would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

AFA-P01 and AFB-P01 are standby pumps. Little degradation is expected during plant power operation when the pumps are idle except for testing. Testing the pumps at design flow on a Cold Shutdown frequency will provide additional information regarding the condition of the pumps. This information compensates for not measuring flow rate during the quarterly test.

Approval

Complies with GL 89-04 Position 9. Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Pump Relief Request No. 2 (PRR-02)

Non-Essential Auxiliary Feedwater Pump Flow Rate Measurement

Pump ID	Pump Description	Code Class	Drawing / Coord.
AFN-P01	Non-Essential Aux. Feedwater Pump (Motor-Driven)	NA	AFP-001 / H06

Function

The non-essential auxiliary feedwater pump AFN-P01 supplies feedwater to the steam generators during plant startup and shutdown. AFN-P01 is not within the required scope of the IST Program because it is not ASME Code Class 1, 2, or 3, and it does not perform a required function in shutting down the reactor, maintaining the shutdown condition, or mitigating the consequences of an accident. It is included in the IST Program as an augmented component to facilitate testing required by Technical Specification 4.7.1.2(a)(1).

Test Requirement

Pump flow rate shall be measured and compared with its reference value. (OM-6 para. 5.2)

Alternate Testing

AFN-P01 will be tested at mini-flow conditions during plant operation, but flow rate will not be measured.

Basis for Relief

There are only two practical flow paths available for testing AFN-P01. The primary flow path is into the main feedwater lines to the steam generators. The other flow path is the minimum flow recirculation line that recirculates back to the condensate storage tank. The flow path to the steam generators is equipped with flow instrumentation, but the recirculation line is a fixed-resistance circuit with no provisions for flow indication.

Use of the primary flow path at power would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

AFN-P01 is a standby pump normally used only during startup. Little degradation is expected during plant power operation when the pump is idle except for testing.

Approval

Since AFN-P01 is an augmented component, deviations from the Code do not require regulatory approval. This relief request is provided for information and documentation purposes only.

Pump Relief Request No. 3 (PRR-03)

Charging Pump Flow Rate Measurement

Pump ID	Pump Description	Code Class	Drawing / Coord.
CHA-P01	Charging Pump	2	CHP-002 / B03
CHB-P01	Charging Pump	2	CHP-002 / D03
CHE-P01	Charging Pump	2	CHP-002 / G03

Function

The charging pumps provide makeup water to the reactor coolant system for chemistry and volume control. They also provide auxiliary spray to the pressurizer.

Test Requirement

The full-scale range of each analog instrument shall be not greater than three times the reference value. (OM-6 para. 4.6.1.2(a))

Alternate Testing

None. The installed flow instrument, CHB-FI-212, will be used to measure charging pump during inservice testing.

Basis for Relief

Each charging pump is a constant-speed, positive displacement pump with a typical flow rate reference value of 43 gpm. The analog charging flow indicator CHB-FI-212 is located in the common discharge line of the three pumps. The full-scale range of CHB-FI-212 is 150 gpm, which exceeds the range requirement of 4.6.1.2(a).

The combined requirements of OM-6 Table 1 (flow rate accuracy within 2% of full-scale) and para. 4.6.1.2(a) (full scale range not greater than 3 times the reference value) result in a measurement within 6% of the reference value. 6% is also the guideline for instrument acceptability provided in NUREG-1482, Paragraph 5.5.1.

The loop accuracy of CHB-FI-212 (based on the square root of the sum of the squares of the inaccuracies of each instrument or component in the loop) is ± 1.32% of full-scale. When combined with the 150 gpm range of the instrument, which is 3.49 times the reference value, the accuracy of the CHB-FI-212 instrument loop is within 4.7% of the reference value. Therefore, flow indicator CHB-FI-212 meets the combined requirement for measurement accuracy within 6% of the reference value. This accuracy is sufficient to provide an acceptable level of quality and safety.

Approval

Alternative authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999.

Pump Relief Request No. 5 (PRR-05)

LPSI Pump Flow Rate Measurement

Pump ID	Pump Description	Code Class	Drawing / Coord.
SIA-P01	Low Pressure Safety Injection (LPSI) Pump	2	SIP-001 / F11
SIB-P01	Low Pressure Safety Injection (LPSI) Pump	2	SIP-001 / B11

Function

LPSI pumps SIA-P01 and SIB-P01 provide low-pressure coolant injection of borated water into the reactor coolant system under accident conditions. They also provide shutdown cooling flow post-accident and during normal reactor startup and shutdown.

Test Requirement

Where system resistance cannot be varied, flow rate and pressure shall be determined and compared to their respective reference value. (OM-6, Para. 5.2(c))

Alternate Testing

LPSI pumps SIA-P01 and SIB-P01 will be tested at mini-flow conditions during plant operation per OM-6 para. 5.2(c), but flow rate will not be measured. SIA-P01 and SIB-P01 will be tested at design flow on a Cold Shutdown frequency, with all Code-required parameters measured and evaluated per OM-6 para. 5.2(d).

Basis for Relief

During normal power operation, the LPSI pumps cannot develop sufficient discharge pressure to overcome RCS pressure and allow flow through the safety injection headers. Thus, during quarterly testing, LPSI flow is routed through a minimum flow recirculation line to the refueling water tanks. The minimum-flow recirculation flowpath is a fixed resistance circuit containing a flow-limiting orifice capable of passing only a small fraction of the design flow. The installed flow instrumentation (permanently mounted ultrasonic flowmeter) has only limited capability, and its accuracy is not sufficient to meet OM-6 accuracy requirements. A larger recirculation flowpath is available; however, it uses the same flow instrument as the minimum-recirculation line.

The LPSI pumps are normally used to provide shutdown cooling flow during shutdown operations, and occasionally for recirculating the refueling water tank when the unit is at power. Little degradation is expected during power operation. Thus, the alternate testing will adequately monitor these pumps to ensure continued operability and availability for accident mitigation.

Approval

Complies with GL 89-04 Position 9. Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Pump Relief Request No. 6 (PRR-06)

HPSI Pump Flow Rate Measurement

Pump ID	Pump Description	Code Class	Drawing / Coord.
SIA-P02	High Pressure Safety Injection (HPSI) Pump	2	SIP-001 / E11
SIB-P02	High Pressure Safety Injection (HPSI) Pump	2	SIP-001 / A11

Function

The HPSI pumps provide high-pressure coolant injection of borated water into the reactor coolant system under accident conditions. They also provide flow for long-term cooling and flushing to prevent boron precipitation.

Test Requirement

Where system resistance cannot be varied, flow rate and pressure shall be determined and compared to their respective reference value. (OM- 6, Para. 5.2(c))

Alternate Testing

HPSI pumps SIA-P02 and SIB-P02 will be tested at mini-flow conditions during plant operation per OM-6 para. 5.2(c), but flow rate will not be measured. SIA-P02 and SIB-P02 will be tested at design flow on a Refueling frequency, with all Code-required parameters measured and evaluated per OM-6 para. 5.2(d).

Basis for Relief

During normal power operation, the HPSI pumps cannot develop sufficient discharge pressure to overcome RCS pressure and allow flow through the safety injection headers. Thus, during quarterly testing, HPSI flow is routed through a minimum flow recirculation line to the refueling water tanks. The minimum-flow recirculation flowpath is a fixed resistance circuit containing a flow-limiting orifice capable of passing only a small fraction of the design flow. The installed flow instrumentation (permanently mounted ultrasonic flowmeter) has only limited capability, and its accuracy is not sufficient to meet OM-6 accuracy requirements.

During cold shutdown conditions, full flow operation of the HPSI pumps to the RCS is restricted to preclude RCS pressure transients that could result in exceeding Technical Specification pressure-temperature limits (LTOP).

The HPSI pumps are standby pumps. SIB-P02 is used only occasionally to recharge the safety injection tanks. Little degradation is expected during power operation. Thus, the alternate testing will adequately monitor these pumps to ensure continued operability and availability for accident mitigation.

Approval

Complies with GL 89-04 Position 9. Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Pump Relief Request No. 7 (PRR-07)

Charging Pump Vibration Measurement

Pump ID	Pump Description	Code Class	Drawing/ Coord.
CHA-P01	Charging Pump	2	CHP-002 / B03
CHB-P01	Charging Pump	2	CHP-002 / D03
CHE-P01	Charging Pump	2	CHP-002 / G03

Function

The charging pumps provide makeup water to the reactor coolant system for chemistry and volume control. They also provide auxiliary spray to the pressurizer.

Test Requirement

The frequency response range of the vibration measuring transducers and their readout system shall be from one-third minimum pump rotational speed to at least 1000 Hz. (OM-6 para. 4.6.1.6)

Alternate Testing

The instrumentation used to measure charging pump vibration will have a frequency response range from 1.6 hz to 100 hz.

Basis for Relief

The charging pumps are positive-displacement pumps with a constant running speed of 199 rpm (equivalent to 3.3 Hz). Compliance with paragraph 4.6.1.6 would require using vibration instrumentation with a frequency response range of 1.1 Hz to at least 1000 Hz.

Two different vibration probes are used at PVNGS, one with a frequency response range of 4.9 Hz to 1000 Hz, and a special low-speed probe with a frequency response range of 1.6 Hz to 100 Hz. The low-speed probe was purchased specifically for charging pump testing when the IST requirement for frequency response was one-half pump speed to at least pump shaft rotational speed. This probe does not meet the lower bound or the upper bound of the Code-required frequency response range.

The charging pump bearings are oil-lubricated, sleeve type journal bearings. Because of the high reciprocating loads, the charging pump bearings are not susceptible to oil whirl, which is the primary failure mode that causes vibration below pump shaft rotational speed. There are no other failure mechanisms that manifest themselves with elevated vibration levels in the range of one-third to one-half pump shaft rotational frequency; all the remaining failure modes cause vibration at or above the pump speed. Experience with these pumps confirms this fact.

Therefore vibration instrumentation with a frequency response range above 1.6 Hz is acceptable for monitoring vibration of the charging pumps.

The low-speed probe is sensitive to vibration frequencies up to 30 times the running speed of the charging pumps. This is sufficient to identify bearing degradation, mechanical rubs, and other pump problems producing high-frequency vibrations. These pumps are not susceptible to degradation mechanisms that would manifest themselves in the 100-1000 Hz range but not in the vibration range being monitored (1.6-100 Hz). Therefore, use of the higher frequency vibration probe provides no benefit. The charging pumps are monitored for other symptoms of degradation under the PVNGS Predictive Maintenance Program (see PRR-08 for a description of the PVNGS Predictive Maintenance Program). Therefore use of this probe during charging pump inservice testing will provide an acceptable level of quality and safety.

Approval "Hardship" alternative authorized pursuant to 10 CFR 50.55a(a)(3)(ii) per NRC SER dated July 8, 1999.

Pump Relief Request No. 8 (PRR-08)

Smooth-Running Pumps

Pump ID	Pump Description	Code Class	Drawing / Coord.
AFA-P01	Essential Auxiliary Feedwater Pump (Turbine-Driven)	3	AFP-001 / D06
AFB-P01	Essential Auxiliary Feedwater Pump (Motor-Driven)	3	AFP-001 / B06
AFN-P01	Non-Class Auxiliary Feedwater Pump (Motor-Driven)	N	AFP-001 / H06
CTA-P01	Condensate Transfer Pump	3	CTP-001 / C05
CTB-P01	Condensate Transfer Pump	3	CTP-001 / B05
ECA-P01	Essential Chilled Water Circulation Pump	3	ECP-001 / B08
ECB-P01	Essential Chilled Water Circulation Pump	3	ECP-001 / B04
EWA-P01	Essential Cooling Water Pump	3	EWP-001 / E06
EWB-P01	Essential Cooling Water Pump	3	EWP-001 / E02
PCA-P01	Spent Fuel Pool Cooling Pump	3	PCP-001 / D15
PCB-P01	Spent Fuel Pool Cooling Pump	3	PCP-001 / B15
SIA-P01	Low Pressure Safety Injection (LPSI) Pump	2	SIP-001 / F11
SIB-P01	Low Pressure Safety Injection (LPSI) Pump	2	SIP-001 / B11
SIA-P02	High Pressure Safety Injection (HPSI) Pump	2	SIP-001 / E11
SIB-P02	High Pressure Safety Injection (HPSI) Pump	2	SIP-001 / A11
SIA-P03	Containment Spray Pump	2	SIP-001 / H11
SIB-P03	Containment Spray Pump	2	SIP-001 / C11
SPA-P01	Essential Spray Pond Pump	3	SPP-001 Sh. 1 / C04
SPB-P01	Essential Spray Pond Pump	3	SPP-001 Sh. 1 / C07

Function Various

Test Requirement If deviations fall within the alert range of Table 3, the frequency of testing specified in para. 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If deviations fall within the required action range of Table 3, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected. (OM-6 para. 6.1)

Alternate Testing Vibration parameters that would have reference values ≤ 0.05 ips may be considered "smooth-running". The Alert and Required Action values for these parameters will be determined as if their reference value is 0.05 ips; that is, the Alert Range will be > 0.125 ips to 0.3 ips, and the Required Action Range will be > 0.3 ips.

In addition to the Code-mandated monitoring, these pumps are monitored under the PVNGS Predictive Maintenance Program. This program includes the following:

- Spectrum band monitoring
- Bearing acceleration monitoring (on ball and roller bearings only)

- Bearing oil analysis (for oil lubricated bearings)
- Motor Current Signature analysis (for all but the smallest motors)

If any of these parameters are outside normally expected ranges, an evaluation will be performed and appropriate corrective actions will be taken.

Before being treated as "smooth-running" under this relief request, each candidate pump will be evaluated to verify that testing performed under the provisions of this relief request will not prevent the detection of significant pump degradation.

Basis for Relief

The repeatability of pump vibration readings at PVNGS is in the range of 0.05 ips due to hydraulic flow noise in this amplitude range and the repeatability of the vibration instruments. When vibration velocities are less than 0.05 ips, changes have been shown to be non-significant.

At vibration velocities less than 0.05 ips, flow noise and instrument repeatability can significantly affect reference values. Candidates for "smooth-running" status will be analyzed per OM-6 paragraph 4.3 to verify that use of this relief request will not prevent the detection of significant pump degradation.

