Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

June 30, 1986
ANPP-37192-EEVB/JBK/98.05

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U. S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. J. B. Martin
Regional Administrator, Region V

Subject: NRC IE Bulletin 85-03: Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings
File: 86-055-026

Dear Mr. Martin:

This letter refers to the request for action and information, as identified in the subject bulletin, that was received by ANPP on December 2, 1985. Attached please find the responses to those items directed to licensees and plants under construction.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

EEVB/JBK/dlm
Attachments

cc: R. P. Zimmerman (all w/a)
E. A. Licitra
A. C. Gehr
U. S. Nuclear Regulatory Commission (Original)
Document Control Desk
Washington, DC 20555

IE-11

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Executive Vice President, Arizona Nuclear Power Project, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.

Edwin E. Van Brunt

Edwin E. Van Brunt, Jr.

Sworn to before me this 1st day of July, 1986.

Nora E. Meador

Notary Public

My Commission Expires:

My Commission Expires April 6, 1987

ATTACHMENT A

For motor-operated valves in the high pressure coolant injection/core spray and emergency feedwater systems (RCIC for BWRs) that are required to be tested for operational readiness in accordance with 10 CFR 50.55a(g), develop and implement a program to ensure that valve operator switches are selected, set and maintained properly. This should include the following components:

NRC Item a

a. Review and document the design basis for the operation of each valve. This documentation should include the maximum differential pressure expected during both opening and closing the valve for both normal and abnormal events to the extent that these valve operations and events are included in the existing, approved design basis, (i.e., the design basis documented in pertinent license submittals such as FSAR analyses and fully-approved operating and emergency procedures, etc.). When determining the maximum differential pressure, those single equipment failures and inadvertent equipment operations (such as inadvertent valve closures or openings) that are within the plant design basis should be assumed.

PVNGS Response

ANPP has completed the design basis review for the operation of each motor-operated valve in the Auxiliary Feedwater (AFW) and High Pressure Safety Injection (HPSI) systems for Palo Verde Units 1, 2, and 3. The system valve data summary for each unit is presented in Attachment B.

NRC Item b

b. Using the results from item a above, establish the correct switch settings. This shall include a program to review and revise, as necessary, the methods for selecting and setting all switches (i.e., torque, torque bypass, position limit, overload) for each valve operation (opening and closing).

If the licensee determines that a valve is inoperable, the licensee shall also make an appropriate justification for continued operation in accordance with the applicable technical specification.

PVNGS Response

ANPP's program to review and revise, as necessary, the methods for selecting and setting all switches for each valve operation (opening and/or closing, as appropriate) in the AFW and HPSI systems is expected to include:

1. Review the design basis provided in Item a.

2. Review the valve manufacturer design methodology that generated the valving requirements (i.e., type, actuator torques, thrust valves) which ensure proper valve operation without failure.

3. Review the motor-operator manufacturer design methodology that generated the motor-operator requirements (i.e., size, nominal torque, maximum torque, torque bypass, torque limit, overload) which ensure proper motor-operator/valve operation without failure.

4. Review any changes to the initial torque switch settings made by the manufacturer and any field resettings to accommodate actual operating conditions.

5. Establish procedures to ensure motor-operator switch settings are properly reset and maintained throughout the life of the plant (this is intended to be consistent with Item d).

6. Establish the justification for continued operation for those valves which are determined to be inoperable.

The scheduled completion date of Item b is January 30, 1987.

NRC Item c

c. Individual valve settings shall be changed, as appropriate, to those established in item b, above. Whether the valve setting is changed or not, the valve will be demonstrated to be operable by testing the valve at the maximum differential pressure determined in item a above with the exception that testing motor-operated valves under conditions simulating a break in the line containing the valve is not required. Otherwise, justification should include the alternative to maximum differential pressure testing which will be used to verify the correct settings.

Note: This bulletin is not intended to establish a requirement for valve testing for the condition simulating a break in the line containing the valve. However, to the extent that such valve operation is relied upon in the design basis, a break in the line containing the valve should be considered in the analyses prescribed in items a and b above. The resulting switch settings for pipe break conditions should be verified, to the extent practical, by the same methods that would be used to verify other settings (if any) that are not tested at the maximum differential pressure.

