

PUMP AND VALVE
INSERVICE TESTING PROGRAM
PALO VERDE NUCLEAR GENERATING STATION

REVISION 2

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INTRODUCTION

The Inservice Inspection Program for Palo Verde Nuclear Generating Station is developed in compliance with the rules and regulations of 10CFR50.55a and Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition, Winter 1981 Addenda. Where these rules were determined to be impractical, specific relief was written.

Section 1.0 discusses the Inservice Testing Program for applicable Class 1, 2, and 3 pumps. Section 2.0 discusses the Inservice Testing Program for applicable Class 1, 2, and 3 valves.

1.0 INSERVICE TESTING OF PUMPS

1.1 General Information

The Inservice Testing Program for ASME Class 1, 2, and 3 pumps was developed in accordance with, and meets the requirements of ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP, 1980 Edition, Winter 1981 Addenda.

The Inservice Testing Program for pumps will remain in effect through the next 10 year inservice inspection interval commencing at commercial operation.

Section 3.1 lists all Class 1, 2, and 3 pumps which are to be tested, along with the applicable parameters to be measured.

1.2 Program Information

The following information is included in the Inservice Testing Program for pumps:

- A. Pump Number lists the pump identification number as shown on the P&ID's.
- B. Pump Name describes the pump's functional identification as it is related to system operation.
- C. ISI Class is the Owner's classification of the pump per ISI requirements.
- D. P&ID and Coordinates indicates the drawing and grid location where the pump appears.
- E. Test Parameters indicates the required test quantities required per Table IWP-3100-1.*
- F. Notes are general statements which can be referred to in the ISI Testing Program.

1.3 Reference Values

Reference values shall be established when the pump is known to be operating acceptably. All subsequent test results shall be compared to the reference values.

After a pump has been replaced a new set of reference values shall be determined from the results of the first inservice test run after the pump is put into service. When a reference value has been affected by a repair of routine servicing of the pump, a new reference value or set of values shall be determined or the previous value confirmed by an inservice test run prior to return of the pump to service.

*These quantities will be either measured, observed, or calculated (denoted by "M", "O", or "C" in the ISI Testing Program). "PRR-(1)" will denote a specific request for relief concerning that parameter.



1.4 Test Frequency

An inservice test shall be run on each pump nominally every three months during plant operation. The auxiliary feedwater pumps will be tested monthly as required per Tech Spec 3/4.7.1.2. If this frequency can reasonably be accomplished during shutdown periods it will be, however, this is not mandatory. Where a pump is not tested on a three month frequency during plant shutdown, it will be tested prior to declaring the system operable, per Technical Specifications.

Where a pump is operated more frequently than every three months, it need not be run for a special test, provided the requirements of IWP-3400b are met.

1.5 Request for Relief

Where ASME Section XI requirements are determined to be impractical, a request for relief is written.

Where relief from an ASME Code requirement is granted within the provisions of 10CFR50.55a (g) (6) (i), it will be incorporated into the Palo Verde Inservice Testing Program.

Relief requests are shown in Appendix A.



2.0 INSERVICE TESTING OF VALVES

2.1 General Information

The Inservice Testing Program for ASME Class 1, 2, and 3 valves was developed on accordance with, and meets the requirements of ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWV, 1980 Edition, Winter 1981 Addenda:

The Inservice Testing Program for valves will remain in effect throughout the next 10 year inservice inspection interval, commencing at commercial operation.

2.2 Preservice Test

Each valve, after installation and prior to service, shall be tested. These tests shall be conducted under conditions similar to those to be experienced during subsequent inservice tests. Safety and relief valves which will be removed and bench tested during subsequent inservice test need not be installed prior to the preservice test.

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits.

2.3 Program Information

The following information is included in the Inservice Testing Program for valves:

- A. Valve Number lists the valve identification number as shown on the P&ID's.
- B. Coordinates reference the grid on the P&ID where the valve appears.
- C. ISI Class is the Owner's classification of the valve per ISI requirements.
- D. Valve Category indicates the category assigned to the valve based on the definitions of IWV-2200.
- E. Valve Size lists the nominal size of the valve in inches.
- F. Valve Type lists the valve design.
- G. Actuator Type lists the type of valve actuator.
- H. Valve Position indicates the normal position of valve during plant operation; either normally open (O), normally closed (C), or both (O/C).



I. Stroke Direction indicates the direction which an active valve must stroke to perform its safety function. Also, the direction in which the valve will be stroked to satisfy the exercising requirements of IWV-3410 and IWV-3520. This may be specified as open (O), closed (C), or both (O/C).

J. Test lists the test or tests that will be performed for each valve to fulfill the requirements of Subsection IWV.

Appendix J Leak Test (AJLT)

Valve will be leak tested in accordance with 10CFR50, Appendix J requirements.

Full Stroke Test (FST)

Valve will be full stroke exercised for operability in the direction necessary to fulfill its safety function.

Partial Stroke Test (PST)

Valve will be partial stroke exercised when full stroke exercising is impractical.

Fail-Safe Test (FT)

All valves with fail-safe actuators will be tested to verify proper fail-safe operation upon loss of actuator power.

Verify Position Indicator (VPI)

Automatically actuated valves with remote indication will be verified in accordance with IWV-3300.

Pressure Safety Valve Testing (PSVT)

Relief and safety valve set points will be verified in accordance with IWV-3510.

K. Test Mode indicates the frequency at which the preceding mentioned tests will be performed. The following abbreviations are used:

Cold Shutdown (CS)

Valve testing at cold shutdown is valve testing which commences not later than seventy-two (72) hours after cold shutdown and continues until required testing is completed or plant startup, whichever occurs first. Completion of all required valve testing is not a requisite to plant startup. Valve testing which is not completed during cold shutdown will be performed during subsequent cold shutdowns to meet the Code specified testing requirements. No valve is required to be tested more often than once every 90 days.

Note: Completion of all valve testing during cold shutdown is not required if plant operating conditions will not permit the testing of specific valves.

Normal Operation (OP)

Valve tests with this designation will be performed once every three months.

Reactor Refueling (RF)

Valve tests with this designation will be conducted at reactor refueling outages only.

- L. Max Stroke Time lists the maximum allowed full stroke time measured in seconds from signal initiation until stroke completion is indicated. Testing is to be completed for all stroke times listed whenever the valve is full stroke tested (ref. IWV-3413).
- M. Relief Request references the relief request contained in Appendix B that applies to the particular valve.
- N. Remarks lists clarification remarks.

The Inservice Testing Program lists all ASME Class 1, 2, and 3 valves that have been assigned valve categories. Except for valves directly in the flow path (B passive), valves exempted per IWV-1200 are not listed. This listing is located in Section 3.2.

The tables are organized by system in order of the assigned P&ID number.

2.4 Request for Relief

Where ASME Section XI requirements were determined to be impractical, a request for relief was written.

2.5 Explanation of Abbreviations and Notes

See the following pages.



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
EXPLANATION OF ABBREVIATIONS													1 of 4	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
					ANG								ANGLE	
					BA								BALL	
					BTF								BUTTERFLY	
					CK								CHECK	
					DIA								DIAPHRAGM	
					GA								GATE	
					GL								GLOBE	
					PCV								PRESSURE CONTROL VALVE	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM	EXPLANATION OF ABBREVIATIONS										P & ID	PAGE 2 of 4	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
					PL								PLUG
					PSV								PRESSURE SAFETY VALVE
					TW								THREE WAY
						AO							AIR OPERATOR
						HY							HYDRAULIC
						MAN							MANUAL
						MO							MOTOR OPERATOR
						SA							SELF ACTUATED

INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
EXPLANATION OF ABBREVIATIONS													3 of 4	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
						SOL							SOLENOID	
													OPEN	
													CLOSED	
													OPEN/CLOSED	
								AJLT					APPENDIX J LEAK TEST	
								FST					FULL STROKE TEST	
								PST					PARTIAL STROKE TEST	
								LT					LEAK TEST	





EXPLANATION OF NOTES

NOTES:

1. This valve is exempt from testing per IWV-1200, however, the valve is directly in the flow path and is maintained in the listing.
2. This valve is a pressure relief valve and will be tested at the frequency stated in IWV-3511.
3. This valve is a passive valve and does not require testing.
4. This valve cannot be full stroke exercised.
5. This valve cannot be partially stroke exercised during plant operation.
6. All motor operated valves fail-as-is and therefore do not require a fail safe test per IWV-3415.
7. Position of valve is determined to be non-safety related and therefore requires no testing.
8. This valve is A passive and will only be leak tested in accordance with 10CFR50 Appendix J rules.
9. This valve will be leak tested in accordance with 10CFR50, Appendix J requirements.
10. This valve operates during normal operation and therefore requires no special testing (IWV-3414).
11. Operability of this valve shall be noted when the Diesel Generator System is tested for operability.
12. Maximum stroke time is not a licensing commitment for this valve (stroke time is not identified in FSAR or Technical Specifications).



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SECTION 3.1

INSERVICE TESTING PROGRAM - PUMPS

... PALO VERDE NUCLEAR GENERATING STATION

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 PUMPS
PALO VERDE NUCLEAR GENERATING STATION

PUMP NUMBER	PUMP NAME	ISI CLASS	P & ID AND COORDINATES	TEST PARAMETERS						NOTES
				SPEED	INLET PRES.	DIFF. PRES.	FLOW RATE	VIBRATION	BEARING TEMP.	
AFA-P01	Auxiliary Feedwater Pump (Turbine Driven)	3	AFS-001 D6	0	M	C	0	PRR-5	PRR-1	Tested Monthly
AFB-P01	Auxiliary Feedwater Pump (Motor Driven)	3	AFS-001 C6	NA	M	C	0	PRR-5	PRR-1	Tested Monthly
AFN-P01	Auxiliary Feedwater Pump (Motor Driven)	*	AFP-001 H6	NA	M	C	0	PRR-5	PRR-1	Tested Monthly
CHA-P01	Charging Pump No. 1.	2	CHS-002 B3	NA	PRR-4	PRR-4	0	PRR-5	PRR-1	
CHB-P01	Charging Pump No. 2.	2	CHS-002 D3	NA	PRR-4	PRR-4	0	PRR-5	PRR-1	
CHE-P01	Charging Pump No. 3.	2	CHS-002 G3	NA	PRR-4	PRR-4	0	PRR-5	PRR-1	
CTA-P01	Condensate Transfer Pump	3	CTS-001 C5	NA	M	C	0	PRR-5	PRR-1	
CTB-P01	Condensate Transfer Pump	3	CTS-001 A5	NA	M	C	0	PRR-5	PRR-1	
DFA-P01	Diesel Generator Fuel Oil Transfer Pump	3	DFX-001 B6	NA	C	C	0	PRR-2	PRR-1	
DFB-P01	Diesel Generator Fuel Oil Transfer Pump	3	DFS-001 B2	NA	C	C	0	PRR-2	PRR-1	
DGA-P02	Diesel Generator Jacket Water Cooling Pump	3	DGS-004 F6	-	-	-	-	-	-	PRR-3
DGB-P02	Diesel Generator Jacket Water Cooling Pump	3	DGS-004 F3	-	-	-	-	-	-	PRR-3
DGA-P03	Diesel Generator Lube Oil Pump	3	DGS-003 C7	-	-	-	-	-	-	PRR-3
DGB-P03	Diesel Generator Lube Oil Pump	3	DGS-003 C3	-	-	-	-	-	-	PRR-3
DGA-P05	Diesel Generator Fuel Oil Booster Pump	3	DGS-005 D7	-	-	-	-	-	-	PRR-3
DGB-P05	Diesel Generator Fuel Oil Booster Pump	3	DGS-005 D3	-	-	-	-	-	-	PRR-3

* This pump is not an ASME Code Class Pump, however augmented testing will be done in accordance with the PVNGS Tech Specs 3/4.7.1.2.