For displacement reference values less than 0.5 mils, it is noted that the Section XI code in effect for the first interval IST Program (1980 Edition, Winter 1981 Addenda) sets the Alert Range at >1.0 mil and the Required Action Range at >1.5 mil. This implies a minimum reference value of 0.5 mils, which is equivalent to 0.047 ips for 1800 rpm pumps and 0.094 ips for 3600 rpm pumps. The effective reference values proposed for smooth-running pumps are roughly equal to the implied Section XI reference values for 1800 rpm pumps and more conservative than the implied reference values for 3600 rpm pumps. Without this relief request, the Alert Ranges for some smooth running pumps will be reduced by a factor of 10.

The PVNGS Predictive Maintenance (PdM) Program is part of the Preventive Maintenance (PM) Program described in UFSAR section 17.2.3.11.1.6. The PM Program was developed using RCM, NPRDS, EPRI, and INPO guidelines as well as factoring in PVNGS site-specific experience and regulatory requirements. The PM Program and PdM activities are controlled by plant procedures. Each of these pumps has a maintenance plan documented in the PM Program which describes the PM and PdM activities performed on that pump. The performance of the system associated with each of these pumps is monitored and compared to performance criteria under the PVNGS Maintenance Rule Program. This ensures the continued effectiveness of the PM program to minimize component failures and maintain or improve system performance (balance availability and reliability).

The PVNGS Predictive Maintenance Program uses vibration analysis, lubricant analysis, and infrared thermographic analysis as appropriate, to predict the need for maintenance so that equipment can be reworked prior to failure. The components included in this program include those considered important to safe and reliable plant operation, including all the pumps in the IST Program. The intervals for monitoring are based on manufacturer's recommendations, maintenance history, cost effectiveness, and experience. Although the monitoring, analyses, database, and software used in the Predictive Maintenance Program do not fall under the PVNGS Quality Program, the Predictive Maintenance Program still provides valuable information for assuring the operational readiness of smooth-running pumps.

The vibration analysis program monitors the vibration of rotating machinery. In addition to the vibration at pump bearings, the vibration of the driver (turbine or motor) bearings are also collected and trended. Analyzed parameters and methods include vibration velocity, bearing acceleration, bearing high frequency detection, and spectral analysis.

The lubricant analysis program samples lubricants and analyzes them to identify degradation or negative trends. Most testing is performed at the on-site lubrication laboratory, where capabilities include wear debris, chemical composition, and lubrication cleanliness analysis.

In both the vibration monitoring and lubricant analysis programs, recently acquired data is compared with previous data to detect any indicated degradation of equipment condition. If degradation indicates the reliability of operating equipment may be negatively affected, or if acceptance criteria is no longer being met, appropriate corrective action is taken. Corrective action may include: continuing trending of the degraded condition, if the condition is not considered to be immediately threatening to the equipment and can be corrected during a time window convenient to plant operation; additional testing or monitoring to confirm the suspected degraded condition; inspection and repair of the equipment as necessary; changes to preventive maintenance procedures or schedules; or design changes.

PVNGS expends considerable resources on preventive and predictive maintenance. One result of these efforts are pumps that run very smoothly. For example, many pumps in the PVNGS IST Program would currently be candidates for "smooth-running" status under PRR-08, as shown in the table below. To continue to impose Code-mandated Alert and Required Action values on smooth-running pumps unnecessarily penalizes PVNGS for achieving this high level of performance.

Pump	Typical Vibration Reference Values (ips)
Auxiliary Feedwater	0.12 - 0.21
Condensate Transfer *	0.0044 – 0.0556
Essential Chilled Water *	0.0075 – 0.0496
Essential Cooling Water *	0.00295 – 0.0931
Low Pressure Safety Injection *	0.0343 – 0.319
High Pressure Safety Injection	0.0667 – 0.296
Containment Spray	0.086 – 0.141
Spent Fuel Pool Cooling *	0.0295 – 0.11
Essential Spray Pond *	0.0018 – 0.0316

* Candidates for "smooth-running" status under PRR-08

Approval Partially authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999. Alternatives to OM-6 para. 5.1 and 6.1 were authorized, but relief from para. 4.3 was denied. Accordingly, reference to OM-6 para. 4.3 has been deleted from the "Test Requirements" section of PRR-08.

Pump Relief Request No. 9 (PRR-09)

Evaluation as Corrective Action

Pump ID	Pump Description	Code Class	Drawing / Coord.
Various	This is a general request for relief	Various	Various

Function Various

Test Requirement If deviations fall within the alert range of Table 3, the frequency of testing specified in para. 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If deviations fall within the required action range of Table 3, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected. (OM-6 para. 6.1)

Alternate Testing In cases where a pump's test parameters fall within either the alert or action required 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. The supporting analysis will include verification of the pump's operational readiness and an evaluation of test data that verifies that the subject pump is not expected to fall below the minimum required performance level in the periods between testing. The analysis will include both pump and system level operational readiness evaluations, description of the cause of the change in pump performance, and an evaluation of the trends indicated by the available test and maintenance data. The results of this analysis will be documented in the record of tests.

Basis for Relief The 1995 Edition of ASME OM Code provides an alternate concept of corrective action should a pump's performance enter the action required range. Specifically, Paragraph ISTB 6.2.2 permits an analysis of the pump and establishment of new reference values. This can avoid premature maintenance of a pump that is subject to expected continual and gradual deterioration over time while operating at a level where it is fully capable of reliably performing its designated safety function.

By using the test requirements of the 1995 Code edition, PVNGS can reduce the frequency of unnecessary pump maintenance with essentially no adverse affect on plant safety since the new Code requirements are equivalent to (or better than) the requirements of the 1988 addenda.

In addition, by expanding this capability to pumps that are in the alert range, frequent and unnecessary testing can be avoided. Note that more frequent testing of pumps is a degrading mechanism for these pumps. This also is required to avoid unnecessary plant shutdown for pumps that are tested at cold

shutdown should a pump enter the alert range during such testing.

The proposed alternative testing is consistent with the response to Question 3.3.2 in the "Summary of Public Workshops Held in NRC Regions on Inspection Procedure 73756".

Approval Alternative authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999.

Pump Relief Request No. 10 (PRR-10)

ANII Involvement in Pump Inservice Testing

Pump ID	Pump Description	Code Class	Drawing / Coord.
Various	This is a general request for relief	Various	Various

Function

Various

Test Requirement

Duties of the Authorized Nuclear Inspector include:
(c) verifying that the visual examinations and tests on pumps and valves have been completed and the results recorded. (Preface to Section XI)

It is the duty of the Inspector:
(1) to perform a detailed review of the inspection plan (IWA-2400) prior to the start of preservice inspection and each inspection interval . . . Review of the inspection plan shall cover any features of the inspection plan which are affected by the requirements of this Division, as applicable, and shall include the following:

(a) examination categories and items
(b) test and examination requirements
(e) inservice test quantities
(g) test frequency

(2) to review any revisions to the inspection plan during the preservice inspection or the inspection interval;
(3) to submit a report to the Owner documenting review of the items identified in (1) and (2) above; (IWA-2110(a))

It is the duty of the Inspector to verify that the inservice tests required on pumps, valves, and component supports (IWF, IWP, and IWV) have been completed and the results recorded. (IWA-2110(c))

Alternate Testing

The PVNGS Pump and Valve IST Program will be developed and implemented in accordance with applicable regulations, codes, quality assurance requirements, plant procedures, and Authorized Inspection Agency requirements. ANII involvement with the Pump and Valve IST Program will not be required.

Basis For Relief

In the nuclear industry, the Authorized Nuclear Inservice Inspectors (ANIIs) have historically been involved primarily with the development and implementation of the Inservice *Inspection* Program. Involvement with the Inservice Testing Program has been minimal. This is consistent with the experience and training of the individual inspectors, who are well schooled in the areas of plant construction and repair. Recognizing this, ASME recently published the OMb-1997 addenda to the ASME/ANSI OM Code, which

includes a change that eliminates all involvement of the ANII in the development and implementation of the Inservice Testing Program.

Each revision to the PVNGS IST Program is subjected to a comprehensive review process including technical reviews, management reviews, and a review under 10 CFR 50.59. In addition, quality assurance evaluations and self-assessments periodically monitor the implementation of the IST Program. These measures, along with the constant attention by highly qualified individuals tasked with program implementation ensure that the previous duties of the inspector are routinely and adequately performed and the intent of the ASME Code is maintained. Thus the proposed alternative testing provides an acceptable level of quality and safety.

Approval Alternative authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999.

Pump Relief Request No. 11 (PRR-11)

Containment Spray Pump Flow Rate Measurement

Pump ID	Pump Description	Code Class	Drawing / Coord.
SIA-P03	Containment Spray (CS) Pump	2	SIP-001 / H11
SIB-P03	Containment Spray (CS) Pump	2	SIP-001 / C11

Function

CS pumps SIA-P03 and SIB-P03 deliver borated water to the containment spray headers, providing containment cooling and pressure control during accident conditions. The CS pumps can also be lined up to provide flow for shutdown cooling.

Test Requirement

The full-scale range of each analog instrument shall be not greater than three times the reference value. (OM-6, para. 4.6.1.2(a))

Where system resistance cannot be varied, flow rate and pressure shall be determined and compared to their respective reference value. (OM-6, para. 5.2(c))

Alternate Testing

CS pumps SIA-P03 and SIB-P03 will be tested at mini-flow conditions during plant operation per OM-6 para. 5.2(c), but flow rate will not be measured. SIA-P03 and SIB-P03 will be tested at design flow during cold shutdown periods when the pump is used for shutdown cooling. During design flow testing, all Code-required parameters will be measured and evaluated per OM-6 para. 5.2(d).

Basis for Relief

The containment spray pumps are single stage, vertical pumps normally lined up to the containment spray headers. The "rumble range" of the pumps, where operation is unstable due to flow oscillations, is approximately 1800-2800 gpm. Each CS pump has two possible recirculation flowpaths: a minimum-flow recirculation flowpath with a flow-limiting orifice capable of passing only a small fraction of the design flow, and a larger flowpath used mainly for RWT mixing. All the flowpaths pass through the flowmeter just downstream of the CS pump discharge. The recirculation flowpaths also pass through a common recirculation line flowmeter. The CS pump discharge flowmeter is an orifice-type analog flowmeter with a range of 0-5000 gpm. The common recirculation line flowmeter is a permanently-mounted ultrasonic flowmeter which has only limited capability. The accuracy of the ultrasonic flowmeter is not sufficient to meet OM-6 accuracy requirements or to be relied upon for determining pump operability.

The normal containment spray flow path cannot be used for testing the CS pumps without spraying down the inside of the containment building and risking damage to important equipment. The RCS injection portion of the

shutdown cooling flow path cannot be used for testing during power operation because the CS pumps are unable to develop sufficient discharge pressure to overcome RCS pressure.

The flow rate through the pump discharge flowmeter must be at least 1634 gpm to satisfy the full-scale range requirement of OM-6 para. 4.6.1.2(a). The flow capacity of the minimum-flow recirculation line is well below 1634 gpm. The larger recirculation flowpath is capable of carrying more than 1634 gpm, but routine surveillance testing at flow rates above this value is not practical because of the pump rumble range (1800-2800 gpm). Testing in or near the rumble range is not practical because of the potential for equipment damage. Testing at flow rates above the rumble range (> 2800 gpm) is not practical because flow velocities in the recirculation piping would exceed the design criteria.

The CS pumps are standby pumps. Little degradation is expected during power operation. The alternate testing will adequately monitor these pumps to ensure continued operability and availability for accident mitigation.

Approval Complies with GL 89-04 Position 9. Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Cold Shutdown Justification No. 1 (CSJ-01)

Auxiliary Feedwater Pump Suction Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
AFAV007	AFW Pump AFA-P01 Suction Header Check Valve	3	C	AFP-001 / D07
AFBV022	AFW Pump AFB-P01 Suction Header Check Valve	3	C	AFP-001 / C07

Function

These check valves open to provide flowpaths from the Condensate Storage Tank to the respective auxiliary feedwater pump. They have no specific safety function in the closed position.

Alternate Testing

These valves will be partial-stroke exercised open during quarterly pump testing via the minimum flow recirculation lines, and full-stroke exercised open during cold shutdown periods.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Full-stroke exercising at power is not practical because this would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to unnecessary thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

This cold shutdown justification is similar to CSJ-1 in the first interval IST Program.

Cold Shutdown Justification No. 2 (CSJ-02)

AFW Pump Discharge Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
AFAV137	Essential AFW Pump AFA-P01 Discharge Check Valve	3	C	AFP-001 / D06
AFBV138	Essential AFW Pump AFB-P01 Discharge Check Valve	3	C	AFP-001 / C06

Function

These check valves open to provide flowpaths from the respective essential auxiliary feedwater pumps to the auxiliary feedwater supply headers. They have no specific safety function in the closed position.

Alternate Testing

These valves will be partial-stroke exercised open during quarterly pump testing via the minimum flow recirculation lines, and full-stroke exercised open during cold shutdown periods.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Full-stroke exercising at power is not practical because this would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to unnecessary thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

This cold shutdown justification is similar to CSJ-1 in the first interval IST Program.

Cold Shutdown Justification No. 3 (CSJ-03)

AFW Discharge Header Check Valve Open and Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
AFAV015	AFW Pump AFA-P01 Discharge Header Check Valve	3	C	AFP-001 / E05
AFBV024	AFW Pump AFB-P01 Discharge Header Check Valve	3	C	AFP-001 / C05

Function

These check valves open to provide flowpaths from the respective auxiliary feedwater pump to the auxiliary feedwater headers. They close so that if one pump fails to start after an auxiliary feedwater actuation signal (AFAS), flow from the operating pump is not diverted back through the idle pump.

Alternate Testing

These valves will be full-stroke exercised open and exercised closed during cold shutdown periods.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Full-stroke exercising at power is not practical because this would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to unnecessary thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

Closure testing these valves can be performed by two methods. The normal method is to operate the opposite pump with the pumps lined up for parallel operation to the steam generators while the pump associated with the valve being tested is idle. Performing this test at power is not practical because it would inject cold auxiliary feedwater into the main feedwater lines, with the temperature perturbations and undesirable consequences described above. Alternately, a source of pressurized water could be introduced between the check valve and the normally-closed downstream flow control and header isolation valves. Performance of this test would require draining the AFW pump recirculation lines and entry into an extended LCO for the duration of the test (approx. 4-6 hours).