Each valve shall be stroke tested, to the extent practical, to verify that the settings defined in item b above have been properly implemented even if testing with differential cannot be performed.

PVNGS Response

Individual valve settings shall be changed, as appropriate, to those established in Item b.

Each motor-operated valve in the HPSI and AFW systems will be stroke tested (at maximum differential pressure or flow rate if practical) prior to any switch adjustments as a result of this bulletin, and after the switch adjustments to verify the switch settings from Item b have been properly implemented. If a stroke test cannot be performed at maximum differential pressure or flow rate, the valves operability will be verified using an alternative method (to be determined).

The testing will be conducted per the following schedule:

Unit 1 - First refueling outage
Unit 2 - Surveillance test outage
Unit 3 - Prior to November 15, 1987

NRC Item d

d. Prepare or revise procedures to ensure that correct switch settings are determined and maintained throughout the life of the plant.* Ensure that applicable industry recommendations are considered in the preparation of these procedures.

PVNGS Response

Procedures for correct motor-operator switch setting determination, and maintenance of this information throughout the life of the plant, will be established in conjunction with Item b.

The scheduled completion date of Item d is January 30, 1987.

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* This item is intended to be completely consistent with action item 3.2, "Post-Maintenance Testing (All Other Safety-Related Components)," of Generic Letter 83-28, "Required Action Based on Generic Implications of Salem ATWS Events." These procedures should include provisions to monitor valve performance to ensure the switch settings are correct. This is particularly important if the torque or torque bypass switch setting has been significantly raised above that required.

NRC Item e

e. Within 180 days of the date of this bulletin, submit a written report to the NRC that: (1) reports the results of item a and (2) contains the program to accomplish items b through d above including a schedule for completion of these items.

1. For plants with an OL, the schedule shall ensure that these items are completed as soon as practical and within two years from the date of this bulletin.

2. For plants with a CP, this schedule shall ensure that these items are completed before the scheduled date for OL issuance or within two years from the date of this bulletin, whichever is later.

PVNGS Response

(1) ANPP has completed the design basis review for the operation of each motor-operated valve in the AFW and HPSI systems.

(2) The scheduled completion dates of the programs to accomplish each Item are:

Item a: Completed

Item b: January 30, 1987

Item c: Unit 1 - First Refueling Outage
Unit 2 - Surveillance Test Outage
Unit 3 - Prior to November 15, 1987

Item d: January 30, 1987

NRC Item f

f. Provide a written report on completion of the above program. This report should provide (1) a verification of completion of the request program, (2) a summary of the findings as to valve operability prior to any adjustments as a result of this bulletin, and (3) a summary of data in accordance with Table 2, Suggested Data Summary Format. The NRC staff intends to use this data to assist in the resolution of Generic Issue II.E.6.1. This report shall be submitted to the NRC within 60 days of completion of the program. Table 2 should be expanded, if appropriate, to include a summary of all data required to evaluate the response to this bulletin.

PVNGS Response

ANPP plans to submit a formal report within 60 days of completion of Items a through d. The formal report shall provide (1) a verification of completion of the requested program, (2) a summary of the findings as to valve operability prior to any adjustments as a result of this bulletin, and (3) a summary of data in accordance with the suggested format outlined in the bulletin.

NRC Question

Although no specific request or requirement is intended, the time required to complete each action item above would be helpful to the NRC in evaluating the cost of this bulletin.

PVNGS Response

As of May 23, 1986, the estimated time expenditure on each action item is summarized below:

Item a:
ANPP - 375 man-hours
Vendors - 500 man-hours

Item b:
ANPP - 2000 man-hours*
Vendors - 100 man-hours

Item c:
ANPP - 180 man-hours
Vendors - Not Applicable

Item d:
ANPP - 100 man-hours
Vendors - Not Applicable

*Includes time expenditure for NRC IE Module 35743 Motor-Operated Valve Maintenance Program begun in Fall of 1983.