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 PUMPS
PALO VERDE NUCLEAR GENERATING STATION

PUMP NUMBER	PUMP NAME	ISI CLASS	P & ID AND COORDINATES	TEST PARAMETERS						NOTES
				SPEED	INLET PRES.	DIFF. PRES.	FLOW RATE	VIBRATION	BEARING TEMP.	
ECA-P01	Essential Chilled Water Circulation Pump	3	ECS-001 B8	NA	M	C	0	PRR-5	PRR-1	
ECB-P01	Essential Chilled Water Circulation Pump	3	ECS-001 B4	NA	M	C	0	PRR-5	PRR-1	
EWA-P01	Essential Cooling Water Pump	3	EWS-001 E6	NA	M	C	0	PRR-5	PRR-1	
EWB-P01	Essential Cooling Water Pump	3	EWS-001 E2	NA	M	C	0	PRR-5	PRR-1	
SIA-P01	LPSI Pump #1	2	SIS-001 G11	NA	M	C	0	PRR-5	PRR-1	
SIB-P01	LPSI Pump #2	2	SIS-001 B11	NA	M	C	0	PRR-5	PRR-1	
SIA-P02	HPSI Pump #1	2	SIS-001 E11	NA	M	C	0	PRR-5	PRR-1	
SIB-P02	HPSI Pump #2	2	SIS-001 A11	NA	M	C	0	PRR-5	PRR-1	
SIA-P03	Containment Spray Pump #1	2	SIS-001 H11	NA	M	C	0	PRR-5	PRR-1	
SIB-P03	Containment Spray Pump #2	2	SIS-001 C11	NA	M	C	0	PRR-5	PRR-1	
SIA-P05	Spray Chemical Addition Pump #1	2	SIS-001 D14	NA	PRR-4	PRR-4	0	PRR-5	PRR-1	
SIB-P05	Spray Chemical Addition Pump #2	2	SIS-001 C14	NA	PRR-4	PRR-4	0	PRR-5	PRR-1	
SPA-P01	Essential Spray Pond Pump #1	3	SPS-001 C4	NA	C	C	0	PRR-5	PRR-1	
SPB-P01	Essential Spray Pond Pump	3	SPS-001 C7	NA	C	C	0	PRR-5	PRR-1	

SECTION 3.2

INSERVICE TESTING PROGRAM - VALVES

PALO VERDE NUCLEAR GENERATING STATION



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM AUXILIARY FEEDWATER										P & ID 13-M-AFS-001			PAGE 1 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V002	G1	3	B	6"	GA	MAN	0	0	NA				NOTE 3	
V005	E7	3	C	8"	CK	SA	C	O/C	FST	OP				
V006	D7	3	B	8"	GA	MAN	0	0	NA				NOTE 3	
V007	D7	3	C	8"	CK	SA	C	0	FST	OP				
V009	C7	3	C	8"	CK	SA	C	O/C	FST	OP				
V015	D5	3	C	6"	CK	SA	C	0	FST	CS	VRR-21		NOTE 5	
V016	D5	3	B	6"	GA	MAN	0	0	NA				NOTE 3	
V017	D7	3	B	3"	GA	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
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SYSTEM AUXILIARY FEEDWATER										P & ID 13-M-AFS-001			PAGE 2. of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V018	C7	3	B	6"	GL	MAN	C	C	NA				NOTE 3	
V021	C7	3	B	8"	GA	MAN	0	0	NA				NOTE 3	
V022	C7	3	C	8"	CK	SA	C	0	FST	OP				
V024	C5	3	C	6"	CK	SA	C	0	FST	CS	VRR-11		NOTE 5	
V025	C5	3	B	6"	GA	MAN	0	0	NA				NOTE 3	
V026	B7	3	B	3"	GA	MAN	0	0	NA				NOTE 3	
V027	A7	3	B	6"	GL	MAN	C	C	NA				NOTE 3	
V047	F4	3	B	1"	GL	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
AUXILIARY FEEDWATER										13-M-AFS-001			3 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V057	F2	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
V079	D2	2	C	6"	CK	SA	C	0	FST	CS	VRR-11		NOTE 5	
V080	C2	2	C	6"	CK	SA	C	0	FST	CS	VRR-11		NOTE 5	
V096	G2	3	C	4"	CK	SA	O/C	C	FST	OP				
V119	F2	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V122	F4	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V137	D6	3	C	6"	CK	SA	C	0	FST	OP				
V138	C6	3	C	6"	CK	SA	C	0	FST	OP				



INSERVICE TESTING PROGRAM
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SYSTEM AUXILIARY FEEDWATER										P & ID 13-M-AFS-001			PAGE 4 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HV30	B4	3	B	6"	GL	MO	C	0	FST VPI	OP RF	20's		NOTES 6, 12	
HV31	C4	3	B	6"	GL	MO	C	0	FST VPI	OP RF	20's		NOTES 6, 12	
HV32	D4	3	B	6"	GL	MO	C	0	FST VPI	OP RF	20's		NOTES 6, 12	
HV33	C4	3	B	6"	GL	MO	C	0	FST VPI	OP RF	20's		NOTES 6, 12	
HV54	G4	3	B	4"	GL	MO	O	O/C	FST VPI	OP RF	60's		NOTES 6, 12	
UV34	B3	2	B	6"	GA	MO	C	O/C	FST VPI	OP RF	12's		NOTE 6	
UV35	C3	2	B	6"	GA	MO	C	O/C	FST VPI	OP RF	12's		NOTE 6	
UV36	D3	2	B	6"	GA	MO	C	O/C	FST VPI	OP RF	12's		NOTE 6	





INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 6 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V340	E12	2	B	2"	GA	MAN	C	C	NA				NOTE 3	
V341	F13	2	B	2"	GA	MAN	0	0	NA				NOTE 3	
V342	F12	2	B	2"	GA	MAN	0	0	NA				NOTE 3	
V343	F13	2	B	2"	GA	MAN	0	0	NA				NOTE 3	
V347	E10	2	B	2"	GA	MAN	0	0	NA				NOTE 3	
V348	D10	2	B	2"	GA	MAN	C	C	NA				NOTE 3	
V349	D9	2	B	3"	GA	MAN	0	0	NA				NOTE 3	
V350	E9	2	B	3"	GA	MAN	C	C	NA				NOTE 3	





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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 9 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V385	C4	2	B	3"	GA	MAN	0	0	NA				NOTE 3	
V389	B4	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V392	E3	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V394	D3	2	B	3"	GA	MAN	0	0	NA				NOTE 3	
V395	B3	2	B	3"	GA	MAN	0	0	NA				NOTE 3	
V398	B3	2	B	3"	GA	MAN	0	0	NA				NOTE 3	
V403	D3	2	C	3"	CK	SA							NOTE 1	
V404	D3	2	B	3"	GA	MAN	0	0	NA				NOTE 3	

INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 10 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V415	B2	2	B	3"	GA	MAN	0	0	NA				NOTE 3	
V418	B1	2	B	3"	GA	MAN	0	C	NA				NOTE 3	
V423	D6	2	C	3"	CK	SA							NOTE 1	
V424	D6	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V426	D9	2	B	1/2"	GL	MAN	0	0	NA				NOTE 3	
V429	D16	2	C	2"	CK	SA	0	C	FST	CS	VRR-14		NOTE 5	
V431	G11	1	C	2"	CK	SA	C	C	FST	CS	VRR-12		NOTE 5	
V433	G9	1	C	2"	CK	SA	0	C	FST	CS	VRR-14		NOTE 5	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 11 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V434	F9	1	B	2"	GA	MAN	0	0	NA				NOTE 3	
V435	F10	1	C	2"	CK	SA							NOTE 1	
V436	D15	2	B	1"	GL	MAN	C	C	NA				NOTE 3	
V449	C6	2	C	3/4"	CK	SA	0	C	NA				NOTE 3	
V787	H1	1	C	1"	CK	SA	0	C	FST	CS	VRR-13		NOTE 5	
V788	H1	1	B	1"	GL	MAN	0	0	NA				NOTE 3	
V802	G1	1	C	1"	CK	SA	0	C	FST	CS	VRR-13		NOTE 5	
V803	G1	1	B	1"	GL	MAN	0	0	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 12 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V807	F1	1	C	1"	CK	SA	0	C	FST	CS		VRR-13	NOTE 5	
V808	F1	1	B	1"	GL	MAN	0	0	NA				NOTE 3	
V812	E1	1	C	1"	CK	SA	0	C	FST	CS		VRR-13	NOTE 5	
V813	E1	1	B	1"	GL	MAN	0	0	NA				NOTE 3	
V816	G5	2	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V818	G4	2	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V819	F5	2	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V821	F4	2	B	1 1/2"	GL	MAN	C	C	NA				NOTE 3	

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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 13 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V835	G3	2	AC	1 1/2"	CK	SA	0	C	EST AJLT	CS RF		VRR-13	NOTES 5, 9	
V836	G6	2	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V839	G7	2	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V841	C8	2	B	3"	GL	MAN	C	C	NA				NOTE 3	
V842	C9	2	B	2"	GL	MAN	C	C	NA				NOTE 3	
V854	E15	2	A	3/4"	GL	MAN	C	C	AJLT	RF			NOTE 8	
V866	H1	1	C	1"	CK	SA	0	C	FST	CS		VRR-13	NOTE 5	
V867	G1	1	C	1"	CK	SA	0	C	FST	CS		VRR-13	NOTE 5	



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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 14 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V868	F1	1	C	1"	CK	SA	0	C	FST	CS		VRR-13	NOTE 5	
V869	E1	1	C	1"	CK	SA	0	C	FST	CS		VRR-13	NOTE 5	
FV204	D6	2	B	2"	GL	A0							NOTE 1	
FV241	H2	2	B	1"	GL	A0							NOTE 1	
FV242	G2	2	B	1"	GL	A0							NOTE 1	
FV243	F2	2	B	1"	GL	A0							NOTE 1	
FV244	E2	2	B	1"	GL	A0							NOTE 1	
HV203	H12	1	B	2"	GL	SOL	C	O/C	FST FT VPI	CS CS RF	10s	VRR-12	NOTES 5, 12	