During power operation these valves remain closed and cannot be opened due to the lack of an available discharge path. Thus, it is extremely unlikely that a valve would be discovered in the open position during periodic closure testing. Therefore quarterly closure testing is considered impractical because the risk of performing this testing outweighs the anticipated benefits.

This CSJ is similar to CSJ-2 in the first interval IST Program.

Cold Shutdown Justification No. 4 (CSJ-04)

AFW Header Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
AFAV079	AFW Header Check Valve	2	C	AFP-001 / E02
AFBV080	AFW Header Check Valve	2	C	AFP-001 / C02

Function

These check valves open to provide flowpaths from the auxiliary feedwater pump headers to the respective feedwater line and steam generator. They have no specific safety function in the closed position.

Alternate Testing

These valves will be full-stroke exercised open during cold shutdown periods.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Full-stroke exercising at power is not practical because this would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to unnecessary thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

This cold shutdown justification is similar to CSJ-3 in the first interval IST Program.

Cold Shutdown Justification No. 5 (CSJ-05)

LPSI and CS Pump Discharge Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIAV434	LPSI Pump Discharge Check Valve	2	C	SIP-001 / F09
SIBV446	LPSI Pump Discharge Check Valve	2	C	SIP-001 / B09
SIAV485	CS Pump Discharge Check Valve	2	C	SIP-001 / H10
SIBV486	CS Pump Discharge Check Valve	2	C	SIP-001 / G10

Function

Open for pump discharge flowpath for shutdown cooling or low pressure safety injection. These valves close to prevent reverse flow, but closure is not a required safety function.

Alternate Testing

These valves will be partial-stroke exercised open quarterly, and full-stroke exercised open during cold shutdown periods when the associated pump is used for shutdown cooling.

Basis

These are simple check valves with no external means of exercising or for determining disc position. During power operation, the valves can be part-stroke exercised open with flow when the associated pump is operated via the 6" recirculation line. Full-stroke exercising during power operation is not practical because pump discharge pressure is not sufficient to overcome RCS pressure, and there is not a recirculation flow path capable of handling maximum accident condtion flow as required by Generic Letter 89-04 Position 1. The valves will be full-stroke exercised open at cold shutdown when the associated pump is used for shutdown cooling.

This cold shutdown justification is similar to CSJ-29 and CSJ-30 in the first interval IST Program.

Cold Shutdown Justification No. 6 (CSJ-06)

Auxiliary Pressurizer Spray Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHBHV0203	Auxiliary Pressurizer Spray Isolation Valve	1	B	CHP-001 / H10
CHAHV0205	Auxiliary Pressurizer Spray Isolation Valve	1	B	CHP-001 / H11
CHEV431	Auxiliary Pressurizer Spray Check Valve	1	C	CHP-001 / G09

Function

These valves open to provide flowpaths from the charging pump discharge header to the pressurizer for auxiliary pressurizer spray. Valves CHBHV0203 and CHAHV0205 close for spray/pressure control. Check valve CHEV431 is not relied upon to perform a specific safety function in the closed direction.

Alternate Testing

The auxiliary pressurizer spray isolation valves will be full-stroke exercised open and closed during cold shutdown. Stroke time testing and fail-safe testing will be performed in conjunction with exercise tests.

The auxiliary pressurizer spray check valve will be full-stroke exercised open during cold shutdown.

Basis

Opening either of the auxiliary pressurizer spray isolation valves during power operation initiates spray flow to the pressurizer. This could cause an RCS pressure transient that could adversely affect plant safety and lead to a plant trip. In addition, the pressurizer spray piping and nozzle would be subjected to unnecessary thermal shock. Opening these valves at power is considered impractical for these reasons.

CHEV431 is a simple check valve with no external means of exercising or for determining disc position. Thus testing in the open direction requires a flow test. In order to full-stroke exercise this valve, either CHBHV0203 or CHAHV0205 must be fully opened. As discussed above, routinely opening these valves during plant operation is impractical. Therefore testing this valve is also considered impractical at power.

This cold shutdown justification is similar to CSJ-6 in the first interval IST Program.

Cold Shutdown Justification No. 7 (CSJ-07)

Boration Flowpath Isolation Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHEHV0532	Isolation for Refueling Water Tank to Boric Acid Makeup Pumps	3	B	CHP-002 / E16

Function

CHEHV0532 is normally open to provide an emergency boration flowpath to the charging pump suction header. It is closed to prevent sluicing water from the spent fuel pool to the Refueling Water Storage Tank (RWT) during emergency boration when using the spent fuel pool as a borated water source.

Alternate Testing

CHEHV0532 will be full-stroke exercised open and closed during cold shutdown. Stroke time testing and fail-safe testing will be performed in conjunction with the exercise tests.

Basis

CHEHV0532 could be closed at power for testing, however this would isolate the common line from the RWT to multiple boration flowpaths. This is considered impractical, because CHE-HV532 is non-redundant and failure to re-open would render multiple boration flowpaths inoperable.

This justification is consistent with the guidelines on deferring testing provided in NUREG-1482, Paragraphs 3.1.1(1).

This CSJ is similar to CSJ-4 in the first interval IST Program, except that Valve CHEHV0536 has been deleted from this CSJ due to the implementation of ASME OM Code Case OMN-1 per VRR-12.

Cold Shutdown Justification No. 9 (CSJ-09)

Letdown Isolation Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHBUV0515	Reactor Coolant Letdown Isolation Valve	1	B	CHP-001 / H15
CHAUV0516	Reactor Coolant Letdown Inbd. Isolation Valve	1	A	CHP-001 / G15
CHBUV0523	Reactor Coolant Letdown Otbd. Isolation Valve	1	A	CHP-001 / F13

Function

These valves open to provide a flowpath for reactor coolant letdown flow - non-safety function. CHBUV0515 and CHAUV0516 close to secure letdown on a Safety Injection Actuation signal (SIAS). CHAUV0516 and CHBUV0523 close on a Containment Isolation Actuation signal (CIAS) signal for containment isolation.

Alternate Testing

These valves will be full-stroke exercised closed during cold shutdown periods. Stroke time testing and fail-safe testing will be performed in conjunction with exercise test.

Basis

Closing any of these valves isolates the letdown line from the RCS. During power operation, this would result in undesirable pressurizer level transients with the potential for a plant trip. If a valve failed to reopen, then a plant shutdown may be required.

This cold shutdown justification is similar to CSJ-8 in the first interval IST Program.

Cold Shutdown Justification No. 10 (CSJ-10)

Containment Refueling Purge Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CPAUV0002A	Containment Purge Supply Otbd. Isolation Valve	2	A	CPP-001 / D06
CPAUV0002B	Containment Purge Exhaust Inbd. Isolation Valve	2	A	CPP-001 / E03
CPBUV0003A	Containment Purge Supply Inbd. Isolation Valve	2	A	CPP-001 / D05
CPBUV0003B	Containment Purge Exhaust Otbd. Isolation Valve	2	A	CPP-001 / E02

Function

These 42" valves open to provide flowpaths for containment ventilation during shutdown periods - non-safety function. They are required to close on a containment purge isolation actuation signal (CPIAS) during a loss of shutdown cooling or a fuel handling accident in containment. They are locked closed for containment isolation during power operation (Modes 1-4).

Alternate Testing

These valves will be full-stroke exercised closed during cold shutdown periods. Stroke time testing will be performed in conjunction with exercise test.

Basis

Per PVNGS Technical Specification 3.6.1.7a, these valves must remain closed during operation. These valves are administratively maintained in the closed position at all times when the plant is operating in Modes 1-4. The valves are not capable of closing against accident pressure. Thus they are not required to operate (stroke closed) during operational periods. Due to the large size of these valves and the potential for damage as a result of frequent cycling, it is not prudent to operate them more than is absolutely necessary.

This cold shutdown justification is similar to CSJ-11 in the first interval IST Program.

Cold Shutdown Justification No. 11 (CSJ-11)

RCP Seal Injection Containment Isolation Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHNV835	Reactor Coolant Pump Seal Injection Check Valve	2	AC	CHP-001 / G03

Function

This valve opens to provide a flowpath from the charging pump discharge header to the reactor coolant pump (RCP) seals - non-safety function. It closes for containment isolation.

Alternate Testing

CHNV835 will be exercised closed during cold shutdown.

Basis

During power operation when the RCPs are running, these valves are normally open to supply seal water to the RCPs. Seal injection is necessary for the proper operation of the RCP seals. Closing these valves for testing would necessitate isolating seal injection flow and risking damage to the seals. Stopping the RCPs at power for the sole purpose of valve testing is not considered practical because the reactor will trip.

It is noted that paragraph 3.1.1.4 of NUREG-1482 permits deferral of tests that require shutdown of RCPs until refueling outages. However, since PVNGS typically secures RCPs during cold shutdown outages, this test will be performed at cold shutdown.

This cold shutdown justification is similar to CSJ-10 in the first interval IST Program, except that Valve CHBHV0255 was deleted from this CSJ due to the implementation of ASME OM Code Case OMN-1 per VRR-12.

Cold Shutdown Justification No. 13 (CSJ-13)

Instrument Air Containment Isolation Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
IAAUV0002	Instrument Air Supply To Containment Isolation Valve	2	A	IAP-003 / G07
IAEV0021	Instrument Air Supply To Containment Isolation Check Valve	2	AC	IAP-003 / G05

Function

These valves open to provide a flowpath for instrument air to the containment - non-safety function. They close to provide containment isolation.

Alternate Testing

IAAUV0002 will be full-stroke exercised closed during cold shutdown periods. Stroke time testing and fail-safe testing will be performed in conjunction with exercise testing.

IAEV0021 will be full-stroke exercised closed during cold shutdown periods.

Basis

Closing either of these valves during power operation isolates operating air to important equipment within the containment building, including the pressurizer spray control valves and letdown isolation valves. This would, in turn, risk pressurizer level and pressure transients with a potential for a plant trip. If IAAUV0002 were to fail to re-open, an expedited plant shutdown would be required. It is also noted that closure testing of IAEV0021 requires containment entry.

This cold shutdown justification is similar to CSJ-13 and CSJ-14 in the first interval IST Program.

Cold Shutdown Justification No. 15 (CSJ-15)

Reactor Head Vent and Pressurizer Vent Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
RCAHV0101	Reactor Vessel Vent Valve	2	B	RCP-001 / G15
RCBHV0102	Reactor Vessel Vent Valve	2	B	RCP-001 / G15
RCAHV0103	Pressurizer Vent Valve	2	B	RCP-001 / G14
RCBHV0105	Reactor Coolant System Common Vent Valve To RDT	2	B	RCP-001 / G13
RCAHV0106	Reactor Coolant System Common Vent Valve To Containment	2	B	RCP-001 / G13
RCBHV0108	Pressurizer Vent Valve	2	B	RCP-001 / G13
RCBHV0109	Pressurizer Vent Valve	2	B	RCP-001 / G13

Function

These valves open to remotely vent non-condensible gasses from the reactor vessel and/or pressurizer steam space. They can also be used to depressurize the RCS. They close for reactor coolant system integrity.

Alternate Testing

These valves will be full-stroke exercised open and closed during cold shutdown periods. Stroke time testing and fail-safe testing will be performed in conjunction with the exercise testing.

Basis

These valves are administratively controlled in the keylocked closed position with the power supply disconnected to prevent inadvertent operation. Since these are reactor coolant system boundary valves, failure of a valve to close or significant leakage following closure can result in a loss of coolant in excess of the limits imposed by the Technical Specifications leading to a plant shutdown. Furthermore, if a valve were to fail open or valve indication fail to show the valve returned to the fully closed position after exercising, it is likely that a plant shutdown would be required. Note also that Technical Specifications require that these valves be closed in Modes 1-4.

This justification is consistent with the guidelines for deferring testing provided in NUREG-1482, Paragraph 3.1.1.

This cold shutdown justification is similar to CSJ-16 in the first interval IST Program.

Cold Shutdown Justification No. 17 (CSJ-17)

Turbine-Driven AFW Pump Steam Supply Check Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SGAV0043	Main Steam Supply From SG #1 To AFW Pump AFA-P01 Check Valve	3	C	SGP-001, Sh. 1 / E12
SGAV0044	Main Steam Supply From SG #2 To AFW Pump AFA-P01 Check Valve	3	C	SGP-001, Sh. 1 / C12

Function

These valves open to provide flowpaths for steam from the steam generators to turbine-driven Auxiliary Feedwater Pump, AFA-P01. They close to prevent blowdown of the opposite steam generator after a main steam line break when an AFAS opens the associated isolation valve.

Alternate Testing

These valves will be partial-stroke exercised open and exercised closed during quarterly pump minimum-flow recirculation testing. Full-stroke exercising open will be performed during pump full-flow testing at cold shutdown.

Basis

Full-stroke exercising of these valves would require operation of Auxiliary Feedwater Pump AFA-P01 at full rated capacity. This is not practical during power operation because it would inject cold auxiliary feedwater into the main feedwater lines. The resulting temperature perturbations could lead to unnecessary thermal shock / fatigue damage to the feedwater piping and steam generators, and the cooldown of the reactor coolant system could cause undesirable reactivity variations and power fluctuations.

This cold shutdown justification is similar to CSJ-28 in the first interval IST Program.

Cold Shutdown Justification No. 18 (CSJ-18)

Feedwater Isolation Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SGBUV0130	Inbd. FWIV to SG #1 Downcomer	2	B	SGP-002 / G11
SGBUV0132	Inbd. FWIV to SG #1 Economizer	2	B	SGP-002 / E12
SGBUV0135	Inbd. FWIV to SG #2 Downcomer	2	B	SGP-002 / C11
SGBUV0137	Inbd. FWIV to SG #2 Economizer	2	B	SGP-002 / A12
SGAUV0172	Otbd. FWIV to SG #1 Downcomer	2	B	SGP-002 / G12
SGAUV0174	Otbd. FWIV to SG #1 Economizer	2	B	SGP-002 / E12
SGAUV0175	Otbd. FWIV to SG #2 Downcomer	2	B	SGP-002 / C12
SGAUV0177	Otbd. FWIV to SG #2 Economizer	2	B	SGP-002 / A12

Function

The main feedwater isolation valves (FWIVs) are normally open during steaming operations to provide flowpaths for main feedwater flow to the steam generators - non-safety function. They close to isolate and maintain the integrity of the steam generators and to secure feeding a faulted steam generator in the event of a steam leak inside containment.