ATTACHMENT B

AFW AND HPSI VALVE DATA SUMMARY
FOR PALO VERDE UNITS 1, 2 AND 3

PVNGS AUXILIARY FEEDWATER SYSTEM VALVE DATA SUMMARY

UNIT # 1

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer Model Motor RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
1JAFBHV-0030 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux FW Reg Valve: PPB to SG1	1740./1740.
1JAFBHV-0031 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux FW Reg Valve: PPB to SG2	1740./1740.
1JAFAHV-0032 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux. FW Reg Valve: PPA to SG1	1810./1810.
1JAFCHV-0033 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 1900 RPM	Aux FW Reg Valve: PPA to SG2	1810./1810.
1JAFAUV-0034 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPB to SG1	1740./1740.
1JAFBUV-0035 Anch-Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPB to SG2	1740./1740.
1JAFCUV-0036 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPA to SG1	1810./1810.

0813K/0029K

PVNGS AUXILIARY FEEDWATER SYSTEM VALVE DATA SUMMARY

UNIT # 1

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer Model Motor RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
1JAFDUV-0037 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPA to SG2	1810./1810.
1JAFAHV-0054 Gimpel GS-N Globe/4" 900 lb.	Limitorque SMB-00- 1900 RPM	Aux FW Turbine Trip Valve	1355./NA

PVNGS AUXILIARY FEEDWATER SYSTEM VALVE DATA SUMMARY

UNIT # 2

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer Model Motor RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
2JAFBHV-0030 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux FW Reg Valve: PPB to SG1	1740./1740.
2JAFBHV-0031 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux FW Reg Valve: PPB to SG2	1740./1740.
2JAFAHV-0032 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux. FW Reg Valve: PPA to SG1	1810./1810.
2JAFCHV-0033 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 1900 RPM	Aux FW Reg Valve: PPA to SG2	1810./1810.
2JAFAUV-0034 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPB to SG1	1740./1740.
2JAFBUV-0035 Anch-Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPB to SG2	1740./1740.
2JAFCUV-0036 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPA to SG1	1810./1810.

PVNGS AUXILIARY FEEDWATER SYSTEM VALVE DATA SUMMARY

UNIT # 2

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer Model Motor RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
2JAFDUV-0037 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPA to SG2	1810./1810.
2JAFAHV-0054 Gimpel GS-N Globe/4" 900 lb.	Limitorque SMB-00- 1900 RPM	Aux FW Turbine Trip Valve	1355./NA

PVNGS AUXILIARY FEEDWATER SYSTEM VALVE DATA SUMMARY

UNIT # 3

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer Model Motor RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
3JAFBHV-0030 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux FW Reg Valve: PPB to SG1	1740./1740.
3JAFBHV-0031 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux FW Reg Valve: PPB to SG2	1740./1740.
3JAFAHV-0032 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 3600 RPM	Aux. FW Reg Valve: PPA to SG1	1810./1810.
3JAFCHV-0033 CCI EXG9-X3-X6P6 Globe/4" 900 lb.	Limitorque SMB-00-15 1900 RPM	Aux FW Reg Valve: PPA to SG2	1810./1810.
3JAFAUV-0034 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPB to SG1	1740./1740.
3JAFBUV-0035 Anch-Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPB to SG2	1740./1740.
3JAFCUV-0036 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPA to SG1	1810./1810.

PVNGS AUXILIARY FEEDWATER SYSTEM VALVE DATA SUMMARY

UNIT # 3

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer Model Motor RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
3JAFDUV-0037 Anch/Dar 5746 Gate/6" 900 lb.	Limitorque SMB-00-25 1800 RPM	Aux FW Isol Valve: PPA to SG2	1810./1810.
3JAFAHV-0054 Gimpel GS-N Globe/4" 900 lb.	Limitorque SMB-00- 1900 RPM	Aux FW Turbine Trip Valve	1355./NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 1

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
1JCHBHV-0530 Borg-Warner 77890-1 Gate/20" 300 lb.	Limitorque SB-1-60 3455 RPM	RWT Suction Isolation	NA/44
1JCHAHV-0531 Borg-Warner 77890-1 Gate/20" 300 lb.	Limitorque SB-1-60 3455 RPM	RWT Suction Isolation	NA/44
1JSIAUV-0673 Posi-Seal 14336-3 Butterfly/24" 150 lb.	Limitorque SMB-00-10 1700 RPM	Containment Sump Suction Isolation	57/NA
1JSIAUV-0674 Posi-Seal 14336-4 Butterfly/24" 150 lb.	Limitorque SMB-000-5/ 1700 RPM	Containment Sump Suction Isolation	57/NA
1JSIBUV-0675 Posi-Seal 14336 Butterfly/24" 150 lb.	Limitorque SMB-00-10 1700 RPM	Containment Sump Suction Isolation	57/NA
1JSIBUV-0676 Posi-Seal 14336-4 Butterfly/24" 150 lb.	Limitorque SMB-000-5/ 1800 RPM	Containment Sump Suction Isolation	57/NA
1JSIAUV-0666 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-04-7.5 1800 RPM	HPSI Pump Miniflow Recirc Line Isolation	NA/1945