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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-001			PAGE 15 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HV205	G12	1	B	2"	GL	SOL	C	O/C	FST FT VPI	CS CS RF	10s	VRR-12	NOTES 5, 12	
HV250	C9	2	B	3"	GL	AO	C	C	NA				NOTE 3	
HV255	G4	2	A	1/2"	GL	MO	O	O/C	FST VPI AJLT	CS RF RF	10s	VRR-13	NOTES 6, 9, 12	
HV524	D16	2	A	2"	GL	MO	O	O/C	FST VPI AJLT	CS RF RF	5s	VRR-14	NOTES 5, 6, 9	
HV526	E13	2	B	3/4"	GL	SOL	C	C	NA				NOTE 3	
UV231P	G8	2	B	1 1/2"	GL	AO							NOTE 1	
UV515	H15	1	B	2"	GL	AO	O	C	FST FT VPI	CS CS RF	10s	VRR-1	NOTE 12	
UV516	H15	1	A	2"	GL	AO	O	C	FST FT VPI AJLT	CS CS RF RF	5s	VRR-1	NOTE 9	





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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-002		PAGE 18 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V101	G7	2	C	3"	CK	SA	0	NA	NA				NOTE 7
V118	C7	2	C	4"	CK	SA	0/C	0	FST	OP			NOTE 10
V130	D12	3	B	1"	DIA	MAN	0	0	NA				NOTE 3
V143	C14	3	B	3"	DIA	MAN	0	0	NA				NOTE 3
V144	B14	3	B	3"	DIA	MAN	0	0	NA				NOTE 3
V145	B14	3	B	3"	DIA	MAN	0	0	NA				NOTE 3
V152	C12	3	B	3"	DIA	MAN	0	0	NA				NOTE 3
V153	B12	3	B	3"	DIA	MAN	0	0	NA				NOTE 3

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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-002			PAGE 19 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V154	C12	3	C	3"	CK	SA	C	NA	NA				NOTE 7	
V155	B12	3	C	3"	CK	SA	C	NA	NA				NOTE 7	
V161	B11	3	B	3"	DIA	MAN	0	0	NA				NOTE 3	
V166	B11	3	B	3"	DIA	MAN	0	0	NA				NOTE 3	
V174	B9	3	B	2"	DIA	MAN	C	C	NA				NOTE 3	
V177	B8	2	C	3"	CK	SA	O/C	C	FST	CS		VRR-1		
V179	C7	2	C	3"	CK	SA	O/C	C	FST	CS		VRR-1		
V184	F9	3	C	3"	CK	SA	C	C	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-002			PAGE 20 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V188	E7	2	C	3"	CK	SA	O/C	C	FST	CS		VRR-1		
V190	A8	2	C	3"	CK	SA	C	O	FST	CS		VRR-17	NOTE 5	
V192	D12	3	B	1"	DIA	MAN	O	O	NA				NOTE 3	
V198	G13	2	B	1"	GL	MAN	O	O	NA				NOTE 3	
PC-V215	A11	3	B	3"	DIA	MAN	C	C	NA				NOTE 3	
V305	C15	2	C	20"	CK	SA	C	O	FST	OP				
V306	C13	2	C	20"	CK	SA	C	O	FST	OP				
V316	B5	2	B	4"	DIA	MAN	O	O	NA				NOTE 3	



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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-002			PAGE 21 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V319	D5	2	B	4"	DIA	MAN	0	0	NA				NOTE 3	
V322	G5	2	B	4"	DIA	MAN	0	0	NA				NOTE 3	
V327	F5	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V328	B2	2	C	2"	CK	SA	O/C	C	FST	OP				
V331	E2	2	C	2"	CK	SA	O/C	C	FST	OP				
V334	G2	2	C	2"	CK	SA	O/C	C	FST	OP				
V335	G1	2	B	2"	GA	MAN	0	0	NA				NOTE 3	
V337	E1	2	B	2"	GA	MAN	0	0	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-002			PAGE 22 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V339	B1	2	B	2"	GA	MAN	0	0	NA				NOTE 3	
V440	C2	2	C	2"	CK	SA	0/C	C	FST	OP				
V645	F7	2	B	1"	DIA	MAN	0	0	NA				NOTE 3	
V646	H13	2	C	1"	CK	SA	0/C	0	NA				NOTE 10	
V647	F14	2	C	3"	CK	SA	C	C	NA				NOTE 3	
V649	E11	3	B	3"	DIA	MAN	C	C	NA				NOTE 3	
V653	C10	3	B	3"	DIA	MAN	0	0	NA				NOTE 3	
V668	D9	3	C	2"	CK	SA	C	NA	NA				NOTE 7	



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V753	A12	3	B	3"	DIA	MAN	C	C	NA				NOTE 3
V755	C5	2	B	3"	DIA	MAN	C	C	NA				NOTE 3
V756	D5	2	B	3"	DIA	MAN	C	C	NA				NOTE 3
V757	F5	2	B	3"	DIA	MAN	C	C	NA				NOTE 3
V796	C2	2	B	2"	GA	MAN	C	C	NA				NOTE 3
V797	E2	2	B	2"	GA	MAN	C	C	NA				NOTE 3
V798	F2	2	B	2"	GL	MAN	C	C	NA				NOTE 3
VM43	H15	2	B	1"	GL	MAN	O	O	NA				NOTE 3

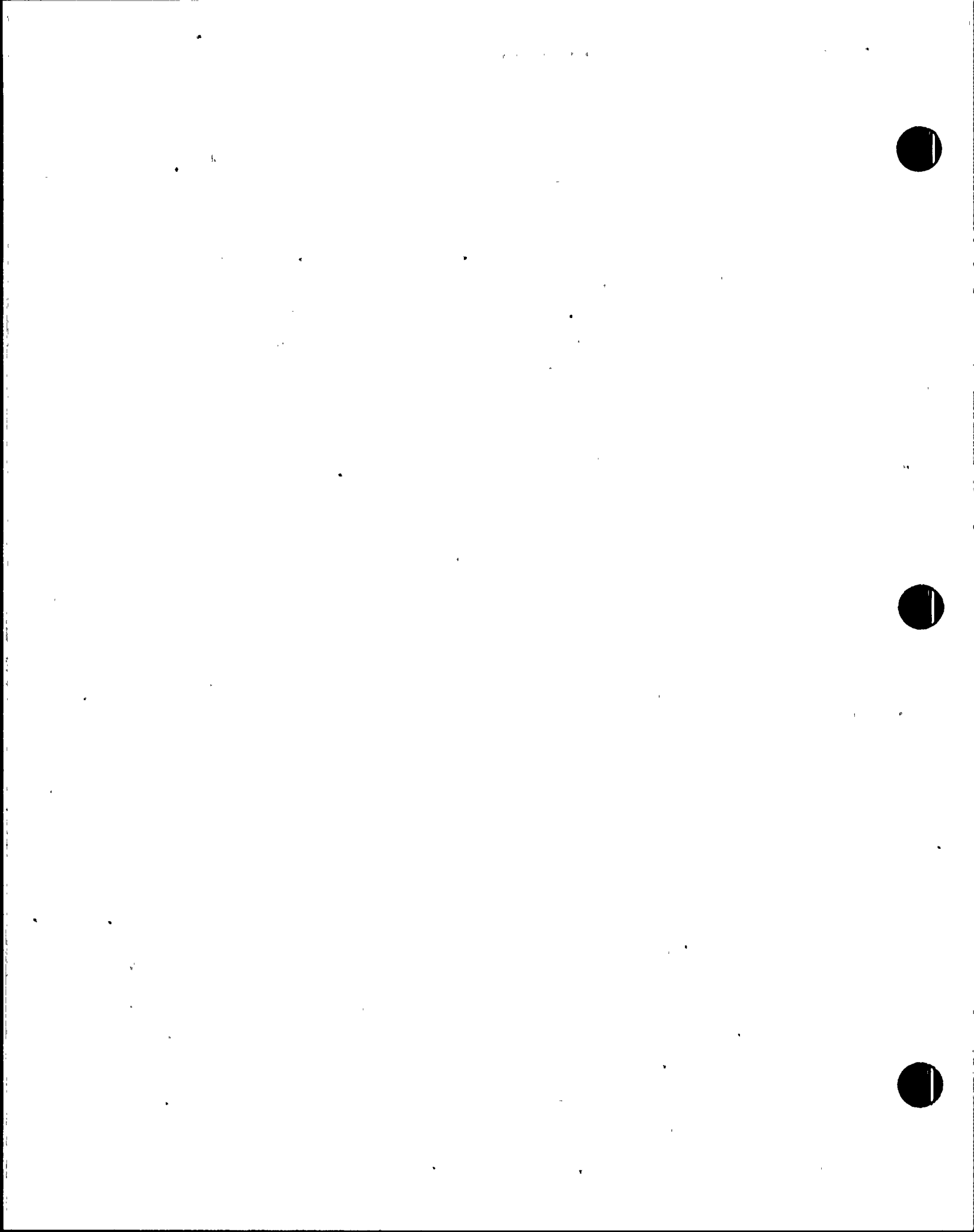




INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CHEMICAL AND VOLUME CONTROL										P & ID 13-M-CHS-002			PAGE 25 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
UV505	F14	2	A	1"	GL	AO	0	C	FST FT VPI AJLT	CS CS RF RF	5s	VRR-18	NOTE 9	
UV506	G14	2	A	1"	GL	AO	0	C	FST FT VPI AJLT	CS CS RF RF	5s	VRR-18	NOTE 9	
UV510	E12	3	B	3"	DIA	AO							NOTE 1	
UV512	E8	3	B	3"	DIA	AO							NOTE 1	
UV514	B10	3	B	3"	GL	MO							NOTE 1	
UV527	B8	3	B	3"	GA	AO							NOTE 1	
PSV115	C6	2	C	3"	PSV	SA	C	0	PSVT				NOTE 2	
PSV199	H15	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	







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SYSTEM CONTAINMENT PURGE									P & ID 13-M-CPS-001			PAGE 28 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV2A	D6	2	A	42"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	10s	VRR-23	NOTES 6, 9
UV2B	E3	2	A	42"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	10s	VRR-23	NOTES 6, 9
UV3A	D5	2	A	42"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	10s	VRR-23	NOTES 6, 9
UV3B	E2	2	A	42"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	10s	VRR-23	NOTES 6, 9
UV4A	D6	2	A	8"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	5s		NOTES 6, 9
UV4B	D3	2	A	8"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	5s		NOTES 6, 9
UV5A	D5	2	A	8"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	5s		NOTES 6, 9
UV5B	D2	2	A	8"	BTF	MO	C	C	FST VPI AJLT	CS RF RF	5s		NOTES 6, 9