Alternate Testing

Each of these valves will be full-stroke exercised closed during cold shutdown periods. Stroke time testing and fail-safe testing will be performed in conjunction with the exercise testing.

Basis

Closing any of these valves isolates the associated feedwater header. During power operation, isolation of a feedwater header would require a significant power reduction and could result in unacceptable steam generator level and reactor power transients with the potential for a plant trip.

The downcomer isolation valves do not have partial-stroke capability, however the economizer isolation valves are capable of partial stroke exercising. Part-stroke exercising is not considered practical because of the risk of full closure. This risk was recognized by NUREG-1432, Vol 1, Rev. 1, "Standard Technical Specifications - Combustion Engineering Plants Specifications", which states that "MFIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power" as the basis for the 18-month test frequency specified by SR 3.7.3.1. Nevertheless, part-stroke exercising continues to be performed as an augmented test to satisfy System and Maintenance Engineering's desire to periodically exercise the 4-way pilot valves to confirm continued operability.

This cold shutdown justification is similar to CSJ-17 and CSJ-26 in the first interval IST Program.

Cold Shutdown Justification No. 19 (CSJ-19)

Main Steam Isolation Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SGEUV0170	Main Steam Isolation Valve From Steam Gen. #1	2	B	SGP-001, Sh. 1 / G10
SGEUV0171	Main Steam Isolation Valve From Steam Gen. #2	2	B	SGP-001, Sh. 1 / D10
SGEUV0180	Main Steam Isolation Valve From Steam Gen. #1	2	B	SGP-001, Sh. 1 / F10
SGEUV0181	Main Steam Isolation Valve From Steam Gen. #2	2	B	SGP-001, Sh. 1 / B10

Function

These valves are normally open during steaming operations to provide flowpaths for steam flow to the main turbine generators and associated auxiliaries - non-safety function. They close to isolate and maintain the integrity of the steam generators.

Alternate Testing

Each of these valves will be full-stroke exercised closed during cold shutdown periods. Stroke time testing and fail-safe testing will be performed in conjunction with exercise testing.

Basis

Closing any of these valves isolates the associated steam header. During power operations, isolation of a main steam header would require a significant power reduction and could result in unacceptable steam generator level and reactor power transients with the potential for a plant trip.

The main steam isolation valves are capable of partial stroke exercising. Part-stroke exercising is not considered practical because of the risk of closure. This risk was recognized by NUREG-1432, Vol 1, Rev. 1, "Standard Technical Specifications - Combustion Engineering Plants Specifications", which states that "MSIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power" as the basis for the 18-month test frequency specified by SR 3.7.2.1. Nevertheless, part-stroke exercising continues to be performed as an augmented test to satisfy System and Maintenance Engineering's desire to periodically exercise the 4-way pilot valves to confirm continued operability.

This cold shutdown justification is similar to CSJ-25 in the first interval IST Program.

Cold Shutdown Justification No. 20 (CSJ-20)

HPSI Header Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIEV113	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F14
SIEV123	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F12
SIEV133	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F07
SIEV143	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F04

Function

These valves open to provide flowpaths from the high pressure safety injection headers to the reactor coolant system. They close to prevent flow diversion during LPSI operation.

Alternate Testing

Each of these valves will be verified closed during cold shutdown periods. Tests performed during cold shutdown will not necessarily include pre-test open exercising.

Basis

These are simple check valves with no external means of exercising nor for determining disk position. Thus they can only be verified closed by developing a differential pressure across the valve disc and then determining reverse-direction leakage. During power operation the LPSI pump could be operated to pressurize the downstream piping thus providing a pressure differential across the respective valve, however, pressurizing the safety injection headers can unseat downstream check valves V540, V541, V542, and V543. Per TS SR 3.4.15.1, this would then require leak testing of these valves which would entail containment entry. Thus, closure verification at power is considered impractical.

As discussed in NUREG-1482, Appendix A, Question Group 24, closure testing of valves with safety functions in both directions requires that the valves be opened and then verified to close. It is impractical to exercise these valves open except during refueling outages, as discussed in the ROJ for open exercising. Since these valves can be verified closed more frequently (cold shutdown) than the valves can be opened (refueling), closure verification will be performed at cold shutdown without opening the valve. This strategy is consistent with the Current Considerations under Question Group 24.

Cold Shutdown Justification No. 21 (CSJ-21)

LPSI Header Check Valve Open and Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIEV114	Low Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F13
SIEV124	Low Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F11
SIEV134	Low Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F06
SIEV144	Low Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F04

Function

These valves open to provide flowpaths from the low pressure safety injection headers to the reactor coolant system for safety injection and shutdown cooling. They close to prevent flow diversion during HPSI operation.

Alternate Testing

Each of these valves will be full-stroke exercised open and exercised closed during cold shutdown periods.

Basis

These are simple check valves with no external means of exercising nor for determining disc position. Part-stroke exercising open at power through the safety injection check valve test line test via valves SIEUV0618, 628, 638, and 648 is not practical, because this would unseat check valves SIEV540, V541, V542, and V543, requiring a containment entry to perform the leak test required by TS SR 3.4.15.1. Full-stroke exercising open at power is not possible because the discharge pressure of the LPSI pumps is not sufficient to overcome RCS pressure. The valves can be full-stroke exercised open at cold shutdown while the shutdown cooling system is in operation.

These valves can only be verified closed by developing a differential pressure across the valve disc and then determining reverse-direction leakage. During power operation the HPSI pump could be operated to pressurize the downstream piping thus providing a pressure differential across the respective valve, however, pressurizing the safety injection headers can unseat downstream check valves SIEV540, V541, V542, and V543. Per TS SR 3.4.15.1, this would then require leak testing of these valves which would entail containment entry. Thus, closure verification at power is considered impractical.

Cold Shutdown Justification No. 23 (CSJ-23)

Nitrogen Containment Isolation Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
GAEV015	Nitrogen Supply To Containment Check Valve	2	AC	GAP-001 / E02

Function

This check valve opens to provide a flowpath for nitrogen to several non-critical components inside containment - non-safety function. It closes for containment isolation.

Alternate Testing

This valve will be verified closed during cold shutdown periods. Closure testing will not necessarily include pre-test open exercising.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Thus the only way of verifying valve closure is by performing a reverse flow test. Performing this test on this valve requires containment entry. Containment entry for routine inservice testing is considered impractical during power operations.

Since this valve performs a safety function only in the closed position, exercising open before closure verification is not required. This testing satisfies Code requirements and is consistent with the discussion in NUREG-1482, Appendix A, Question Group 24.

This cold shutdown justification is similar to CSJ-13 in the first interval IST Program.

Cold Shutdown Justification No. 24 (CSJ-24)

Hydrogen Return Containment Isolation Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
HPAV002	Hydrogen Sample/Recombiner Return To Containment Check Valve	2	AC	HPP-001 / F15
HPBV004	Hydrogen Sample/Recombiner Return To Containment Check Valve	2	AC	HPP-001 / C15

Function These check valves open to provide air return flowpaths to the containment from the recombiners and the post-LOCA hydrogen monitors. They close for containment isolation.

Alternate Testing These valves will be verified to close during cold shutdown periods.

Basis These are simple check valves with no external means of exercising or for determining disc position. Thus the only way of verifying valve closure is by performing a reverse flow test. Performing this test on these valves requires plugging the line which would require operator action to restore in the event of an accident during testing. Performing this test also requires containment entry. Containment entry for routine inservice testing is considered impractical during power operations.

Cold Shutdown Justification No. 26 (CSJ-26)

SIT Vent Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIAHV0605	Safety Inj. Tank 2A Vent Valve	2	B	SIP-002 / F15
SIAHV0606	Safety Inj. Tank 2B Vent Valve	2	B	SIP-002 / F12
SIAHV0607	Safety Inj. Tank 1A Vent Valve	2	B	SIP-002 / F07
SIAHV0608	Safety Inj. Tank 1B Vent Valve	2	B	SIP-002 / F04
SIBHV0613	Safety Inj. Tank 2A Vent Valve	2	B	SIP-002 / E15
SIBHV0623	Safety Inj. Tank 2B Vent Valve	2	B	SIP-002 / E12
SIBHV0633	Safety Inj. Tank 1AVent Valve	2	B	SIP-002 / E07
SIBHV0643	Safety Inj. Tank 1B Vent Valve	2	B	SIP-002 / E04

Function

These valves are normally closed to ensure the integrity of the associated safety injection tank (SIT) so that the required nitrogen overpressure is maintained. They are opened to reduce the nitrogen pressure in the SITs during plant depressurization to preclude nitrogen injection into the RCS.

Alternate Testing

Each of these valves will be exercised open and closed during cold shutdown periods. Stroke time testing and fail-safe testing will be performed in conjunction with exercise testing.

Basis

These valves are normally closed during power operation. Plant technical specifications require that power be removed from the valves, and that the SIT nitrogen cover gas pressure be maintained within the required range. Exercising a valve during operation would render the associated SIT inoperable if the cover gas pressure were reduced below the required range. A valve failing open during testing would completely depressurize the SIT and result in an expedited plant shutdown.

This cold shutdown justification is similar to CSJ-22 in the first interval IST Program.

Cold Shutdown Justification No. 27 (CSJ-27)

Shutdown Cooling Suction Isolation Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SICUV0653	Shutdown Cooling Suction Inboard Containment Isolation Valve	1	A	SIP-002 / D03
SIDUV0654	Shutdown Cooling Suction Inboard Containment Isolation Valve	1	A	SIP-002 / D10

Function

These valves are normally closed to ensure the integrity of the reactor coolant system and to provide containment isolation. They are opened during plant cooldown to initiate shutdown cooling.

Alternate Testing

Each of these valves will be full-stroke exercised open and closed during cold shutdown periods. Stroke time testing will be performed in conjunction with the exercise testing.

Basis

These valves provide pressure barriers between the reactor coolant system pressure and the lesser rated shutdown cooling piping systems. As an installed safety feature they are provided with electrical interlocks that prevent them from being opened when pressurizer pressure is greater than 400 psig. Although this interlock can be overridden, routine operation of these valves with a large differential pressure across the seats is considered impractical due to the risk of damage to the seating surfaces of the valves.

This cold shutdown justification is similar to CSJ-24 in the first interval IST Program, except that Valves SIAHV0651, SIBHV0652, SIAUV0655 and SIB-UV0656 have been deleted from this CSJ due to the implementation of ASME OM Code Case OMN-1 per VRR-12..

Cold Shutdown Justification No. 28 (CSJ-28)

Normal Chilled Water Containment Isolation Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
WCEV039	Chilled Water Supply To Containment Check Valve	2	AC	WCP-001 / E05

Function

This valve is normally opened to supply cooling water to the containment - non-safety function. It closes for containment isolation.

Alternate Testing

This valve will be verified closed during cold shutdown periods. Closure testing will not necessarily include pre-test open exercising.

Basis

This is a simple check valve with no external means of exercising nor for determining disc position. Closure verification must be performed by developing a differential pressure across the disc and measuring reverse flow.

Performing these tests requires containment entry. Containment entry for routine inservice testing is considered impractical during power operations. In addition, exercising this valve to the closed position requires an extended shutdown of the primary containment cooling system. This could cause the containment temperature to exceed the technical specification limit for air temperature and hamper testing activities inside containment.

Since this valve performs a safety function only in the closed position, exercising open before closure verification is not required. This testing satisfies Code requirements and is consistent with the discussion in NUREG-1482, Appendix A, Question Group 24.

This cold shutdown justification is similar to CSJ-13 in the first interval IST Program.

Cold Shutdown Justification No. 29 (CSJ-29)

RMW Supply to RDT Containment Isolation Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHNV494	Reactor Makeup Water Supply Check Valve to RDT Inboard CIV	2	AC	CHP-003 / E15

Function

Opens to supply RMW to the reactor drain tank - not a safety function. Closes for containment isolation.

Alternate Testing

This valve will be verified closed during cold shutdown periods. Closure testing will not necessarily include pre-test open exercising.

Basis

This is a simple check valve with no external means of exercising nor for determining disc position. Closure verification must be performed by developing a differential pressure across the disc and measuring reverse flow.

Performing this tests requires a containment entry. Containment entry for routine inservice testing is considered impractical during power operations.

Since this valve performs a safety function only in the closed position, exercising open before closure verification is not required. This testing satisfies Code requirements and is consistent with the discussion in NUREG-1482, Appendix A, Question Group 24.

This cold shutdown justification is similar to CSJ-32 in the first interval IST Program.

Cold Shutdown Justification No. 30 (CSJ-30)

NC to Containment Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
NCEV118	Nuclear Cooling Water Supply To Containment Check Valve	2	AC	NCP-003 / E06

Function

This valve opens to provide a flowpath for cooling water to important equipment inside the containment - non-safety function. It closes to provide containment isolation.

Alternate Testing

These valves will be full-stroke exercised closed during cold shutdown periods.

Basis

This is a simple check valve with no external means of exercising nor for determining disc position. Closure verification must be performed by developing a differential pressure across the disc and measuring reverse flow.

Performing this test requires securing cooling water flow to important equipment within the containment building, including the reactor coolant pumps (RCPs). It is impractical to secure this cooling water flow for an extended period with the RCPs running without endangering the reactor coolant pumps and motors. Thus testing at power is impractical because it would require the unnecessary shutdown of all of the reactor coolant pumps. Testing at cold shutdown is practical because the RCPs are typically not running during cold shutdown periods.

It is noted that paragraph 3.1.1.4 of NUREG-1482 permits deferral of tests that require shutdown of RCPs until refueling outages. However, since PVNGS typically secures RCPs during cold shutdown outages, this test will be performed at cold shutdown.

Closure testing will not include pre-test open exercising, since the valve is known to be open during power operation prior to the closure verification. This testing satisfies Code requirements and is consistent with the discussion in NUREG-1482, Appendix A, Question Group 24.

This cold shutdown justification is similar to CSJ-15 in the first interval IST Program.