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PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 1

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
1JSIBUV-0667 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Pump Miniflow Recirc Line Isolation	NA/1966
1JSICHV-0321 Borg-Warner 79530 Y-Globe/3" 1500 lb.	Limitorque SMC-0-25 1900 RPM	Hot Leg Injection Flow Control	1924/NA
1JSIDHV-0331 Borg-Warner 79530 Y-Globe/3" 1500 lb.	Limitorque SMB-0-25 1900 RPM	Hot Leg Injection Flow Control	1924/NA
1JSIAHV-0604 Borg-Warner 77910 Gate/3" 1500 lb.	Limitorque SMB-00-10 1800 RPM	Hot Leg Injection Flow Control	1945/NA
1JSIBHV-0609 Borg-Warner 77910 Gate/3" 1500 lb.	Limitorque SMB-00-10 1800 RPM	Hot Leg Injection Flow Control	1945/NA
1JSIAHV-0698 Borg-Warner 77740 Gate/4" 1500 lb.	Limitorque SMB-0-10 1700 RPM	HPSI Train Isolation	1100/NA
1JSIBHV-0699 Borg-Warner 77740 Gate/4" 1500 lb.	Limitorque SMB-0-10 1700 RPM	HPSI Train Isolation	1100/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 1

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
1JSIBUV-0616 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RMP	HPSI Header Isolation and Throttling	1924/NA
1JSIBUV-0617 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
1JSIBUV-0626 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
1JSIAUV-0627 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
1JSIBUV-0636 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
1JSIAUV-0637 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
1JSIBUV-0646 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 1

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
1JSIAUV-0647 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 2

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
2JCHBHV-0530 Borg-Warner 77890-1 Gate/20" 300 lb.	Limitorque SB-1-60 3455 RPM	RWT Suction Isolation	NA/44
2JCHAHV-0531 Borg-Warner 77890-1 Gate/20" 300 lb.	Limitorque SB-1-60 3455 RPM	RWT Suction Isolation	NA/44
2JSIAUV-0673 Posi-Seal 14336-3 Butterfly/24" 150 lb.	Limitorque SMB-00-10 1700 RPM	Containment Sump Suction Isolation	57/NA
2JSIAUV-0674 Posi-Seal 14336-4 Butterfly/24" 150 lb.	Limitorque SMB-000-5/ 1700 RPM	Containment Sump Suction Isolation	57/NA
2JSIBUV-0675 Posi-Seal 14336 Butterfly/24" 150 lb.	Limitorque SMB-00-10 1700 RPM	Containment Sump Suction Isolation	57/NA
2JSIBUV-0676 Posi-Seal 14336-4 Butterfly/24" 150 lb.	Limitorque SMB-000-5/ 1800 RPM	Containment Sump Suction Isolation	57/NA
2JSIAUV-0666 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-04-7.5 1800 RPM	HPSI Pump Miniflow Recirc Line Isolation	NA/1945

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 2

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
2JSIBUV-0667 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Pump Miniflow Recirc Line Isolation	NA/1966
2JSICHV-0321 Borg-Warner 79530 Y-Globe/3" 1500 lb.	Limitorque SMC-0-25 1900 RPM	Hot Leg Injection Flow Control	1924/NA
2JSIDHV-0331 Borg-Warner 79530 Y-Globe/3" 1500 lb.	Limitorque SMB-0-25 1900 RPM	Hot Leg Injection Flow Control	1924/NA
2JSIAHV-0604 Borg-Warner 77910 Gate/3" 1500 lb.	Limitorque SMB-00-10 1800 RPM	Hot Leg Injection Flow Control	1945/NA
2JSIBHV-0609 Borg-Warner 77910 Gate/3" 1500 lb.	Limitorque SMB-00-10 1800 RPM	Hot Leg Injection Flow Control	1945/NA
2JSIAHV-0698 Borg-Warner 77740 Gate/4" 1500 lb.	Limitorque SMB-0-10 1700 RPM	HPSI Train Isolation	1100/NA
2JSIBHV-0699 Borg-Warner 77740 Gate/4" 1500 lb.	Limitorque SMB-0-10 1700 RPM	HPSI Train Isolation	1100/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 2