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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM CONDENSATE STORAGE AND TRANSFER										P & ID 13-M-CTS-001			PAGE 29 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V014	D4	3	B	8"	GA	MAN	0	0	NA				NOTE 3	
V015	D4	3	B	8"	GA	MAN	0	0	NA				NOTE 3	
V016	C4	3	C	3"	CK	SA	C	0	FST	OP				
V017	C4	3	B	3"	GA	MAN	0	0	NA				NOTE 3	
V018	C3	3	B	3"	GA	MAN	C	C	NA				NOTE 3	
V019	B3	3	B	3"	GA	MAN	C	C	NA				NOTE 3	
V020	A4	3	C	3"	CK	SA	C	0	FST	OP				
V021	A4	3	B	3"	GA	MAN	0	0	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES

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SYSTEM CONDENSATE STORAGE AND TRANSFER										P & ID 13-M-CTS-001			PAGE 30 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V022	A6	3	B	3"	GA	MAN	0	0	NA				NOTE 3	
V023	C6	3	B	3"	GA	MAN	0	0	NA				NOTE 3	
V028	C4	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V029	B4	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V033	C4	3	B	3"	GL	MAN	C	C	NA				NOTE 3	
V037	C4	3	C	3"	CK	SA	C	C	NA				NOTE 3	
V038	B4	3	C	3"	CK	SA	C	C	NA				NOTE 3	
V042	B4	3	B	3"	GL	MAN	C	C	NA				NOTE 3	





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SYSTEM DIESEL FUEL OIL AND TRANSFER										P & ID 13-M-DFS-001			PAGE 32 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V003	H6	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V007	G7	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V008	G7	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V009	G8	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V012	D6	3	C	2"	CK	SA	C	0	FST	OP				
V013	D6	3	B	2"	GL	MAN	0	0	NA				NOTE 3	
V014	D6	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V015	D5	3	B	2"	GA	MAN	C	C	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM DIESEL FUEL OIL AND TRANSFER										P & ID 13-M-DFS-001			PAGE 33 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V018	D2	3	B	2"	GL	MAN	0	0	NA				NOTE 3	
V019	D2	3	C	2"	CK	SA	C	0	FST	OP				
V020	D2	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V021	D2	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V028	G4	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V029	G5	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V030	G4	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V032	H2	3	B	2"	GA	MAN	0	0	NA				NOTE 3	



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SYSTEM DIESEL GENERATOR										P & ID 13-M-DGS-001			PAGE 35 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V001	F6	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V003	F7	3	C	2"	CK	SA	O/C	C	FST	OP				
V004	F7	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V006	E7	3	C	2"	CK	SA	C	0	FST	OP				
V007	F8	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V010	F3	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V012	F3	3	C	2"	CK	SA	O/C	C	FST	OP				
V013	F3	3	B	2"	GA	SA	0	0	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES

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SYSTEM DIESEL GENERATOR										P & ID 13-M-DGS-001			PAGE 36 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V015	E3	3	C	2"	CK	SA	C	0	Fst	OP				
V016	F4	3	B	2"	GA	MAN	C	C	NA				NOTE 3	
V024	E7	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V025	E4	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V054	F8	3	B	1 1/2"	GA	MAN	C	C	NA				NOTE 3	
V055	F4	3	B	1 1/2"	GA	MAN	C	C	NA				NOTE 3	
V063	E6	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V064	E2	3	B	1"	GL	MAN	C	C	NA				NOTE 3	



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SYSTEM DIESEL GENERATOR										P & ID 13-M-DGS-001			PAGE 37 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V066	B7	3	C	1"	CK	SA	O/C	C	FST	OP				
V067	B7	3	C	1"	CK	SA	O/C	C	FST	OP				
V068	B3	3	C	1"	CK	SA	O/C	C	FST	OP				
V069	B3	3	C	1"	CK	SA	O/C	C	FST	OP				
V384	B7	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V394	B7	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V484	B3	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V494	B3	3	B	1"	GA	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
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SYSTEM										P & ID			PAGE	
DIESEL GENERATOR										13-M-DGS-001			38 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV9	B6	3	B	3"	BTF	MAN	0	0	NA				NOTE 3	
HCV10	B2	3	B	3"	BTF	MAN	0	0	NA				NOTE 3	
HCV11	B6	3	B	3"	BTF	MAN	0	0	NA				NOTE 3	
HCV12	B2	3	B	3"	BTF	MAN	0	0	NA				NOTE 3	
UV1	F6	3	B	2"	GA	SOL							NOTE 1	
UV2	F2	3	B	2"	GA	SOL							NOTE 1	
PSV5	C6	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV6	C3	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	





INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

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SYSTEM DIESEL GENERATOR (LUBE OIL)										P & ID 13-M-DGS-003			PAGE 40 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V339	E8	3	C	1 1/2"	CK	SA	O/C	0					NOTE 11	
V355	C7	3	C	6"	CK	SA	O/C	0					NOTE 11	
V356	E6	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V357	E6	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V358	D6	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V359	D6	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V362	C7	3	B	3"	BA	MAN	0	0	NA				NOTE 3	
V363	C6	3	B	3"	BA	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM DIESEL GENERATOR (LUBE OIL)										P & ID 13-M-DGS-003			PAGE 41 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V364	C6	3	C	3"	CK	SA	O/C	0					NOTE 11	
V369	D6	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V370	D5	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V371	D5	3	B	6"	BA	MAN	C	C	NA				NOTE 3	
V380	F8	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	
V439	E4	3	C	1 1/2"	CK	SA	O/C	0					NOTE 11	
V455	C4	3	C	6"	CK	SA	O/C	0					NOTE 11	
V456	E2	3	B	6"	BA	MAN	0	0	NA				NOTE 3	

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM DIESEL GENERATOR (LUBE OIL)										P & ID 13-M-DGS-003			PAGE 42 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V457	E2	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V458	D2	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V459	D2	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V462	C3	3	B	3"	BA	MAN	0	0	NA				NOTE 3	
V463	C2	3	B	3"	BA	MAN	0	0	NA				NOTE 3	
V464	C2	3	C	3"	CK	SA	0/C	0					NOTE 11	
V469	D2	3	B	6"	BA	MAN	0	0	NA				NOTE 3	
V470	D2	3	B	6"	BA	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM DIESEL GENERATOR (LUBE OIL)										P & ID 13-M-DGS-003			PAGE 43 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V471	D2	3	B	6"	BA	MAN	C	C	NA				NOTE 3	
V480	F4	3	B	1 1/2"	TW	MAN	O	O	NA				NOTE 3	
TCV97	C5	3	B	6"	TW	SA							NOTE 1	
TCV98	C1	3	B	6"	TW	SA							NOTE 1	
PCV67	F7	3	B	1 1/2"	PCV	SA							NOTE 1	
PCV68	F4	3	B	1 1/2"	PCV	SA							NOTE 1	
PSV81	D5	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV82	D5	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	









INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM

DIESEL GENERATOR (FUEL OIL)

P & ID

13-M-DGS-004

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V332	E7	3	C	1"	CK	SA	C	0					NOTE 11
V335	F6	3	B	1"	TW	MAN	0	0	NA				NOTE 3
V337	C6	3	B	1"	TW	MAN	0	0	NA				NOTE 3
V432	E3	3	C	1"	CK	SA	C	0					NOTE 11
V435	F3	3	B	1"	TW	MAN	0	0	NA				NOTE 3
V437	C3	3	B	1"	TW	MAN	0	0	NA				NOTE 3
V520	G7	3	C	1"	CK	SA	C	0					NOTE 11
V620	G3	3	C	1"	CK	SA	C	0					NOTE 11





INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM

DIESEL GENERATOR (STARTING AIR)

P & ID

13-M-DGS-006

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V396	G7	3	C	3"	CK	SA	C	0					NOTE 11
V397	C7	3	C	3"	CK	SA	C	0					NOTE 11
V496	G3	3	C	3"	CK	SA	C	0					NOTE 11
V497	C3	3	C	3"	CK	SA	C	0					NOTE 11
FV13	C6	3	B	3"	GA	A0	C	0					NOTE 11
FV14	C3	3	B	3"	GA	A0	C	0					NOTE 11
FV15	G6	3	B	3"	GA	A0	C	0					NOTE 11
FV16	G3	3	B	3"	GA	A0	C	0					NOTE 11







INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 52 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V001	F7	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V002	B8	3	B	6"	GA	MAN	0	0	NA				NOTE 3	
V004	F6	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V005	H7	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V006	H6	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V007	H5	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V008	E7	3	B	4"	GA	MAN	0	0	NA				NOTE 3	
V009	E5	3	B	2"	GA	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 53 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V011	B5	3	B	6"	GA	MAN	0	0	NA				NOTE 3	
V013	F7	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V015	F6	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V016	H7	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V017	H6	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V018	H5	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V019	E7	3	B	4"	GA	MAN	0	0	NA				NOTE 3	
V020	E5	3	B	2"	GA	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V031	C7	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V032	C3	3	B	1"	GA	MAN	0	0	NA				NOTE 3	
V038	D8	3	C	1 1/2"	CK	SA	0/C	C	FST	OP				
V039	D7	3	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V040	D7	3	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V041	C8	3	C	1 1/2"	CK	SA	C	0	FST	OP				
V043	C7	3	C	1"	CK	SA	0/C	C	FST	OP				
V045	F3	3	B	2 1/2"	GA	MAN	0	0	NA				NOTE 3	

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 55 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V046	F3	3	B	2 1/2"	GA	MAN	0	0	NA				NOTE 3	
V047	F2	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V048	H3	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V049	H3	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V050	H2	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V051	H2	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V052	H2	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V053	H1	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V054	H1	3	B	1 1/2"	GA	MAN	0	0	NA				NOTE 3	
V055	F1	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V056	F1	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
(CT) V056	C8	3	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V057	E3	3	B	4"	GA	MAN	0	0	NA				NOTE 3	
(CT) V057	C4	3	B	1 1/2"	GL	MAN	0	0	NA				NOTE 3	
V058	E3	3	B	4"	GA	MAN	0	0	NA				NOTE 3	
V060	D4	3	C	1 1/2"	CK	SA	O/C	C	FST	OP			NOTE 3	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 57 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V061	D3	3	B	1 1/2"	GL	MAN	O	O	NA				NOTE 3	
V062	D3	3	B	1 1/2"	GL	MAN	O	O	NA				NOTE 3	
V064	C3	3	C	1"	CK	SA	O/C	C	FST	OP				
V065	B4	3	B	6"	GA	MAN	O	O	NA				NOTE 3	
V068	B1	3	B	6"	GA	MAN	O	O	NA				NOTE 3	
V070	E1	3	B	2"	GA	MAN	O	O	NA				NOTE 3	
V071	E1	3	B	2"	GA	MAN	O	O	NA				NOTE 3	
V072	C4	3	C	1 1/2"	CK	SA	C	O	FST	OP				