Cold Shutdown Justification No. 31 (CSJ-31)

SI Header Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIEV540	Safety Injection Header Check Valve	1	AC	SIP-002 / C13
SIEV541	Safety Injection Header Check Valve	1	AC	SIP-002 / C11
SIEV542	Safety Injection Header Check Valve	1	AC	SIP-002 / C06
SIEV543	Safety Injection Header Check Valve	1	AC	SIP-002 / C04

Function

These valves open to provide flowpaths from the safety injection headers to the reactor coolant system for safety injection and shutdown cooling. They close to isolate the safety injection system from the reactor coolant system.

Alternate Testing

Each of these valves will be full-stroke exercised open during cold shutdown.

Basis

These are simple check valves with no external means of exercising nor for determining disc position. Part-stroke exercising open at power through the safety injection check valve test line test via valves SIEUV0618, 628, 638, and 648 is not practical, because because unseating the check valves requires a containment entry to perform the leak test required by TS SR 3.4.15.1. The valves can be full-stroke exercised by directing LPSI flow to the RCS, but this is not possible at power because the discharge pressure of the LPSI pumps is not sufficient to overcome RCS pressure.

This cold shutdown justification is similar to CSJ-31 in the first interval IST Program.

Cold Shutdown Justification No. 32 (CSJ-32)

RCP Seal Bleed-Off Isolation Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHBUV0505	Reactor Coolant Pump Seal Bleed-off Otbd. Isolation Valve	2	A	CHP-002 / H13
CHAUV0506	Reactor Coolant Pump Seal Bleed-off Inbd. Isolation Valve	2	A	CHP-002 / H14

Function

These valves are normally open during power operation to provide a flowpath for seal bleed-off from the reactor coolant pumps (RCPs) – non-safety function. They close for containment isolation.

Alternate Testing

These valves will be exercised closed during cold shutdown periods. Stroke time testing and fail safe testing will be performed in conjunction with exercise testing.

Basis

These air-operated valves are electrically interlocked so that they cannot be closed when any of the reactor coolant pumps are in operation. Closing either of these valves during RCP operation would interrupt bleed-off flow from the RCP seals and could result in damage to the seals. Thus testing these valves at power would require the unnecessary shutdown of all of the reactor coolant pumps.

It is noted that paragraph 3.1.1.4 of NUREG-1482 permits deferral of tests that require shutdown of RCPs until refueling outages. However, since PVNGS typically secures RCPs during cold shutdown outages, this test will be performed at cold shutdown.

This cold shutdown justification is similar to CSJ-7 in the first interval IST Program.

Refueling Outage Justification No. 1 (ROJ-01)

Boration Flow Path Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHAV177	Boration Flowpath Check Valve To Charging Pump Suction	2	C	CHP-002 / B07
CHAV190	Emerg. Boration Flowpath Check Valve To Charging Pump Suction	2	C	CHP-002 / A07

Function

These check valves open to provide emergency boration flowpaths from the boration header (CHAV177) or via gravity drain directly from the Refueling Water Tank (RWT) (CHAV190). They have no specific safety function in the closed position.

Alternate Testing

These check valves will be part-stroke exercised open during cold shutdown and full stroke exercised open during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position, thus, testing these valves in the open direction requires system flow. Since there is no recirculation flowpath capable of full flow (68 gpm per TRM TSR 3.1.101.2), the only practical flowpath is into the charging pump suction header. This would introduce highly concentrated boric acid solution from the RWT into the RCS via the charging pumps. The rapid insertion of negative reactivity during plant operation would cause a RCS cooldown and depressurization which could result in an unscheduled plant trip or safety injection system actuation.

During cold shutdown, the introduction of excess quantities of boric acid into the RCS is undesirable from the aspect of maintaining proper plant chemistry and the inherent difficulties that may be encountered during the subsequent startup due to over-boration of the RCS. The radioactive waste processing system would also be overburdened by the large amounts of RCS coolant that would require processing to decrease the boron concentration at startup. Since the boron concentration is normally increased to a limited extent for shutdown margin prior to reaching cold shutdown, a part-stroke exercise of these valves could be performed at that time.

This refueling outage justification is similar to CSJ-4 in the first interval IST Program.

Refueling Outage Justification No. 2 (ROJ-02)

RWT Outlet Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHAV306	Refueling Water Tank Outlet Check Valve	2	C	CHP-002 / C13
CHBV305	Refueling Water Tank Outlet Check Valve	2	C	CHP-002 / B15

Function

These check valves open to provide flowpaths from the Refueling Water Tank (RWT) to the suctions of the safety injection and containment spray pumps. They close during post-accident recirculation cooling to prevent backflow of water from the containment sump to the RWT.

Alternate Testing

These valves will be part-stroke exercised open during quarterly testing of the safety injection pumps via the pumps' minimum flow circuit, and full-stroke exercised open during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining obturator position. Thus, testing these valves in the open direction requires system flow. The various pump mini-flow lines are capable of part-stroke testing only since their size precludes passing full accident flow through these valves. Full-stroke exercising these valves to the open position requires injection into the RCS via the simultaneous operation of the containment spray and LPSI pumps in the train. During plant operation this is precluded because neither the containment spray nor the LPSI pumps can develop sufficient discharge pressure to overcome RCS pressure. At cold shutdown there is no available reservoir in the reactor coolant system to accept the injected water, and the shutdown cooling system cannot provide sufficient flow back to the RWT. Also, the excessive quantities of boric acid injected during such testing would seriously hamper the ensuing startup. Therefore, the only practical opportunity for full-flow testing these valves is during refueling outages when the reactor head has been removed and RWT inventory is used to fill the refueling cavity.

This refueling outage justification is similar to VRR-6 in the first interval IST Program.

Refueling Outage Justification No. 3 (ROJ-03)

BAMP Discharge Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHNV154	Boric Acid Make-up Pump CHN-P02A Discharge Check Valve	3	C	CHP-002 / B13
CHNV155	Boric Acid Make-up Pump CHN-P02B Discharge Check Valve	3	C	CHP-002 / B13

Function

The boric acid makeup pump (BAMP) discharge check valves open to allow flow through the idle BAMPs as part of the emergency boration flowpaths (Ref. TRM TLCO 3.1.101). They have no specific safety function in the closed position.

Alternate Testing

These check valves will be part-stroke exercised open quarterly and full-stroke exercised open during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Testing these valves in the open direction requires system flow. The boric acid makeup pumps can be operated to open these valves, however there is no installed flow instrumentation in the BAMP recirculation line. Therefore the only practical instrumented flowpath is into the RCS via the charging pumps. During plant operation, the rapid insertion of negative reactivity resulting from the introduction of highly concentrated boric acid solution to the RCS would result in a RCS cooldown and de-pressurization, which could cause an unscheduled plant trip or possible safety injection system actuation.

During cold shutdown, the introduction of excess quantities of boric acid into the RCS is undesirable from the aspect of maintaining proper plant chemistry and the inherent difficulties that may be encountered during the subsequent startup due to over-boration of the RCS. The radioactive waste processing system would also be overburdened by the large amounts of RCS coolant that would require processing to decrease the boron concentration at startup.

This refueling outage justification is similar to CSJ-4 in the first interval IST Program.

Refueling Outage Justification No. 4 (ROJ-04)

HPSI Header Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIEV113	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F14
SIEV123	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F12
SIEV133	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F07
SIEV143	High Pressure Safety Injection Pump Header Check Valve	2	C	SIP-002 / F04

Function

These valves open to provide flowpaths from the high pressure safety injection (HPSI) headers to the reactor coolant system. They close to prevent flow diversion during LPSI operation.

Alternate Testing

These valves will be full-stroke exercised open during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Part-stroke exercising open at power through the safety injection check valve test line test via valves SIEUV0618, 628, 638, and 648 is not practical, because this would unseat check valves SIEV540, V541, V542, and V543, requiring a containment entry to perform the leak test required by TS SR 3.4.15.1. Full-stroke exercising at power is not possible because the discharge pressure of the HPSI pumps is not sufficient to overcome RCS pressure. Exercising at cold shutdown is not practical because low-temperature over-pressure concerns preclude directing HPSI flow to the RCS.

This refueling outage justification is similar to VRR-28 in the first interval IST Program.

Refueling Outage Justification No. 5 (ROJ-05)

HPSI Pump Discharge Check Valve Open and Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIAV404	High Pressure Safety Injection Pump 1 Discharge Check Valve	2	C	SIP-001 / F06
SIBV405	High Pressure Safety Injection Pump 2 Discharge Check Valve	2	C	SIP-001 / B04

Function

These valves open to provide flowpaths from the high pressure safety injection (HPSI) pumps to the safety injection headers and thence to the reactor coolant system. They close to prevent flow diversion through an idle HPSI pump during HPSI operation.

Alternate Testing

These valves will be full-stroke exercising open and exercised closed during each refueling outage. The valve will be exercised open prior to closure verification.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Full-stroke exercising at power is not possible because the discharge pressure of the HPSI pumps is not sufficient to overcome RCS pressure. Part-stroke exercising open at power through the safety injection check valve test line test via valves SIEUV0618, 628, 638, and 648 is not practical, because this would unseat check valves SIEV540, V541, V542, and V543, requiring a containment entry to perform the leak test required by TS SR 3.4.15.1. Exercising at cold shutdown is not practical because low-temperature over-pressure (LTOP) concerns preclude directing HPSI flow to the RCS.

Since these valves have safety functions in both the open and closed positions, closed exercising requires the valve to be exercised to the open position and then be verified to close. Exercising open is not practical except at refueling as described above.

Verification of closure without opening the valve is not practical more frequently than refueling because closure verification requires a reverse-flow test, which is performed by connecting a pressure source downstream of the check valve and determining reverse flow. The opposite-train HPSI pump can be used as the pressure source via the cross-connect valves, but this is not practical at power since cross-connecting the two trains of HPSI renders both trains inoperable. It is also not practical at cold shutdown, because any leakage through the HPSI header isolation valves could challenge the LTOP protection system. Using another pressurized water source via a downstream

test connection is not practical at power or cold shutdown, because the risk of routinely placing the HPSI system in this configuration and the burden of setting up the test equipment outweighs the benefits of testing.

This refueling outage justification is consistent with the provisions of NUREG-1482 section 4.1.4, which states that the NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage. It is also consistent with the requirements for exercising check valves with a safety function in both positions by exercising the valve open and then verifying that it closes discussed in NUREG-1482, Appendix A, Question Group 24, and with the guidelines for deferring valve testing given in NUREG-1482 section 3.1.1.

This refueling outage justification is similar to VRR-28 in the first interval IST Program.

Refueling Outage Justification No. 6 (ROJ-06)

HPSI Long-Term Recirculation Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIAV522	HPSI Long-Term Recirc. Check Valve	1	AC	SIP-002 / C02
SIAV523	HPSI Long-Term Recirc. Ctmt. Isolation Check Valve	1	AC	SIP-002 / F02
SIBV532	HPSI Long-Term Recirc. Check Valve	1	AC	SIP-002 / B10
SIBV533	HPSI Long-Term Recirc. Ctmt. Isolation Check Valve	1	AC	SIP-002 / F09

Function

These valves open to provide flowpaths from the high pressure safety injection headers to the reactor coolant system for hot leg injection. They close to isolate the safety injection system from the reactor coolant system.

Alternate Testing

These valves will be full-stroke exercised open during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Exercising with flow can be accomplished with the HPSI pumps (or the charging pumps via cross-tie valves) to the RCS. SIAV523 and SIBV533 can also be part-stroke exercised using the SIT fill/drain line via valves SIBUV0322 and SIBUV0332. Exercising at power is not practical because unseating the valves would require a containment entry to perform the leak test required by TS SR 3.4.15.1; containment entry is not considered practical for quarterly surveillance testing. Exercising at cold shutdown is not practical because of the potential for a low-temperature over-pressure (LTOP) event, which could challenge the LTOP relief valves, violate RCS temperature/pressure limits, or damage equipment.

This refueling outage justification is similar to VRR-35 in the first interval IST Program.

Refueling Outage Justification No. 9 (ROJ-09)

Regenerative Heat Exchanger Inlet Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHEVM70	Charging to Regenerative Heat Exchanger Inlet Inboard Containment Isolation Check Valve	2	AC	CHP-001 / F15

Function

Valve opens for charging flowpath to support boration and auxiliary pressurizer spray. Closes for containment isolation.

Alternate Testing

This valve will be verified closed during each refueling outage. Closure testing will not necessarily include open exercising immediately prior to the closure verification.

Basis

This is a simple check valve with no external means of exercising nor for determining disc position. Testing in the closed direction requires a reverse flow test. The valve alignment for this test requires isolating and draining a portion of the charging line. Performing this test at power or cold shutdown is not practical because it renders auxiliary pressurizer spray and multiple boration flowpaths out of service for an extended period of time, requires several entries into high radiation areas inside containment, and violates containment integrity, with entry into numerous LCOs. During testing, manual realignment of numerous valves would be required to restore the system to an operable status if the system functions became necessary during inservice testing.

As discussed in NUREG-1482, Appendix A, Question Group 24, closure testing of valves with safety functions in both directions requires that the valves be opened and then verified to close. This valve is exercised open with normal charging flow during power operation. This satisfies the code requirement for verifying the valve is open prior to the closure verification.

Refueling Outage Justification No. 10 (ROJ-10)

Safety Injection Pump Suction Flowpath Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
CHAV306	RWT Outlet Check Valve	2	C	CHP-002 / C13
CHBV305	RWT Outlet Check Valve	2	C	CHP-002 / B15

Function

CHAV306 and CHBV305 open to provide flowpaths from the Refueling Water Tank (RWT) to the suctions of the safety injection and containment spray pumps. They close during post-accident recirculation cooling to prevent backflow of water from the containment sump to the RWT.

Alternate Testing

These valves will be exercised to the open position and then verified to close during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position. Testing in the closed direction involves a reverse flow test requiring set up of hoses, gauges, and other test equipment. The test also requires a valve alignment that renders the complete safety injection train (LPSI, HPSI, and containment spray) inoperable, with entry into multiple LCOs for an extended period of time. During this test, manual realignment of numerous valves would be required to restore the system to an operable status if the system functions became necessary during inservice testing. Therefore testing is considered impractical during power operation and cold shutdown.

This justification is consistent with the guidelines on extension of test intervals to refueling outage for check valves verified closed by leak testing provided in NUREG-1482, section 4.1.4.

The valves will be exercised to the open position and then verified to close as required for check valves with safety functions in both directions per NUREG-1482, Appendix A, Question Group 24.