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
2JSIBUV-0616 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RMP	HPSI Header Isolation and Throttling	1924/NA
2JSIBUV-0617 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
2JSIBUV-0626 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
2JSIAUV-0627 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
2JSIBUV-0636 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
2JSIAUV-0637 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
2JSIBUV-0646 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 2

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
2JSIAUV-0647 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 3

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
3JCHBHV-0530 Borg-Warner 77890-1 Gate/20" 300 lb.	Limitorque SB-1-60 3455 RPM	RWT Suction Isolation	NA/44
3JCHAHV-0531 Borg-Warner 77890-1 Gate/20" 300 lb.	Limitorque SB-1-60 3455 RPM	RWT Suction Isolation	NA/44
3JSIAUV-0673 Posi-Seal 14336-3 Butterfly/24" 150 lb.	Limitorque SMB-00-10 1700 RPM	Containment Sump Suction Isolation	57/NA
3JSIAUV-0674 Posi-Seal 14336-4 Butterfly/24" 150 lb.	Limitorque SMB-000-5/ 1700 RPM	Containment Sump Suction Isolation	57/NA
3JSIBUV-0675 Posi-Seal 14336 Butterfly/24" 150 lb.	Limitorque SMB-00-10 1700 RPM	Containment Sump Suction Isolation	57/NA
3JSIBUV-0676 Posi-Seal 14336-4 Butterfly/24" 150 lb.	Limitorque SMB-000-5/ 1800 RPM	Containment Sump Suction Isolation	57/NA
3JSIAUV-0666 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-04-7.5 1800 RPM	HPSI Pump Miniflow Recirc Line Isolation	NA/1945

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 3

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
3JSIBUV-0667 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Pump Miniflow Recirc Line Isolation	NA/1966
3JSICHV-0321 Borg-Warner 79530 Y-Globe/3" 1500 lb.	Limitorque SMC-0-25 1900 RPM	Hot Leg Injection Flow Control	1924/NA
3JSIDHV-0331 Borg-Warner 79530 Y-Globe/3" 1500 lb.	Limitorque SMB-0-25 1900 RPM	Hot Leg Injection Flow Control	1924/NA
3JSIAHV-0604 Borg-Warner 77910 Gate/3" 1500 lb.	Limitorque SMB-00-10 1800 RPM	Hot Leg Injection Flow Control	1945/NA
3JSIBHV-0609 Borg-Warner 77910 Gate/3" 1500 lb.	Limitorque SMB-00-10 1800 RPM	Hot Leg Injection Flow Control	1945/NA
3JSIAHV-0698 Borg-Warner 77740 Gate/4" 1500 lb.	Limitorque SMB-0-10 1700 RPM	HPSI Train Isolation	1100/NA
3JSIBHV-0699 Borg-Warner 77740 Gate/4" 1500 lb.	Limitorque SMB-0-10 1700 RPM	HPSI Train Isolation	1100/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 3

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
3JSIBUV-0616 Borg-Warner 77620-2 Y-Globe/2" 1500 lb	Limitorque SMC-00-7.5 1800 RMP	HPSI Header Isolation and Throttling	1924/NA
3JSIBUV-0617 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
3JSIBUV-0626 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
3JSIAUV-0627 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
3JSIBUV-0636 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
3JSIAUV-0637 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA
3JSIBUV-0646 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA

PVNGS HIGH PRESSURE SAFETY INJECTION SYSTEM VALVE DATA SUMMARY

UNIT # 3

Valve Number Manufacturer Model Type/Size Body Rating	Valve Operator: Manufacturer, Model RPM	Valve Function	Maximum Differential Pressure (PSID): Opening/Closing
3JSIAUV-0647 Borg-Warner 77620-2 Y-Globe/2" 1500 lb.	Limitorque SMC-00-7.5 1800 RPM	HPSI Header Isolation and Throttling	1924/NA