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 58 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V098	B7	3	B	1"	GA	MAN	C	C	NA				NOTE 3	
V099	B6	3	B	1"	GA	MAN	C	C	NA				NOTE 3	
V101	B3	3	B	1"	GA	MAN	C	C	NA				NOTE 3	
V102	B2	3	B	1"	GA	MAN	C	C	NA				NOTE 3	
V120	E6	3	B	2"	GA	MAN	O	O	NA				NOTE 3	
V201	F5	3	B	3"	GA	MAN	O	O	NA				NOTE 3	
V202	F5	3	B	3"	GA	MAN	O	O	NA				NOTE 3	
V209	E5	3	B	2"	GA	MAN	O	O	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 59 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V213	E1	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V214	E2	3	B	2"	GA	MAN	0	0	NA				NOTE 3	
V220	B6	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
V222	B2	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
V228	E1	3	B	2"	GL	MAN	0	0	NA				NOTE 3	
V229	E2	3	B	2"	GL	MAN	0	0	NA				NOTE 3	
V230	E5	3	B	2"	GL	MAN	0	0	NA				NOTE 3	
V231	E5	3	B	2"	GL	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 60 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V524	E4	3	B	3"	GL	MAN	0	0	NA				NOTE 3	
V525	E7	3	B	3"	GL	MAN	0	0	NA				NOTE 3	
LV15	D7	3	B	1 1/2"	GL	SOL							NOTE 1	
LV16	D3	3	B	1 1/2"	GL	SPL							NOTE 1	
TV29	D7	3	B	2 1/2"	TW	HY							NOTE 1	
TV30	D3	3	B	2 1/2"	TW	HY							NOTE 1	
HCV35	D5	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV36	D1	3	B	1"	TW	MAN	0	0	NA				NOTE 3	

INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 61 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV41	F7	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV42	F2	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV48	F3	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	
HCV53	F6	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV54	F1	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV59	H5	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV60	G1	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV65	G6	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 62 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV66	G2	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	
HCV71	G7	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV72	G3	3	B	1"	TW	MAN	0	0	NA				NOTE 3	
HCV115	F5	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	
HCV118	D2	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	
HCV119	D6	3	B	1 1/2"	TW	MAN	0	0	NA				NOTE 3	
PSV75	D7	3	C	1 1/2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV76	D3	3	C	1 1/2"	PSV	SA	C	0	PSVT				NOTE 2	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL CHILLED WATER										P & ID 13-M-ECS-001			PAGE 63 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV95	E5	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV96	E1	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV97	E7	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV98	E3	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV99	F7	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV100	F2	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV101	F6	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV102	F1	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV103	H7	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV104	H4	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV105	H6	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV106	H2	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV107	H5	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV108	H1	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV109	F4	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV117	F5	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL COOLING WATER										P & ID 13-M-EWS-001			PAGE 66 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V005	F5	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V021	C6	3	B	6"	GA	MAN	O	O	NA				NOTE 3	
V022	C7	3	B	6"	GL	MAN	O	O	NA				NOTE 3	
V029	H3	3	C	2"	CK	SA	O/C	C	FST	OP				
V031	F2	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V039	F1	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V043	C1	3	B	6"	GA	MAN	O	O	NA				NOTE 3	
V044	C3	3	B	6"	GL	MAN	O	O	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL COOLING WATER										P & ID 13-M-EWS-001			PAGE 67 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V051	F6	3	B	1"	GL	MAN	C	C	NA				NOTE 3	
V079	G7	3	C	2"	CK	SA	C	O	FST	OP				
V080	G3	3	C	2"	CK	SA	C	O	FST	OP				
V095	G6	3	B	1"	GL	MAN	O	O	NA				NOTE 3	
V096	G2	3	B	1"	GL	MAN	O	O	NA				NOTE 3	
V103	H7	3	C	2"	CK	SA	O/C	C	FST	OP				
V104	H7	3	B	2"	GL	MAN	O	O	NA				NOTE 3	
V105	H6	3	B	2"	GL	MAN	O	O	NA				NOTE 3	





INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL COOLING WATER										P & ID 13-M-EWS-001		PAGE 69 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV65	C8	3	B	14"	BTF	MO	C	O/C	FST VPI	RF RF	120s	VRR-2	NOTES 6, 12
UV145	C4	3	B	14"	BTF	MO	C	O/C	FST VPI	RF RF	120s	VRR-2	NOTES 6, 12
HCV5	D6	3	B	20"	BTF	MAN	O	O	NA				NOTE 3
HCV6	D2	3	B	20"	BTF	MAN	O	O	NA				NOTE 3
HCV41	B6	3	B	20"	BTF	MAN	O	O	NA				NOTE 3
HCV42	B2	3	B	20"	BTF	MAN	O	O	NA				NOTE 3
HCV53	B7	3	B	20"	BTF	MAN	O	O	NA				NOTE 3
HCV54	B3	3	B	20"	BTF	MAN	O	O	NA				NOTE 3



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
ESSENTIAL COOLING WATER										13-M-EWS-001			70 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV66	C6	3	B	14"	BTF	MAN	C	C	NA				NOTE 3	
HCV67	D7	3	B	10"	BTF	MAN	C	C	NA				NOTE 3	
HCV68	D4	3	B	10"	BTF	MAN	C	C	NA				NOTE 3	
HCV71	E7	3	B	30"	BTF	MAN	O	O	NA				NOTE 3	
HCV72	E3	3	B	30"	BTF	MAN	O	O	NA				NOTE 3	
HCV133	C6	3	B	10"	BTF	MAN	C	C	NA				NOTE 3	
HCV134	C2	3	B	10"	BTF	MAN	C	C	NA				NOTE 3	
HCV135	D5	3	B	20"	BTF	MAN	O	O	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM ESSENTIAL COOLING WATER										P & ID 13-M-EWS-001			PAGE 71 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV136	D1	3	B	20"	BTF	MAN	O	O	NA				NOTE 3	
HCV146	C2	3	B	14"	BTF	MAN	C	C	NA				NOTE 3	
PSV47	B6	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV48	B2	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV61	D7	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV62	D3	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV79	E7	3	C	1"	PSV	SA	C	C	PSVT				NOTE 2	
PSV80	E3	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	













INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID		PAGE	
CONTAINMENT HYDROGEN CONTROL										13-M-HPS-001		77 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V001	E4	2	B	2"	GL	MAN	C	C	NA				NOTE 3
V002	F7	2	AC	2"	CK	SA	C	O/C	FST AJLT	RF RF		VRR-19	NOTE 9
V003	D4	2	B	2"	GL	MAN	C	C	NA				NOTE 3
V004	C7	2	AC	2"	CK	SA	C	O/C	FST AJLT	RF RF		VRR-19	NOTE 9
V005	E5	2	B	2"	GL	MAN	C	C	NA				NOTE 3
V006	D5	2	B	2"	GL	MAN	C	C	NA				NOTE 3
HV7A	F5	2	A	1"	GL	SOL	C	O/C	FST FT VPI AJLT	OP OP RF RF	1s		NOTE 9
HV7B	G6	2	A	1"	GL	SOL	C	O/C	FST FT VPI AJLT	OP OP RF RF	1s		NOTE 9



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM CONTAINMENT HYDROGEN CONTROL									P & ID 13-M-HPS-001			PAGE 78 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
HV8A	C5	2	A	1"	GL	SOL	C	O/C	FST FT VPI AJLT	OP RF RF	1s		NOTE 9
HV8B	B6	2	A	1"	GL	SOL	C	O/C	FST FT VPI AJLT	OP RF RF	1s		NOTE 9
UV1	E7	2	A	2"	GL	MO	C	O/C	FST VPI AJLT	OP RF RF	12s		NOTE 6, 9
UV2	D7	2	A	2"	GL	MO	C	O/C	FST VPI AJLT	OP RF RF	12s		NOTE 6, 9
UV3	E6	2	A	2"	GL	MO	C	O/C	FST VPI AJLT	OP RF RF	12s		NOTE 6, 9
UV4	D6	2	A	2"	GL	MO	C	O/C	FST VPI AJLT	OP RF RF	12s		NOTE 6, 9
UV5	F6	2	A	2"	GL	MO	C	O/C	FST VPI AJLT	OP RF RF	12s		NOTE 6, 9
UV6	C6	2	A	2"	GL	MO	C	O/C	FST VPI AJLT	OP RF RF	12s		NOTE 6, 9



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM NUCLEAR COOLING WATER										P & ID 13-M-NCS-002			PAGE 82 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV244	C4	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV245	B4	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV258	C4	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV259	B4	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV262	E1	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV263	D1	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV264	D2	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	
HCV265	C2	3	B	10"	BTF	MAN	0	0	NA				NOTE 3	

INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM FUEL POOL COOLING AND CLEANUP										P & ID 13-M-PCS-001			PAGE 85 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V011	D16	3	B	10"	DIA	MAN	O	O	NA				NOTE 3	
V013	D15	3	C	8"	CK	SA	C	O	FST	OP				
V014	D14	3	B	8"	DIA	MAN	O	O	NA				NOTE 3	
V015	D14	3	B	8"	DIA	MAN	O	O	NA				NOTE 3	
V017	B15	3	C	8"	CK	SA	C	O	FST	OP				
V018	B14	3	B	8"	DIA	MAN	O	O	NA				NOTE 3	
V019	B14	3	B	8"	DIA	MAN	O	O	NA				NOTE 3	
V026	C12	3	B	8"	DIA	MAN	O	O	NA				NOTE 3	



INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM FUEL POOL COOLING AND CLEANUP										P & ID 13-M-PCS-001			PAGE 86 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V027	E12	3	B	8"	DIA	MAN	O	O	NA				NOTE 3	
V028	C14	3	B	8"	DIA	MAN	C	C	NA				NOTE 3	
V036	D10	2	B	4"	DIA	MAN	C	C	NA				NOTE 3	
V069	B16	3	B	10"	DIA	MAN	O	O	NA				NOTE 3	
V070	E10	2	A	4"	GA	MAN	C	C	AJLT	RF			NOTE 8	
V071	E9	2	A	4"	GA	MAN	C	C	AJLT	RF			NOTE 8	
V075	H6	2	A	4"	GA	MAN	C	C	AJLT	RF			NOTE 8	
V076	H5	2	A	4"	GA	MAN	C	C	AJLT	RF			NOTE 8	