Refueling Outage Justification No. 11 (ROJ-11)

LPSI and CS Pump Suction Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIAV157	Containment Spray Pump Suction Line Check Valve	2	C	SIP-001 / G13
SIBV158	Containment Spray Pump Suction Line Check Valve	2	C	SIP-001 / B13
SIBV200	LPSI Pump Suction Line Check Valve	2	C	SIP-001 / B12
SIAV201	LPSI Pump Suction Line Check Valve	2	C	SIP-001 / F13

Function These valves open to provide flowpaths to the suctions of the respective pumps.

Alternate Testing These check valves will be part-stroke exercised open quarterly and full-stroke exercised open during each refueling outage.

Basis These are simple check valves with no external means of exercising or for determining disc position. During power operation, the valves can be part-stroke exercised open with flow when the associated pump is operated via the recirculation lines. Full-stroke exercising during power operation is not practical because pump discharge pressure is not sufficient to overcome RCS pressure, and there is not a recirculation flow path capable of routinely handling maximum accident condition flow as required by Generic Letter 89-04 Position 1. Full-stroke exercising during cold shutdown while on shutdown cooling is not practical because these valves are not in the shutdown cooling lineup (the shutdown cooling lines tap into the suction lines downstream from these valves). These valves can be full-stroke exercised open during refueling outages while the reactor refueling pool is being filled from the RWT by the LPSI and CS pumps.

This refueling outage justification is similar to VRR-30 in the first interval IST Program.

Refueling Outage Justification No. 12 (ROJ-12)

Shutdown Cooling Isolation Valve Bonnet Vent Check Valve Open and Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIAVA10	Shutdown Cooling Isolation Valve Bonnet Vent Check Valve	2	C	SIP-002 / G03
SIBVA15	Shutdown Cooling Isolation Valve Bonnet Vent Check Valve	2	C	SIP-002 / G10
SIAV997	Shutdown Cooling Isolation Valve Bonnet Vent Check Valve	1	C	SIP-002 / E03
SIBV998	Shutdown Cooling Isolation Valve Bonnet Vent Check Valve	1	C	SIP-002 / D10

Function

These valves open to provide flowpaths from the bonnet area of SIAUV0655, SIBUV0656, SICUV0653, and SIDUV0654 to prevent pressure locking of the valves. They close for containment isolation.

Alternate Testing

Each of these valves will be full-stroke exercised open and exercised closed during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position. The only way to exercise the valves open is by initiating flow through the valves with an external pressure source via test fittings installed for that purpose. The only way to verify valve closure is to perform a reverse-flow test in the same manner. The shutdown cooling isolation valve associated with the check valve is rendered inoperable during testing.

Both the open and closure tests require the use of test equipment, whose setup makes testing impractical during power operation and cold shutdown outages. This justification is consistent with the provisions of NUREG-1482 section 4.1.4, which states that the NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage. In addition, performing this testing on SIAV997 and SIBV998 requires containment entry. Containment entry for routine inservice testing is considered impractical during power operations.

This refueling outage justification is similar to CSJ-34 in the first interval IST Program.

Refueling Outage Justification No. 13 (ROJ-13)

AFW Turbine Steam Supply Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
AFAV096	Aux Steam Supply Check Valve to AFW Turbine	3	C	AFP-001 / G02
SGEV887	Turbine-Driven AFW Pump Steam Supply Warmup Line Check Valve	3	C	SGP-001 / D12
SGEV888	Turbine-Driven AFW Pump Steam Supply Warmup Line Check Valve	3	C	SGP-001 / C13

Function

AFAV096 opens to provide auxiliary steam to the steam-driven auxiliary feedwater pump (not a safety-related function). The valve closes and remains closed to prevent steam diversion through the aux steam system from affecting pump performance.

SGEV887 and SGEV888 open during the turbine-driven auxiliary feedwater pump start sequence to clear any residual condensation and to warm up the steam lines to prevent the pump from overspeeding and tripping. The warmup line check valves close to prevent spurious opening of the solenoid-operated warmup line isolation valves SGAUV0134A and SGAUV0138A due to pressure under the seat after a main steam line break, which would result in flow diversion that could cause the pump to overspeed.

Alternate Testing

These valves will be exercised closed during each refueling outage.

Basis

These are simple check valves with no external means of exercising or for determining disc position. The only way of verifying valve closure is by performing a reverse flow test. Performing this test involves the setup and use of hoses, gauges, and other test equipment. NUREG-1482 section 4.1.4 states that "The NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage".

It is noted that performing this test at power would render the turbine-driven auxilary feedwater pump inoperable for the duration of the test (approximately 1-3 hours). Testing at power also involves potential hazards to test personnel when venting the steam systems and connecting / disconnecting the test equipment. Although these factors are not sufficient to justify test deferral by themselves, they were considered along with the need for test equipment when the determination was made to perform this test on a refueling outage frequency.

Valve Relief Request No. 1 (VRR-01)

Emergency Diesel Generator Skid-Mounted Check Valve Open Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
DGAV317	EDG Engine-Driven Jacket Water Circ Pump Discharge Check Valve	3	C	DGP-001 Sh. 4 / F06
DGAV318	EDG Motor-Driven Jacket Water Circ Pump Discharge Check Valve	3	C	DGP-001 Sh. 4 / D06
DGAV364	Pre-Lube Pump and Heater Check Valve	3	C	DGP-001 Sh. 3 / C06
DGBV417	Engine-Driven Jacket Water Circ Pump Discharge Check Valve	3	C	DGP-001 Sh. 4 / F02
DGBV418	Motor-Driven Jacket Water Circ Pump Discharge Check Valve	3	C	DGP-001 Sh. 4 / D02
DGBV464	Pre-Lube Pump and Heater Check Valve	3	C	DGP-001 Sh. 3 / C02

Function

These check valves on the emergency diesel generator (EDG) skid open for jacket water flow and lube oil flow when the EDG is starting or running.

Test Requirement

Check valves shall be exercised nominally every 3 months, except as provided by Paragraph 4.3.2.2, 4.3.2.3, 4.3.2.4, and 4.3.2.5. (OM-10 para. 4.3.2)

Alternate Testing

These check valves will be tested during periodic EDG testing performed in accordance with plant Technical Specifications; All valves will be tested at least once per quarter. Acceptable valve operation will be verified by successfully meeting the starting and running acceptance criteria for the EDG.

Basis For Relief

These check valves were purchased as part of the EDG skid and are mounted on the skid. They are simple check valves with no external means of exercising or for determining disc position. Thus, testing these valves in the open direction requires establishing maximum required accident condition flow through the valve and verifying, by measurement, that the required flow is attained. Due to system design there is no flowpath available with suitable installed instrumentation capable of measuring flow through these valves.

Current plant Technical Specifications require test starting the EDG every 31 days. During testing, each redundant starting subsystem is tested on a rotating basis to ensure that a failure in one starting subsystem is not masked by operation of the other starting subsystem. The EDG must start and attain proper speed, frequency, and voltage within 10 seconds to be considered a successful test. Valve malfunction or degradation will reduce EDG starting and running capability. Therefore testing the EDG is adequate since EDG

testing adequately tests these skid-mounted valves.

The provisions of this relief request are consistent with NUREG-1482 section 3.4, and para. ISTC 1.2(c) of OMa-1996.

Approval Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Valve Relief Request No. 2 (VRR-02)

ADV Nitrogen Solenoid Valve Stroke Timing

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SGBPV0306A	ADV Nitrogen Solenoid Valve	3	B	SGP-001 Sh. 2 / F5
SGBPV0306B	ADV Nitrogen Solenoid Valve	3	B	SGP-001 Sh. 2 / E5
SGAPV0313A	ADV Nitrogen Solenoid Valve	3	B	SGP-001 Sh. 2 / C5
SGAPV0313B	ADV Nitrogen Solenoid Valve	3	B	SGP-001 Sh. 2 / H5

Function

These valves are normally closed to isolate the normal atmospheric dump valve (ADV) actuation system (instrument air) from the nitrogen backup system - not a safety function. They open on low instrument air header pressure to supply nitrogen from the accumulators to the ADV.

Test Requirement

The limiting value(s) of full-stroke time of each power-operated valve shall be specified by the Owner. (OM-10 para. 4.2.1.4(a))

The stroke time of all power-operated valves shall be measured to at least the nearest second. (OM-10 para. 4.2.1.4(b))

Alternate Testing

The ADV nitrogen solenoid valves will be exercised during quarterly testing of the associated ADV nitrogen backup system. The ADV nitrogen solenoid valves will not be individually stroke time tested. Operational readiness of the solenoid valves will be verified by acceptable exercising and stroke timing of the ADV when actuated by the nitrogen backup system.

Basis For Relief

Each ADV has a nitrogen backup system that can be used to actuate the ADV if instrument air is not available. The solenoid valves are simple solenoid-operated valves that automatically open to enable the nitrogen backup system when low pressure is sensed in the instrument air header. There are no hand switches for manual operation of the valves, and no means of visually determining valve position. Stroke timing these valves is not possible without lifting leads or using other intrusive testing equipment, which would render the ADV inoperable for the duration of the test. Therefore stroke timing these valves is not considered practical.

The solenoid valves have no specific time in which they must actuate to fulfill their safety function. Solenoid valve malfunction or degradation will reduce ADV stroking capability. The ADV must stroke properly within the required stroke time to be considered a successful test. Testing the ADV is adequate to verify the operational readiness of the solenoid valves.

The provisions of this relief request are consistent with the guidance provided

in NUREG-1482 section 3.4 on testing component subassemblies, and and with para. ISTC 1.2(c) of OMa-1996.

Approval Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Valve Relief Request No. 4 (VRR-04)

SI Pump Room Floor Drain Check Valve Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
RDAV020	Containment Spray Pump "A" Room Floor Drain Check Valve	3	C	RDP-002 / B14
RDAV021	HPSI Pump "A" Room Floor Drain Check Valve	3	C	RDP-002 / B14
RDAV022	LPSI Pump "A" Room Floor Drain Check Valve	3	C	RDP-002 / B14
RDBV040	Containment Spray Pump "B" Room Floor Drain Check Valve	3	C	RDP-002 / B05
RDBV041	HPSI Pump "B" Room Floor Drain Check Valve	3	C	RDP-002 / B05
RDBV042	LPSI Pump "B" Room Floor Drain Check Valve	3	C	RDP-002 / B05

Function

These check valves open to allow floor drain flow from the respective pump room to the associated engineered safety feature sump. They close to prevent back-flooding from the sump to the pump rooms.

Test Requirement

During plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full-open or partially open position required to fulfill its function. (OM-10 para. 4.3.2.2)

As an alternative to the testing in (a) or (b) above, disassembly every refueling outage to verify operability of check valves may be used. (OM-10 para. 4.3.2.4(c))

Alternate Testing

Each fuel cycle, at least 3 of these valves (on a rotating schedule) will be disassembled, inspected, and manually full-stroke exercised. If, during inspection, it is discovered that a valve is incapable of performing its required functions, then the remaining valves will be disassembled, inspected, and manually full-stroke exercised during the same refueling outage (if the inspection is performed during a refueling outage) or within 96 hours after the subject valve is returned to service (if the inspection is performed at other times).

Basis For Relief

These are simple check valves with no external provision for exercising or for determining disc position. The only methods of exercising open and closed are by flow testing, or by disassembly and inspection. Due to the system configuration, forward and reverse flow testing measurements are impractical.

All six of these valves are identical with respect to manufacturer, size, model, orientation, and service conditions. Numerous previous inspections have not found any evidence of valve degradation that would affect their ability to open or close.

Since the frequency for disassembling and inspecting these valves in the floor drain system is not determined by refueling outages, inspection may be performed on a schedule that does not conform to a refueling outage schedule, such as during power operation. This is allowed as discussed in NUREG-1482, Appendix A, Question Group 14, under "Current Considerations".

Generic Letter 89-04 Position 2 allows a sample disassembly and inspection plan to be implemented where the licensee determines that it is burdensome to disassemble and inspect all applicable valves during each refueling outage. Although these valves are not especially difficult to access, disassemble, or inspect, inspecting every valve in the group each fuel cycle is burdensome in that it creates a hardship without a compensating increase in the level of quality and safety.

The proposed sample disassembly schedule results in each valve being disassembled and inspected every 3 years. It is noted that this is half of the maximum inspection interval of 6 years recommended under Position 2. The proposed inspection frequency is adequate for assuring continued reliability and operational readiness of these valves.

Approval "Hardship" alternative authorized pursuant to 10 CFR 50.55a(a)(3)(ii) per NRC SER dated July 8, 1999. Complies with GL 89-04 Position 2.

Valve Relief Request No. 8 (VRR-08)

SI Check Valve Closed Exercising

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
SIEV540	SI Header Check Valve	1	AC	SIP-002 / B13
SIEV541	SI Header Check Valve	1	AC	SIP-002 / B11
SIEV542	SI Header Check Valve	1	AC	SIP-002 / C06
SIEV543	SI Header Check Valve	1	AC	SIP-002 / C04
SIAV522	HPSI Long-Term Recirc. Check Valve	1	AC	SIP-002 / C02
SIAV523	HPSI Long-Term Recirc. Check Valve	1	AC	SIP-002 / F02
SIAV532	HPSI Long-Term Recirc. Check Valve	1	AC	SIP-002 / B10
SIAV533	HPSI Long-Term Recirc. Check Valve	1	AC	SIP-002 / F09

Function

These valves close to provide safety system isolation from the reactor coolant system.

Test Requirement

Check valves shall be exercised nominally every 3 months, except as provided by Paragraph 4.3.2.2, 4.3.2.3, 4.3.2.4, and 4.3.2.5. (OM-10 para. 4.3.2)

Alternate Testing

The closure capability of these check valves will be demonstrated by performing leak rate testing in accordance with applicable Technical Specification requirements.

Basis For Relief

These are simple check valves with no external means of exercising nor for determining disc position. The only practical means of verifying closure is by performing a leakage or back flow test. This typically involves a considerable effort with the test connections and valves required for the test alignment in radiation areas with inconvenient access provisions.