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ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM REACTOR COOLANT										P & ID 13-M-RCS-001			PAGE 89 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V210	B13	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V211	C5	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V212	G6	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V213	C7	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V236	G7	1	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V237	F7	1	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V238	G14	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3	
V240	F6	1	B	3"	GA	MAN	0	0	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM REACTOR COOLANT										P & ID 13-M-RCS-001			PAGE 90 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V241	F7	1	B	3"	GA	MAN	O	O	NA				NOTE 3	
V242	G8	1	B	3"	GA	MAN	O	O	NA				NOTE 3	
V243	G8	1	B	3"	GA	MAN	O	O	NA				NOTE 3	
V244	H9	1	C	4"	CK	SA	O/C	C	FST	OP			NOTE 10	
HV101	G15	2	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	
HV102	G15	2	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	
HV103	G14	2	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	
HV105	G15	2	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM REACTOR COOLANT									P & ID 13-M-RCS-001			PAGE 91 of 146		
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HV106	F15	2	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	
HV108	G13	1	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	
HV109	G14	1	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12	
HV403	B6	2	B	3/4"	GL	SOL	O/C	C	FST FT VPI	OP OP RF	10s		NOTE 12	
PV100E	G6	1	B	3"	GL	AO							NOTE 1	
PV100F	G6	1	B	3"	GL	AO							NOTE 1	
PSV200	F12	1	C	6"	PSV	SA	C	O	PSVT				NOTE 2	
PSV201	F12	1	C	6"	PSV	SA	C	O	PSVT				NOTE 2	





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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM		REACTOR COOLANT										P & ID		PAGE	
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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS		
V344	D10	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3		
V345	H10	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3		
V346	H2	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3		
V347	D2	2	B	3/4"	GL	MAN	0	0	NA				NOTE 3		
HV430	D11	2	B	1"	GL	MO	0	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12		
HV431	H11	2	B	1"	GL	MO	0	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12		
HV432	H4	2	B	1"	GL	MO	0	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12		
HV433	D4	2	B	1"	GL	MO	0	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12		



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM REACTOR COOLANT										P & ID 13-M-RCS-002			PAGE 94 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HV446	B12	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV447	E12	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV448	E5	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV449	B5	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV450	B10	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV451	E10	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV452	E3	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	
HV453	B3	1	B	1"	GL	MO	O	C	FST VPI	CS RF	60s	VRR-24	NOTES 6, 12	





INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V043	E12	3	C	6"	CK	SA	C	O	FST	OP				
V044	C12	3	C	6"	CK	SA	C	O	FST	OP				
V346	G12	3	AC	1"	CK	SA	O/C	C	LT FST	RF OP				
V348	F12	3	AC	1"	CK	SA	O/C	C	LT FST	RF OP				
V357	A12	3	AC	1"	CK	SA	O/C	C	LT FST	RF OP				
V358	A12	3	AC	1"	CK	SA	O/C	C	LT FST	RF OP				
HV178	E14	2	B	12"	GL	A0	C	O/C	FST FT VPI	CS CS RF	0-120s C-40s	VRR-20	NOTES 5, 12	
HV179	A14	2	B	12"	GL	A0	C	O/C	FST FT VPI	CS CS RF	0-120s C-40s	VRR-20	NOTES 5, 12	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM MAIN STEAM									P & ID 13-M-SGS-001			PAGE 97 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
HV184	F14	2	B	12"	GL	A0	C	O/C	FST FT VPI	CS CS RF	0-120s C-40s	VRR-20	NOTES 5, 12
HV185	C14	2	B	12"	GL	A0	C	O/C	FST FT VPI	CS CS RF	0-120s C-40s	VRR-20	NOTES 5, 12
UV134	E12	2	B	6"	GA	M0	C	O/C	FST VPI	OP RF	10s		NOTES 6, 12
UV134A	E12	2	B	1"	GL	SOL	C	O/C	FT FST VPI	OP OP RF	10s		NOTES 6, 12
UV138	C12	2	B	6"	GA	M0	C	O/C	FST VPI	OP RF	10s		NOTES 6, 12
UV138A	C12	2	B	1"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	2s		NOTE 12
UV169	F11	2	B	4"	GA	A0	C	O/C	FST FT VPI	OP OP RF	5s		
UV170	G10	2	B	28"	GA	HY	O	C	PST FST FT VPI	OP CS CS RF	5s		

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
UV171	D10	2	B	28"	GA	HY	O	C	PST FST FT VPI	OP CS CS RF	5s			
UV180	E10	2	B	28"	GA	HY	O	C	PST FST FT VPI	OP CS CS RF	5s			
UV181	B10	2	B	28"	GA	HY	O	C	PST FST FT VPI	OP CS CS RF	5s			
UV183	B11	2	B	4"	GA	A0	C	O/C	FST FT VPI	OP OP RF	5s			
UV1133	D13	2	B	1"	GL	SOL	O	C	FST FT VPI	OP OP RF	1.5s			
UV1134	C13	2	B	1"	GL	SOL	O	C	FST FT VPI	OP OP RF	1.5s			
UV1135A	G10	2	B	1"	GL	SOL	O	C	FST FT VPI	OP OP RF	1.5s			
UV1135B	E10	2	B	1"	GL	SOL	O	C	FST FT VPI	OP OP RF	1.5s			



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID			PAGE	
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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
UV1136A	C10	2	B	1"	GL	SOL	O	C	FST FT VPI	OP OP RF	1.5s			
UV1136B	B11	2	B	1"	GL	SOL	O	C	FST FT VPI	OP OP RF	1.5s			
PSV302	A11	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV305	A11	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV309	H12	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV312	H11	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV316	G14	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	
PSV319	G13	3	C	1"	PSV	SA	C	O	PSVT				NOTE 2	



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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM MAIN STEAM										P & ID 13-M-SGS-001			PAGE 100 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV322	A14	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV325	A13	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV554	D12	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV555	D13	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV556	D14	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV557	D14	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV558	B14	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV559	BT4	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	

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ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM MAIN STEAM										P & ID 13-M-SGS-001			PAGE 101 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV560	B13	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV561	B12	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV572	H13	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV573	H13	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV574	H14	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV575	H15	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV576	F14	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	
PSV577	F14	2	C	6"	PSV	SA	C	0	PSVT				NOTE 2	





INSERVICE TESTING PROGRAM
ISI CLASS 1, 2 & 3 VALVES
PALO VERDE NUCLEAR GENERATING STATION

SYSTEM MAIN STEAM										P & ID 13-M-SGS-002			PAGE 103 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V003	E10	2	C	24"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V005	A10	2	C	24"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V006	A10	2	C	24"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V007	E10	2	C	24"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V023	F4	2	B	3"	GL	MAN	C	C	NA				NOTE 3	
V029	B4	2	B	3"	GL	MAN	C	C	NA				NOTE 3	
V039	B6	2	B	1/2"	GL	MAN	O	O	NA				NOTE 3	
V041	F6	2	B	1/2"	GL	MAN	O	O	NA				NOTE 3	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V289	E4	2	B	6"	GA	MAN	0	0	NA				NOTE 3
V290	A4	2	B	6"	GA	MAN	0	0	NA				NOTE 3
V291	G11	2	B	1"	GL	MAN	0	0	NA				NOTE 3
V292	G11	2	B	1"	GL	MAN	0	0	NA				NOTE 3
V295	E6	2	B	1/2"	GL	MAN	0	0	NA				NOTE 3
V296	B6	2	B	1/2"	GL	MAN	0	0	NA				NOTE 3
V423	F7	2	B	1/2"	GL	MAN	0	0	NA				NOTE 3
V428	C7	2	B	1/2"	GL	MAN	0	0	NA				NOTE 3



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SYSTEM MAIN STEAM										P & ID 13-M-SGS-002			PAGE 105 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V524	C11	2	C	3/8"	CK	SA	C	C	NA				NOTE 3	
V525	F11	2	C	3/8"	CK	SA	C	C	NA				NOTE 3	
V642	G11	2	C	8"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V652	G10	2	C	8"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V653	C10	2	C	8"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
V693	C11	2	C	8"	CK	SA	O	C	FST	RF		VRR-16	NOTE 5	
HV41	E5	2	B	6"	GA	MO	O	O	NA				NOTE 3	
HV42	B5	2	B	6"	GA	MO	O	O	NA				NOTE 3	



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
HV43	E5	2	B	6"	GA	MO	C	C	NA				NOTE 3
HV44	A5	2	B	6"	GA	MO	C	C	NA				NOTE 3
HV200	F11	2	B	3/8"	GA	SOL	C	C	FST FT VPI	OP OP RF	1s		
HV201	C11	2	B	3/8"	GA	SOL	C	C	FST FT VPI	OP OP RF	1s		
UV130	G12	2	B	8"	GA	A0	O	C	FST FT VPI	CS CS RF	5s	VRR-8	
UV132	E12	2	B	24"	GA	HY	O	C	PST FST FT VPI	OP CS CS RF	5s		
UV135	C12	2	B	8"	GA	A0	O	C	FST FT VPI	CS CS RF	5s	VRR-8	
UV137	A12	2	B	24"	GA	HY	O	C	PST FST FT VPI	OP CS CS RF	5s		

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SYSTEM MAIN STEAM									P & ID 13-M-SGS-002			PAGE 107 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV172	G12	2	B	8"	GA	AO	0	C	FST FT VPI	CS CS RF	5s	VRR-8	
UV174	E12	2	B	24"	GA	HY	0	C	PST FST FT VPI	OP CS CS RF	5s		
UV175	C12	2	B	8"	GA	AO	0	C	FST FT VPI	CS CS RF	5s	VRR-8	
UV177	A12	2	B	24"	GA	HY	0	C	PST FST FT VPI	OP CS CS RF	5s		
UV204	G3	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV211	G3	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV219	G3	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV220	G6	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		



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SYSTEM MAIN STEAM									P & ID 13-M-SGS-002			PAGE 108 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV221	G5	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV222	C3	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV223	C3	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV224	D3	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV225	D2	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV226	C6	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV227	C5	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		
UV228	G2	2	B	1/2"	GL	SOL	0	C	FST FT VPI	OP OP RF	5s		



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V104	C13	2	B	18"	GA	MAN	O	O	NA				NOTE 3
V105	G13	2	B	18"	GA	MAN	O	O	NA				NOTE 3
V120	C12	2	C	1/2"	CK	SA	C	O	FST	OP			
V128	D13	2	B	1"	GL	MAN	C	C	NA				NOTE 3
V130	E12	2	C	1/2"	CK	SA	C	O	FST	OP			
V148	D13	2	B	1/2"	GL	MAN	C	C	NA				NOTE 3
V152	F14	2	B	1"	GL	MAN	C	C	NA				NOTE 3
V157	G13	2	B	18"	CK	SA	C	O	FST	OP			



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V158	C13	2	C	18"	CK	SA	C	O	FST	OP			
V184	G13	2	B	16"	GA	MAN	C	C	NA				NOTE 3
V185	C13	2	B	16"	GA	MAN	C	C	NA				NOTE 3
V200	B12	2	C	20"	CK	SA	C	O	FST	OP			
V201	F12	2	C	20"	CK	SA	C	O	FST	OP			
V205	G14	2	C	24"	CK	SA	C	O	PST	RF	VRR-3		NOTES 4, 5
V206	A14	2	C	24"	CK	SA	C	O	PST	RF	VRR-3		NOTES 4, 5
V252	F16	2	B	1/2"	GL	MAN	C	C	NA				NOTE 3



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V256	H15	2	B	12"	GA	MAN	C	C	NA				NOTE 3	
V298	D5	2	B	6"	GA	MAN	C	C	NA				NOTE 3	
V400	D10	2	B	2"	GL	MAN	C	C	NA				NOTE 3	
V402	A13	2	B	10"	GA	MAN	O	O	NA				NOTE 3	
V404	F5	2	C	4"	CK	SA	C	O	FST	RF		VRR-7	NOTE 5	
V405	B5	2	C	4"	CK	SA	C	O	FST	RF		VRR-7	NOTE 5	
V418	B15	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V419	H15	2	B	3"	GA	MAN	C	C	NA				NOTE 3	



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V420	D1	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V421	H1	2	B	3"	GA	MAN	C	C	NA				NOTE 3	
V424	F10	2	C	2"	CK	SA	C	O	FST	OP				
V426	A10	2	C	2"	CK	SA	C	O	FST	OP				
V427	B7	2	B	3/4"	GL	MAN	O	O	NA				NOTE 3	
V429	H14	2	B	1/2"	GL	MAN	O	O	NA				NOTE 3	
V434	F9	2	C	10"	CK	SA	C	O	FST	OP				
V435	F8	2	B	10"	GL	MAN	O	O	NA				NOTE 3	



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V442	B15	2	B	12"	GA	MAN	C	C	NA				NOTE 3	
V445	B14	2	B	1/2"	GL	MAN	O	O	NA				NOTE 3	
V446	B9	2	C	10"	CK	SA	C	O	FST	OP				
V447	B8	2	B	10"	GA	MAN	O	O	NA				NOTE 3	
V448	B10	2	C	2"	CK	SA	C	O	FST	OP				
V451	G10	2	C	2"	CK	SA	C	O	FST	OP				
V455	C4	2	B	14"	GA	MAN	C	C	NA				NOTE 3	
V458	G5	2	B	14"	GA	MAN	C	C	NA				NOTE 3	

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V459	D6	2	B	4"	GL	MAN	C	C	NA				NOTE 3	
V460	E5	2	B	6"	GA	MAN	C	C	NA				NOTE 3	
V463	D8	2	A	2"	GL	MAN	C	C	AJLT	RF			NOTE 8	
V464	D5	2	B	6"	GA	MAN	C	C	NA				NOTE 3	
V465	F7	2	B	3/4"	GL	MAN	O	O	NA				NOTE 3	
V470	E13	2	B	10"	GA	MAN	O	O	NA				NOTE 3	
V476	F4	2	B	4"	GA	MAN	O	O	NA				NOTE 3	
V478	B4	2	B	4"	GA	MAN	O	O	NA				NOTE 3	

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V484	C9	2	C	10"	CK	SA	C	O	FST	OP				
V485	H9	2	C	10"	CK	SA	C	O	FST	OP				
V486	G10	2	C	2"	CK	SA	C	O	FST	OP				
V487	G10	2	C	2"	CK	SA	C	O	FST	OP				
V508	F2	2	B	2"	GL	MAN	C	C	NA				NOTE 3	
V509	E2	2	B	2"	GL	MAN	C	C	NA				NOTE 3	
V811	F2	2	B	1"	GL	MAN	C	C	NA				NOTE 3	
V821	G2	2	B	1"	GL	MAN	C	C	NA				NOTE 3	

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V947	D11	2	B	2"	GL	MAN	O	O	NA				NOTE 3	
HV306	G4	2	B	10"	GL	MO	O	O/C	FST VPI	OP RF	60s		NOTES 6, 12	
HV307	B4	2	B	10"	GL	MO	O	O/C	FST VPI	OP RF	60s		NOTES 6, 12	
HV604	G3	2	B	3"	GA	MO	C	O	FST VPI	CS RF	60s	VRR-25	NOTES 6, 12	
HV609	C3	2	B	3"	GA	MO	C	O	FST VPI	CS RF	60s	VRR-25	NOTES 6, 12	
HV657	H3	2	B	16"	BTF	MO	C	O/C	FST VPI	OP RF	60s		NOTES 6, 12	
HV658	C3	2	B	16"	BTF	MO	C	O/C	FST VPI	OP RF	60s		NOTES 6, 12	
HV661	E11	2	B	1"	GL	AO	C	O	NA				NOTE 3	



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
HV678	H9	2	B	10"	BTF	MO	O	O/C	FST VPI	OP RF	60s		NOTES 6, 12
HV679	C9	2	B	10"	BTF	MO	O	O/C	FST VPI	OP RF	60s		NOTES 6, 12
HV683	F13	2	B	20"	GA	MO	O	C	FST VPI	CS RF	200s	VRR-26	NOTES 6, 12
HV684	H9	2	B	10"	GA	MO	O	O/C	FST VPI	OP RF	100s		NOTES 6, 12
HV685	G8	2	B	10"	GA	MO	C	O/C	FST VPI	OP RF	100s		NOTES 6, 12
HV686	H6	2	B	20"	GA	MO	C	O/C	FST VPI	OP RF	200s		NOTES 6, 12
HV687	G6	2	B	10"	GA	MO	O	O/C	FST VPI	OP RF	100s		NOTES 6, 12
HV688	G9	2	B	10"	GA	MO	C	O/C	FST VPI	OP RF	100s		NOTES 6, 12

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HV689	C9	2	B	10"	GA	MO	O	O/C	FST VPI	OP RF	100s		NOTES 6, 12	
HV692	B13	2	B	20"	GA	MO	O	C	FST VPI	CS RF	200s	VRR-26	NOTES 6, 12	
HV693	C9	2	B	10"	GA	MO	C	O/C	FST VPI	OP RF	100s		NOTES 6, 12	
HV694	B8	2	B	10"	GA	MO	O	O/C	FST VPI	OP RF	100s		NOTES 6, 12	
HV695	C6	2	B	10"	GA	MO	O	O/C	FST VPI	OP RF	100s		NOTES 6, 12	
HV696	C6	2	B	20"	GA	MO	C	O/C	FST VPI	OP RF	200s		NOTES 6, 12	
HV698	F3	2	B	4"	GA	MO	O	C	FST VPI	OP RF	60s		NOTES 6, 12	
HV699	B3	2	B	4"	GA	MO	O	C	FST VPI	OP RF	60s		NOTES 6, 12	



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV602	D15	2	B	1/2"	GL	SOL	C	O	FST FT VPI	OP OP RF	16s		NOTE 12
UV603	D15	2	B	1/2"	GL	SOL	C	O	FST FT VPI	OP OP RF	16s		NOTE 12
UV659	A6	2	B	4"	GL	SOL	O	C	FST FT VPI	OP OP RF	10s		NOTE 12
UV660	F6	2	B	4"	GL	SOL	O	C	FST FT VPI	OP OP RF	10s		NOTE 12
UV664	G10	2	B	2"	GL	MO	O	C	FST VPI	OP RF	20s		NOTE 6, 12
UV665	B10	2	B	2"	GL	MO	O	C	FST VPI	OP RF	20s		NOTE 6, 12
UV666	F10	2	B	2"	GL	MO	O	C	FST VPI	OP RF	20s		NOTES 6, 12
UV667	A10	2	B	2"	GL	MO	O	C	FST VPI	OP RF	20s		NOTES 6, 12

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UV668	B10	2	B	2"	GL	MO	O	C	FST VPI	OP RF	20s		NOTES 6, 12
UV669	G10	2	B	2"	GL	MO	O	C	FST VPI	OP RF	20s		NOTES 6, 12
UV671	C6	2	A	8"	GA	MO	C	O/C	FST VPI AJLT	OP RF RF	10s		NOTE 6, 9
UV672	G6	2	A	8"	GA	MO	C	O/C	FST VPI AJLT	OP RF RF	10s		NOTE 6, 9
UV673	G16	2	A	24"	BTF	MO	C	O/C	FST VPI AJLT	OP RF RF	20s		NOTE 6, 9
UV674	G14	2	A	24"	BTF	MO	C	O/C	FST VPI AJLT	OP RF RF	20s		NOTES 6, 9
UV675	A16	2	A	24"	BTF	MO	C	O/C	FST VPI AJLT	OP RF RF	20s		NOTES 6, 9
UV676	A14	2	A	24"	BTF	MO	C	O/C	FST VPI AJLT	OP RF RF	20s		NOTES 6, 9

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV680	C13	2	B	1/2"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	16s		NOTE 12
UV681	E13	2	B	1/2"	GL	SOL	C	O/C	FST FT VPI	OP OP RF	16s		NOTE 12
UV682	D10	2	A	2"	GL	A0	C	C	FST FT VPI	OP OP RF	5s		NOTE 9
UV708	G15	2	A	1/2"	GL	SOL	C	O/C	FST FT VPI A.I.L.T	OP OP RF RE	5s		NOTE 9
UV709	F7	2	B	1/2"	GL	SOL	O/C	C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12
UV710	A7	2	B	1/2"	GL	SOL	O/C	C	FST FT VPI	OP OP RF	0-6s C-10s		NOTE 12
PSV100	F15	2	C	1"	PSV	SA	C	O	PSVT				NOTE 2
PSV118	F15	2	C	1"	PSV	SA	C	O	PSVT				NOTE 2



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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV140	B15	2	AC	3/4"	PSV	SA	C	0	PSVT AJLT	RF	1.		NOTES 2, 9	
PSV141	B14	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV150	H15	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV151	G15	2	AC	3/4"	PSV	SA	C	0	PSVT AJLT	RF			NOTES 2, 9	
PSV159	D15	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV160	D15	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV161	H6	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV162	G4	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV178	D14	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV187	C14	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV191	D6	2	C	1 1/2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV192	C4	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV193	D6	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV194	H6	2	C	1 1/2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV250	F14	2	C	1"	PSV	SA	C	0	PSVT				NOTE 2	
PSV285	F9	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-001			PAGE 125 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV286	B9 :	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV287	C9	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV288	E5	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV289	G9	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV409	B2	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV417	F2	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV439	H2	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV449	D2	2	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	





INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-002		PAGE 127 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V113	F14	2	C	3"	CK	SA	C	0	FST	RF		VRR-7	NOTE 5
V114	F14	2	C	12"	CK	SA	C	0	FST	RF		VRR-4	NOTE 5
V123	F11	2	C	3"	CK	SA	C	0	FST	RF		VRR-7	NOTE 5
V124	F11	2	C	12"	CK	SA	C	0	FST	RF		VRR-4	NOTE 5
V133	F7	2	C	3"	CK	SA	C	0	FST	RF		VRR-7	NOTE 5
V134	F6	2	C	12"	CK	SA	C	0	FST	RF		VRR-4	NOTE 5
V143	F4	2	C	3"	CK	SA	C	0	FST	RF		VRR-7	NOTE 5
V144	F3	2	C	12"	CK	SA	C	0	FST	RF		VRR-4	NOTE 5