Leak testing to verify the closure capability of these valves is primarily for the purpose of confirming their capability of preventing over-pressurization of the related safety injection piping and components. In this regard, the Palo Verde Technical Specifications address the valve test frequency in a manner appropriate for these valves. Technical Specifications (SR 3.4.15.1) requires verifying that the leakage of each valve is within its limit at least once per 18 months, and prior to entering MODE 2 whenever the plant has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months, except for SDC PIVs, and within 24 hours following valve

actuation due to automatic or manual action or flow through the valve, except for SDC PIVs. Performing leak testing as prescribed in the Technical Specifications is adequate to ensure proper and reliable closure of these valves.

Approval Relief granted pursuant to 10 CFR 50.55a(f)(6)(i) per NRC SER dated July 8, 1999.

Valve Relief Request No. 9 (VRR-09)

Verification of Thermal Equilibrium During Safety/Relief Valve Testing

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
Various	All safety and relief valves tested under ambient conditions using a test medium at ambient conditions	Various	C	Various

Function

Provide over-pressure protection to associated systems.

Test Requirement

Temperature Stability. The test method shall be such that the temperature of the valve body shall be known and stabilized before commencing set pressure testing, with no change in measured temperature of more than 10 deg-F (5 deg-C) in 30 minutes. (OM-1 para. 8.1.2.4 and 8.1.3.4)

Alternate Testing

For safety and relief valves tested under ambient conditions using a test medium at ambient conditions, the valve body temperature will be measured and recorded prior to each series of tests (which may consist of multiple lifts) but there will be no verification of attaining thermal equilibrium.

Basis For Relief

This is a generic request for relief for all safety and relief valves tested under ambient conditions using a test medium at ambient conditions. For valves tested under normal prevailing ambient conditions with test medium at approximately the same temperature, the requirement for verifying temperature stability is inappropriate and of no value. There is little or no consequence of minor variations in ambient temperature.

This issue has been identified by the ASME OM Code Committees and is reflected in the 1995 version of the Code, Paragraphs I 8.1.2(d) and I 8.1.3(d).

Approval

Alternative authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999.

Valve Relief Request No. 10 (VRR-10)

Accumulator Volume for Safety/Relief Valve Testing

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
Various	All Class 2 and 3 safety and relief valves used for compressible fluid services other than steam	Various	C	Various

Function

Provide over-pressure protection to associated systems

Test Requirement

Accumulator Volume. There shall be a minimum accumulator volume below the valve inlet, based on the valve capacity (cu ft) and calculated from the following formula:

Minimum Volume = [valve capacity (cu ft per sec) x time open (sec) / 10. (OM-1 para. 8.1.2.2)

Alternate Testing

The volume of the accumulator drum and the pressure source flow rate shall be sufficient to determine the valve set-pressure. (Ref. ASME OM Code-1995, para. I 8.1.2)

Basis For Relief

This is a generic request for relief for all Class 2 and 3 safety and relief valves used for compressible fluid services other than steam. The accumulator volume required by OM-1 para. 8.1.2.2 is not needed for determination of the set pressure for these valves. This has been recognized by the ASME Code Committee and reflected in more recent versions of the OM Code.

Approval

Alternative authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999.

Valve Relief Request No. 11 (VRR-11)

ANII Involvement in Valve Inservice Testing

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
Various	Various	Various	Various	Various

Function

Various

Test Requirement

Duties of the Authorized Nuclear Inspector include:
(c) verifying that the visual examinations and tests on pumps and valves have been completed and the results recorded. (Preface to Section XI)

It is the duty of the Inspector:
(1) to perform a detailed review of the inspection plan (IWA-2400) prior to the start of preservice inspection and each inspection interval . . . Review of the inspection plan shall cover any features of the inspection plan which are affected by the requirements of this Division, as applicable, and shall include the following:

(a) examination categories and items
(b) test and examination requirements
(e) inservice test quantities
(g) test frequency

(2) to review any revisions to the inspection plan during the preservice inspection or the inspection interval;
(3) to submit a report to the Owner documenting review of the items identified in (1) and (2) above; (IWA-2110(a))

It is the duty of the Inspector to verify that the inservice tests required on pumps, valves, and component supports (IWF, IWP, and IWV) have been completed and the results recorded. (IWA-2110(c))

Alternate Testing

The PVNGS Pump and Valve IST Program will be developed and implemented in accordance with applicable regulations, codes, quality assurance requirements, plant procedures, and Authorized Inspection Agency requirements. ANII involvement with the Pump and Valve IST Program will not be required.

Basis For Relief

This is a generic relief request for all valves tested in the PVNGS Pump and Valve IST Program. In the nuclear industry, the Authorized Nuclear Inservice Inspectors (ANIIs) have historically been involved primarily with the development and implementation of the Inservice *Inspection* Program. Involvement with the Inservice Testing Program has been minimal. This is consistent with the experience and training of the individual inspectors, who

are well schooled in the areas of plant construction and repair. Recognizing this, ASME recently published the OMb-1997 addenda to the ASME/ANSI OM Code, which includes a change that eliminates all involvement of the ANII in the development and implementation of the Inservice Testing Program.

Each revision to the PVNGS IST Program is subjected to a comprehensive review process including technical reviews, management reviews, and a review under 10 CFR 50.59. In addition, quality assurance evaluations and self-assessments periodically monitor the implementation of the IST Program. These measures, along with the constant attention by highly-qualified individuals tasked with program implementation ensure that the previous duties of the inspector are routinely and adequately performed and the intent of the ASME Code is maintained. Thus the proposed alternative testing provides an acceptable level of quality and safety.

Approval Alternative authorized pursuant to 10 CFR 50.55a(a)(3)(i) per NRC SER dated July 8, 1999.

Valve Relief Request No. 12 (VRR-12)

MOV Exercising and Stroke Timing

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
Various	MOVs in the IST Program	Various	Various	Various

Function Various

Test Requirement OM-10 Sections 4.1, "Valve Position Verification", and 4.2.1, "Valve Exercising Test".

Alternate Testing Motor-operated valve (MOV) testing may be conducted in accordance with requirements of ASME OM Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants, OM Code-1995, Subsection ISTC", with the following limitations:

1. The potential benefits (such as identification of decreased thrust output and increased thrust requirements) and potential adverse effects (such as accelerated aging or valve damage) will be considered when determining the appropriate testing for each MOV.
2. Where the selected test interval extends beyond 6 years or 4 refueling outages (whichever is longer), performance and test experience will be evaluated to justify the periodic verification interval. Test intervals will not exceed 10 years.

In addition the following exceptions/clarifications are necessary:

3. In order to maintain consistency and compatibility with the Joint Owners Group (JOG) MOV Periodic Verification Program, "functional margin" will be redefined as follows to agree with the definition of "margin" as used in Topical Report MPR-1807 (Joint BWR, Westinghouse, and Combustion Engineering Owners' Group Program on Motor-Operated Valve Periodic Verification, Topical Report MPR-1807", Revision 2, July 1997).

$$Margin = \frac{(Adjusted\ Actuator\ Output\ Thrust/Torque) - (Adjusted\ Required\ Thrust/Torque)}{Adjusted\ Required\ Thrust/Torque}$$

The terms "functional margin" and "margin" are used synonymously in the PVNGS MOV Program.

4. OMN – 1 section 3.3(b) states that inservice tests will be conducted in the as-found condition. At PVNGS, as-found testing will be performed prior to preventive maintenance (PM) when scheduled during the same refueling outage. Regularly scheduled PM activities, such as for stem lubrication , will continue to be performed on a periodic basis to ensure that the MOV is maintained in optimum working condition.

   In some cases, as-found testing may be waived if a modification or some other circumstance creates the condition where MOV trending will be re-baselined and the results of the as-found testing will no longer apply to future operation of the MOV. In all cases, the technical justification is documented with the appropriate management approvals in accordance with station procedures.

   Section (c) states that the inservice testing program consists of a mix of static and dynamic testing. PVNGS is participating in the Joint Owners Group (JOG) MOV Periodic Verification Program, and the results of this program will be used to determine the need for and frequency of continued dynamic testing. For MOVs at PVNGS not included in the scope of the JOG program, site specific information will be used to justify the necessity for and frequency of continued dynamic testing. Station Procedures currently contain the requirements to determine when Dynamic testing is required following valve modifications and this guidance is in accordance with Generic Letter 89-10 requirements.

Basis For Relief

The industry has long recognized the limitations of using stroke-time testing as a means of monitoring the operational readiness of MOVs. After nuclear power plant experience, valve performance problems, and MOV research revealed that the focus of the ASME Code on stroke time and leak-rate testing for MOVs was not sufficient, the NRC issued Generic Letters 89-10 and 96-05. GL 89-10 requested licensees to ensure the capability of MOVs in safety-related systems to perform their intended functions by reviewing MOV design bases, verifying MOV switch settings initially and periodically, testing MOVs under design basis conditions where practicable, improving evaluations of MOV failures and necessary corrective action, and trending MOV problems. Generic Letter 96-05 requested licensees to establish a program, or to ensure the effectiveness of their current programs, to verify on a periodic basis that safety-related MOVs continue to be capable of performing their safety functions.

The PVNGS MOV Program was developed as part of the response to GLs 89-10 and 96-05. This program, which includes both periodic testing and preventive maintenance elements, complies with the requirements of GL 89-10.

The requirements of GL 96-05 are being implemented as described in the response to GL 96-05.

All MOVs in the PVNGS IST Program are included in the PVNGS MOV Program. The periodic verification and preventive maintenance activities performed under the PVNGS MOV Program, together with the other testing performed on these valves in the IST Program, provide adequate assurance of MOV operational readiness. The additional assurance of operational readiness provided by continuing traditional IST exercising and stroke time testing is negligible. Thus, the testing proposed by this relief request provides an acceptable level of quality and safety.

Approval

Valve Relief Request No. 12 (VRR-12) was submitted as a proposed alternative in accordance with 10 CFR 50a(a)3 in the PVNGS Second 10 year Interval for the Pump and Valve Inservice Testing Program on December 10, 1998. The NRC response, dated July 8, 1999, stated that VRR-12 provided an acceptable level of quality and safety and that PVNGS was authorized to use the OMN-1 Code Case for MOV Inservice Testing pursuant to 10 CFR 50.55a(a)(3)(i). The NRC Safety Evaluation Report (SER) Section 3.12 dealt with VRR-12. Section 3.12.4, Conclusion, states that PVNGS should notify the NRC upon completion of procedures for implementing ASME Code Case OMN-1. This notification was made via APS Letter # 102-04973 dated July 18, 2003.

The NRC also stated that they were evaluating possible endorsement of the OMN-1 Code Case through rulemakeing or by regulatory guide. When that endorsement occurs, PVNGS is to follow the provisions of Code Case OMN-1 with any limitations or conditions specified in the NRC endorsement. The NRC endorsement occurred in the Federal Register, Vol. 64, No. 183 on September 22, 1999 in 10 CFR 50 Paragraph 2.5.3.1, entitled Code Case OMN-1. The endorsement specified 2 requirements:

1. At 5 years or three refueling outages (whichever is longer) from the initial implementation of Code Case OMN-1, the adequacy of the test interval for each MOV must be evaluated and adjusted as necessary.

2. The licensee is expected to ensure that the potential increase in core damage frequency and risk associated with extending exercise intervals for High Risk MOVs beyond a quarterly frequency is small and consistent with the intent of the Commission's Safety Goal Policy Statement.

The NRC endorsement also cautioned, as noted in GL 96-05, MOV Periodic Testing, about balancing the benefits and potential adverse affects on valves

and systems caused by MOV testing (specifically Dynamic Testing).

Based on the subject NRC SER and the OMN-1Code Case endorsement in the Federal Register, ASME Code Case OMN-1 can be implemented at PVNGS. The following addresses the NRC requirements:

1. The PVNGS 89-10 Program for MOVs established frequency for MOV preventive maintenance and diagnostic testing will be used to ensure the operational readiness of MOVs in the PVNGS IST Program. The PVNGS 89-10 Program maintenance and testing frequencies are reviewed, evaluated and adjusted by the Valve Services Engineering Group following each refueling outage. This review process satisfies the NRC requirement to evaluate and adjust the MOV test intervals.

2. OMN-1 Code Case implementation at PVNGS involved a risk analysis (Engineering Study 13-NS-C061) associated with extending the exercise interval beyond the current IST frequency for Stoke-time Testing. All High Risk MOVs will be exercised in accordance with their previous testing interval: quarterly or during Cold Shutdown. The Low Risk MOV exercise intervals will be changed to once per fuel cycle (1CY) – which is typically performed during Cold Shutdown.

Code Case Implementation Details

Implementation of Code Case OMN-1 resulted in deleting the IST requirement for the Valve Position Indication Test (VP) and the Stroke Time Test (STO/STC). The IST MOV operational readiness is now monitored using the PVNGS 89-10 Program for MOVs, along with exercising each IST MOV once per fuel cycle.

The following 2 considerations impacted the implementation of this Code Case:

1. The PRA / Risk Assessment evaluation determined that the PVNGS High Risk IST MOVs, previously exercised quarterly via Stroke Time Testing, still needed to be exercised quarterly. This was done under the existing STs as a valve exercise, represented as a Full Stroke Open (FSO) and/or a Full Stroke Closed (FSC) instead of as a Stroke Time Test.

2. Certain IST MOVs need to be stroke timed to meet Technical Specification 3.3.5.4, an 18 month ESF Response Time Calculation requirement. For applicable IST MOVs, Stroke Time Testing was retained in the appropriate STs to be performed on a frequency of once per 18 months.

Where possible, credit has been taken, in this procedure's Valve Component Table, for IST MOVs, that are stroked open and closed during the performance of another IST ST. The new ST has been recorded as the "Procedure" in the Valve Component Table.

Valve Relief Request No. 13 (VRR-13)

Check Valve Condition Monitoring

Valve ID	Valve Description	Code Class	Category	Drawing / Coord.
Various	Various check valves	Various	C and AC	Various

Function

Various

Test Requirement

Check valves shall be exercised nominally every 3 months, except as provided by paras. 4.3.2.2, 4.3.2.3, 4.3.2.4, and 4.3.2.5. (OM-10 para. 4.3.2.1)

Alternate Testing

As an alternative to the testing or examination requirements of OM-10 paragraphs 4.3.2.1 through 4.3.2.5, check valves may be placed in a condition-monitoring program. The program shall be implemented in accordance with the ASME OMa-1996 Code, Appendix II, Check Valve Condition Monitoring Program, with the following modifications:

1. Condition monitoring activities shall assess the condition of the check valve and confirm acceptable performance.
2. The initial interval for tests and associated examinations shall not exceed two fuel cycles or three years (with 25% margin), which ever is longer.
3. The maximum interval shall not exceed 10 years.
4. Trending and evaluation of existing data shall be used to reduce or extend the time interval between tests.
5. Plant safety shall be considered when extending intervals.
6. If the condition-monitoring program is discontinued, the requirements of OM-10 section 4.3.2 shall apply.

Basis For Relief

The purpose of the Condition Monitoring Program is to both improve check valve performance and to optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select group of check valves. Certain check valves need more attention in order to determine their failure or maintenance patterns. Once these mechanisms have been analyzed, confirmed, and the valve or group of similar valves have had their performance improved, then the same level of attention is no longer needed. Certain other check valves need less attention as they have continuously exhibited acceptable operation.

After the reasons for their behavior have been analyzed, and confirmed, then the test, examination, and preventive maintenance activities necessary to maintain the continued acceptable performance can be optimized.

These examples demonstrate how the same types of tests and their associated intervals may need to be periodically adjusted based on the valve's performance. The use of ASME OMa-1996 Code, Appendix II provides a process that allows certain flexibility in establishing the types of test, examination, and preventive maintenance activities and their associated intervals. Use of condition monitoring will:

- Make inservice testing more flexible to adapt to different testing situations or preferences. Different types of analysis techniques can be used. Each valve can be approached in a slightly different manner based on the increasing skill levels of the individuals involved or the resources available.
- Allow for analysis and provide some flexibility for decision making regarding the specification of the type and of the interval of tests, examinations, and preventive maintenance activities.
- Shift emphasis to the problem valves by increasing the scope or interval of testing, monitoring, or examining activities until the cause is determined and the condition is corrected.
- Shift emphasis from the valves that have continuously exhibited acceptable performance by decreasing the scope and frequency of testing, monitoring, or examination activities. Sufficient test, examination and preventive maintenance activity experience is needed before the scope of activities and their interval is adjusted.
- Improve on failure detection capability and on the predictive capability as other activities that are geared to determine the condition of the valve are used. The current IST testing just uses exercising which provides a "snapshot" picture of the valve but gives no clue as to the future performance capability of the valve.
- Increase preventive maintenance activities, not just by creating activities, but because there is a justifiable reason for doing them.

The current check valve testing program as described in OM-10 is extremely rigid and inflexible. Yet for all the of the plant resources that go into running this test program, check valve failures still occur. Many of these failures cannot be predicted by OM-10 testing, and studies show that many are not even detected by OM-10 testing.

The ASME OM Committee spent several years developing requirements for a check valve condition-monitoring program that would lead to goals as listed in the bullets above. After review and approval, these requirements were published with the OMa-1996 Addenda to the OM Code. Implementation of these requirements in place of the check valve exercising requirements of OM-10 paragraph 4.3.2 will provide an equivalent level of quality and safety.

After reviewing the relief request and SER for the check valve condition monitoring program at the Wolf Creek Generating Station, and the proposed change to 10 CFR 50 published in Vol. 62, No. 232 of the Federal Register, the following modifications have been made to the alternate testing proposed under this Relief Request:

1. **Condition monitoring activities shall assess the condition of the check valve and confirm acceptable performance.** This modification addresses the underlying basis for bi-directional testing. The rulemaking states that valve opening and closing functions must be demonstrated when flow testing or examination methods (non-intrusive, or disassembly and inspection) are used. However, the demonstration of opening and closing functions is only one way to achieve the goal of condition monitoring, (i.e., maintaining the continued acceptable performance of check valves). Other methods may be equally effective. If PVNGS devises alternate methods that effectively assess the condition of check valves and confirm acceptable performance, use of such methods should be allowed under the condition monitoring program.

2. **The initial interval for tests and associated examinations shall not exceed two fuel cycles or three years (with 25% margin), which ever is longer.** The 2 fuel cycle / 3 year limit ensures that the intervals are not initially overextended. The 25% margin facilitates scheduling by allowing for plant operating conditions that may not be suitable for conducting condition monitoring activities (e.g., transient conditions or other ongoing surveillance or maintenance activities). The 25% extension does not significantly degrade the reliability that results from performing the condition monitoring activity at its specified interval. This is based on the recognition that the most probable result of any particular condition monitoring activity being performed is that the check valve is in conformance with the acceptance criteria. The 25% margin is not intended to be used repeatedly merely as an operational convenience to extend condition monitoring intervals (other than those consistent with refueling intervals) beyond those specified under this relief request.

3. **The maximum interval shall not exceed 10 years.** The 10 year limit ensures that interval lengths do not become excessive.

4. **Trending and evaluation of existing data shall be used to reduce or extend the time interval between tests.** Trending and evaluating data provide assurance that the component is capable of performing its intended function over the entire IST interval.

5. **Plant safety shall be considered when extending intervals.** Consideration of plant safety will provide assurance that testing under the condition-monitoring program does not significantly degrade plant safety. Implementation of this modification will draw on the experience gained by PVNGS while participating in the risk-informed IST pilot plant effort.

6. **If the condition-monitoring program is discontinued, the requirements of OM-10 section 4.3.2 shall apply.** This modification is similar to the one in the proposed rulemaking, except that reference is made to the code section applicable to check valve testing in the PVNGS IST Program. This modification was part of the January 13, 1998, "Inservice Testing Second 10 year Program" submittal, but has been reformatted as a modification for consistency and clarity.

Approval

The NRC SER dated July 8, 1999, stated that VRR-13 provides an acceptable level of quality and safety in assuring the operational readiness of check valves with the scope of the IST Program and that PVNGS was authorized to use ASME ISTC Appendix II pursuant to 10 CFR 50.55a(a)(3)(i).

Section 3.13 of the SER addressed VRR-13. Section 3.13.4, Conclusion, stated that the PVNGS request to use a 25% margin to extend the maximum interval past 10 years was denied. VRR-13 has been revised accordingly, deleting references to the use of 25% margin to extend the maximum interval.

The NRC SER also stated that the NRC was evaluating the Check Valve Condition Monitoring Program, ASME ISTC Appendix II, to be endorsed through rulemaking. When that endorsement occurs, any limitations included in the rulemaking would apply to the PVNGS implementation of this program. The NRC endorsement is documented in the Federal Register, Vol. 64, No. 183 dated September 22, 1999, in 10 CFR 50 Paragraph 2.5.3.2, entitled Appendix II. This endorsement applies to the 1995 Edition with the 1996 Addenda of ASME OM Code. The endorsement specified 3 requirements:

1. It is required to demonstrate bi-directional exercising movement of the check valve disc.
2. Prudent, safe test interval extensions should be implemented such that extensions be limited to one fuel cycle beyond the current test interval, up to a maximum of 10 years.
3. If the Condition Monitoring Program is discontinued, then all the requirements of ISTC 4.5.1 through 4.5.4 (of the 1995 Edition with the 1996 Addenda of ASME OM Code)

must be met.

Based on the NRC SER and the endorsement of ISTC Appendix II in the Federal Register, PVNGS is approved to implement the Check Valve Condition Monitoring Program. The following addresses the NRC concerns and limitiations:

1. PVNGS will not use the 25% margin extension on the maximum 10 year interval.

2. The PVNGS Check Valve Condition Monitoring Program will incorporate bi-directional testing.

3. Test interval extensions will be not exceed 1 fuel cycle beyond the current test interval, up to a maximum of 10 years.

4. It is understood that if the Check Valve Condition Monitoring Program is discontinued, that the requirements of ISTC 4.5.1 through 4.5.4 (of the 1995 Edition with the 1996 Addenda of ASME OM Code) will apply to PVNGS IST Program check valves.

Notes, Legends, Definitions, and Abbreviations

Notes

Note 1 Whenever check valve is disassembled, perform a manual exercise per 73ST-9ZZ25.

Note 2 Manual exercise per 73ST-9ZZ25 can be substituted for the regular check valve exercise test.

Note 3 Perform a partial stroke exercise with flow after reassembly, if practical.

Note 4 Check valve is tested under the PVNGS Check Valve Condition Monitoring Program per VRR-13 and 73DP-9XI05.

Note 5 MOVs are tested in the PVNGS 89-10 Program for MOVs per ASME OM Code Case OMN-1. This Code Case requires Active MOVs to be exercised once per fuel cycle (1CY). Additional exercising is performed at the Licensee's discretion (refer to VRR-12).

Pump Table Legend

Pump ID Plant equipment identifier. The first 2 letters in the ID indicate the system.

Description Name / description of the pump

Code Class ISI classification of the pump: 1, 2, 3, or N (non-class)

Drawing / Coord. Piping and Instrument Diagram number and coordinates showing the pump

Test Parameters The table indicates the frequency which pump speed, pressure, flow rate, and vibration are measured, along with any applicable relief requests

Test Procedure Procedure(s) which satisfy the testing requirements

Remarks Additional explanation or clarification, if required

Valve Table Legend

Valve ID Plant equipment identifier. The first 2 letters in the ID indicate the system.

Description Name / description of the valve

Drawing Piping and Instrument Diagram number showing the valve

Coord Coordinates where the valve is located on the drawing

Sht# Drawing sheet number

Code Class ISI classification of the valve: 1, 2, 3, or N (non-class)

Size Nominal pipe size of the valve, in inches

Type Valve type:

BF	Butterfly Valve
CK	Check Valve
DI	Diaphragm valve
GA	Gate Valve
GL	Globe Valve
PSV	Pressure Safety Relief Valve
RD	Rupture Disk

Act. Valve actuator type:

AO	Air Operated
HY	Hydraulically Operated
MA	Manually Operated
MO	Motor Operated
SA	Self Actuating
SO	Solenoid Operated

Cat. Valve category, per OM-10 para. 1.4 and 2: A, B, C, or D.

A/P A (active) or P (passive) valve, per OM-10 para. 1.3.

S.P. Safety position: O (open), C (closed), or OC (both open and closed).

Test Test(s) performed on the valve. The first two letters indicate the type of test:

AJ	Appendix J Leak Test
CM	Check Valve Condition Monitoring Test
FS	Full Stroke Exercise Test
FT	Fail Safe Test
LT	Leak Test other than an Appendix J Test
PS	Partial Stroke Exercise Test
ST	Stroke Time Test
SV	Pressure Safety Relief Valve Test
VP	Valve Position Indication Test

A third letter is used where required to indicate stroke direction: O (open) or C (closed), or a special activity, like I (inspection).

Freq Frequency at which a test is performed:

- CLR Per the Containment Leak Rate Program
- CMP Per the Check Valve Condition Monitoring Program
- CSD Cold Shut Down
- QTR Quarterly
- RFO Refueling Outage
- STF Special Test Frequency
- 1YR Once per year
- 18M Once per 18 months
- 1CY Once per fuel cycle
- 2YR Once every 2 years
- 5YR Per OM-1 para. 1.3.3.1 (at least once every 5 years)
- 10Y Per OM-1 para. 1.3.4.1 (at least once every 10 years)

Procedure Procedure in which the test is performed

CSJ/ROJ/VRR Applicable Cold Shutdown Justification, Refueling Outage Justification, or Valve Relief Request

Remarks Additional explanation or clarification, if required

Definitions

Augmented Components or tests included within the IST Program at the discretion of IST Engineering. Augmented components are generally tested in accordance with the Code to the extent practical, however, deviations from Code requirements do not require relief.

Abbreviations

ACU	Air Conditioning Unit
AF	Auxiliary Feedwater system
AFAS	Auxiliary Feedwater Actuation Signal
AFW	Auxiliary Feedwater
ANII	Authorized Nuclear Inservice Inspector
AOV	Air-Operated Valve
ASME	American Society of Mechanical Engineers
BAMP	Boric Acid Makeup Pump
CC	Code Case
CEDM	Control Element Drive Mechanism
CH	Charging system
CIAS	Containment Isolation Actuation Signal
CIV	Containment Isolation Valve
CP	Containment Purge system
CPIAS	Containment Purge Isolation Actuation Signal
CS	Containment Spray
CSD	Cold Shutdown
CSJ	Cold Shutdown Justification
CST	Condensate Storage Tank
CT	Condensate Transfer system
DF	Diesel Fuel system
DG	Diesel Generator system
DW	Demineralized Water system
EC	Essential Chilled Water system
EDG	Emergency Diesel Generator
ESF	Engineered Safety Features

EW	Essential Cooling Water system
FP	Fire Protection system
FWIV	Feedwater Isolation Valve
GA	Service Gas system
GL	Generic Letter
GR	Gaseous Radwaste system
H2	Hydrogen
HC	Containment HVAC system
HP	Hydrogen Purge system
HPSI	High Pressure Safety Injection
HVAC	Heating, ventilation, and air conditioning
IA	Instrument Air system
ISI	Inservice Inspection
IST	Inservice Testing
LCO	Limiting Condition for Operation
LOCA	Loss of Coolant Accident
LPSI	Low Pressure Safety Injection
LTOP	Low Temperature Over Pressure
MFIV	Main Feedwater Isolation Valve
MOV	Motor-Operated Valve
MSIV	Main Steam Isolation Valve
NC	Nuclear Cooling Water system
PASS	Post-Accident Sampling System
PEN.	Penetration
PRA/RA	Probablistic Risk Assessment/Risk Assessment
PRR	Pump Relief Request
PVNGS	Palo Verde Nuclear Generating Station
RC	Reactor Coolant system
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RD	Radioactive Drains
RDT	Reactor Drain Tank
RMW	Reactor Makeup Water
ROJ	Refueling Outage Justification
RWT	Refueling Water Tank
SDC	Shutdown Cooling
SG	Steam Generator
SG	Main Steam system
SI	Safety Injection system
SIAS	Safety Injection Actuation Signal
SIT	Safety Injection Tank
SOV	Solenoid-Operated Valve
SP	Essential Spray Pond system
SR	Surveillance Requirement
SS	Sampling system
TDAFW	Turbine-Driven Auxiliary Feedwater Pump
TRM	Technical Requirements Manual
TS	Technical Specification
TSR	TRM Surveillance Requirement
VCT	Volume Control Tank
VRR	Valve Relief Request
WC	Normal Chilled Water system