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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-002			PAGE 128 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V164	F9	2	AC	10"	CK	SA	C	0	PST AJLT	RF RF		VRR-5	NOTES 4, 5, 9	
V165	F5	2	AC	10"	CK	SA	C	0	PST AJLT	RF RF		VRR-5	NOTES 4, 5, 9	
V210	C16	2	B	2"	GL	MAN	0	0	NA				NOTE 3	
V215	B15	1	AC	14"	CK	SA	C	0	LT PST	RF RF		VRR-6	NOTES 4, 5	
V217	B14	1	AC	14"	CK	SA	C	0	LT FST	RF RF		VRR-9	NOTE 5	
V220	C13	2	B	2"	GL	MAN	0	0	NA				NOTE 3	
V225	B12	1	AC	14"	CK	SA	C	0	LT PST	RF RF		VRR-6	NOTES 4, 5	
V227	B11	1	AC	14"	CK	SA	C	0	LT FST	RF RF		VRR-9	NOTE 5	



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-002			PAGE 129 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V230	C8	2	B	2"	GL	MAN	0	0	NA				NOTE 3	
V235	B7	1	AC	14"	CK	SA	C	0	LT PST	RF RF		VRR-6	NOTES 4, 5	
V237	B6	1	AC	14"	CK	SA	C	0	LT PST	RF RF		VRR-6	NOTES 5	
V240	C5	2	B	2"	GL	MAN	0	0	NA				NOTE 3	
V245	B4	1	AC	14"	CK	SA	C	0	LT PST	RF RF		VRR-6	NOTES 4, 5	
V247	B3	1	AC	14"	CK	SA	C	0	LT FST	RF RF		VRR-9	NOTES 5	
V522	C2	1	AC	3"	CK	SA	C	0	LT FST	RF RF		VRR-10		
V523	F2	1	AC	3"	CK	SA	C	0/C	FST AJLT	RF RF		VRR-10	NOTE 9	

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ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM

SAFETY INJECTION AND SHUTDOWN COOLING

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VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
V532	C10	1	AC	3"	CK	SA	C	O	LT FST	RF RF		VRR-10	
V533	F10	1	AC	3"	CK	SA	C	O/C	FST AJLT	RF RF		VRR-10	NOTE 9
V540	C14	1	AC	12"	CK	SA	C	O	LT FST	RF RF		VRR-9	NOTE 5
V541	C11	1	AC	12"	CK	SA	C	O	LT FST	RF RF		VRR-9	NOTE 5
V542	C6	1	AC	12"	CK	SA	C	O	LT FST	RF RF		VRR-9	NOTE 5
V543	C4	1	AC	12"	CK	SA	C	O	LT FST	RF RF		VRR-9	NOTE 5
V957	D2	1	B	3"	GA	MAN	O	O	NA				NOTE 3
V958	E9	1	B	3"	GA	MAN	O	O	NA				NOTE 3



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING									P & ID 13-M-SIS-002			PAGE 131 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
HV321	G2	1	A	3"	GL	MO	C	O/C	FST VPI AJLT	CS RF RF	10s	VRR-25	NOTE 6
HV331	G9	1	A	3"	GL	MO	C	O/C	FST VPI AJLT	CS RF RF	10s	VRR-25	NOTE 6
HV605	E15	2	B	1"	GL	SOL	C	C	NA				NOTE 3
HV606	E12	2	B	1"	GL	SOL	C	C	NA				NOTE 3
HV607	E7	2	B	1"	GL	SOL	C	C	NA				NOTE 3
HV608	E4	2	B	1"	GL	SOL	C	C	NA				NOTE 3
HV613	E15	2	B	1"	GL	SOL	C	C	NA				NOTE 3
HV619	D15	2	B	1"	GL	AO	C	C	NA				NOTE 3



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-002			PAGE 132 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HV623	E12	2	B	1"	GL	SOL	C	C	NA				NOTE 3	
HV629	D12	2	B	1"	GL	AO	C	C	NA				NOTE 3	
HV633	E7	2	B	1"	GL	SOL	C	C	NA				NOTE 3	
HV639	D7	2	B	1"	GL	AO	C	C	NA				NOTE 3	
HV643	E4	2	B	1"	GL	SOL	C	C	NA				NOTE 3	
HV649	D4	2	B	1"	GL	AO	C	C	NA				NOTE 3	
HV690	H13	2	B	10"	GL	MO	C	C	FST VPI	OP RF	30s		NOTE 6	
HV691	H4	2	B	10"	GL	MO	C	C	FST VPI	OP RF	30s		NOTE 6	



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING									P & ID 13-M-SIS-002			PAGE 133 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV322	D2	2	B	1"	GL	AO	O/C	C	FST FT VPI	OP OP RF	10s		NOTE 12
UV332	D10	2	B	1"	GL	AO	O/C	C	FST FT VPI	OP OP RF	10s		NOTE 12
UV611	C16	2	B	2"	GL	AO	O/C	C	FST FT VPI	CS CS RF	20s	VRR-27	NOTE 12
UV614	B16	1	B	14"	GA	MO	O/C	O	FST VPI	CS RF	60s	VRR-28	NOTES 6, 12
UV615	G14	2	B	12"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6
UV616	G14	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6
UV617	G15	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6
UV618	B16	1	B	1"	GL	AO	O/C	C	FST FT VPI	OP OP RF	10s		NOTE 12



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING									P & ID 13-M-SIS-002			PAGE 134 of 146		
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
UV621	C13	2	B	2"	GL	AO	O/C	0	FST FT VPI	CS CS RF	20s	VRR-27	NOTE 12	
UV624	B12	1	B	14"	GA	MO	O/C	0	FST VPI	CS RF	60s	VRR-28	NOTES 6, 12	
UV625	G11	2	B	12"	GL	MO	C	0	FST VPI	OP RF	10s		NOTE 6	
UV626	G11	2	B	2"	GL	MO	C	0	FST VPI	OP RF	10s		NOTE 6	
UV627	G12	2	B	2"	GL	MO	C	0	FST VPI	OP RF	10s		NOTE 6	
UV628	B13	1	B	1"	GL	AO	O/C	C	FST FT VPI	OP OP RF	10s		NOTE 12	
UV631	C8	2	B	2"	GL	AO	O/C	C	FST FT VPI	OP OP RF	20s	VRR-27	NOTE 12	
UV634	B7	1	B	14"	GA	MO	O/C	C	FST VPI	CS RF	60s	VRR-28	NOTE 6, 12	



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-002			PAGE 135 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
UV635	G6	2	B	12"	GL	MO	C	O	FST VPI	OP RF	10s		NOTE 6	
UV636	G7	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTE 6	
UV637	G7	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTE 6	
UV638	B8	1	B	1"	GL	AO	O/C	C	FST FT Vfi	OP OP RF	10s		NOTE 12	
UV641	C5	2	B	2"	GL	AO	O/C	C	FST FT VPI	CS CS RF	20s	VRR-27	NOTE 12	
UV644	B4	1	B	14"	GA	MO	O/C	O	FST VPI	CS RF	60s	VRR-28	NOTE 6, 12	
UV645	G3	2	B	12"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6	
UV646	G4	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6	



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING									P & ID 13-M-SIS-002			PAGE .136 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV647	G5	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6
UV648	B5	1	B	1"	GL	AO	C	C	FST FT VPI	OP OP RF	10s		NOTE 12
UV651	C3	1	B	16"	GA	MO	C	O/C	FST VPI	CS RF	160s	VRR-29	NOTES 6, 12
UV652	C10	1	B	16"	GA	MO	C	O/C	FST VPI	CS RF	160s	VRR-29	NOTES 6, 12
UV653	E3	1	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9
UV654	E10	1	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9
UV655	G3	2	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9
UV656	G10	2	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9



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SYSTEM SAFETY INJECTION AND SHUTDOWN COOLING										P & ID 13-M-SIS-002			PAGE 137 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
PSV166	G10	2	C	1 1/2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV169	D10	1	C	3/4"	PSV	SA	C	0	PSVT				NOTE 2	
PSV179	F3	2	AC	6"	PSV	SA	C	0	PSVT AJLT	RF			NOTE 2	
PSV189	F10	2	AC	6"	PSV	SA	C	0	PSVT AJLT	RF			NOTE 2	
PSV211	E15	2	C	2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV221	E12	2	C	2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV231	E7	2	C	2"	PSV	SA	C	0	PSVT				NOTE 2	
PSV241	E5	2	C	2"	PSV	SA	C	0	PSVT				NOTE 2	







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SYSTEM ESSENTIAL SPRAY POND										P & ID 13-M-SPS-002			PAGE 141 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
V087	G4	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
V088	G1	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
V093	E7	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
V094	E6	3	B	1"	GL	MAN	0	0	NA				NOTE 3	
HCV45	D4	3	B	20"	BFT	MAN	0	0	NA				NOTE 3	
HCV46	D7	3	B	20"	BFT	MAN	0	0	NA				NOTE 3	
HCV47	D1	3	B	20"	BFT	MAN	0	0	NA				NOTE 3	
HCV48	D5	3	B	20"	BFT	MAN	0	0	NA				NOTE 3	



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SYSTEM ESSENTIAL SPRAY POND										P & ID 13-M-SPS-002			PAGE 142 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS	
HCV125	F4	3	B	8"	BTF	MAN	0	0	NA				NOTE 3	
HCV126	G8	3	B	6"	BTF	MAN	0	0	NA				NOTE 3	
HCV127	F2	3	B	8"	BTF	MAN	0	0	NA				NOTE 3	
HCV128	G5	3	B	6"	BTF	MAN	0	0	NA				NOTE 3	
HCV129	F4	3	B	6"	BTF	MAN	0	0	NA				NOTE 3	
HCV130	F7	3	B	6"	BTF	MAN	0	0	NA				NOTE 3	
HCV131	F2	3	B	6"	BTF	MAN	0	0	NA				NOTE 3	
HCV132	F5	3	B	6"	BTF	MAN	0	0	NA				NOTE 3	



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ISI CLASS 1, 2 & 3 VALVES
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SYSTEM										P & ID		PAGE	
ESSENTIAL SPRAY POND										13-M-SPS-002		143 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
HCV133	E4	3	B	6"	BTF	MAN	0	0	NA				NOTE 3
HCV134	F7	3	B	8"	BTF	MAN	0	0	NA				NOTE 3
HCV135	E2	3	B	6"	BTF	MAN	0	0	NA				NOTE 3
HCV136	F5	3	B	8"	BTF	MAN	0	0	NA				NOTE 3
PSV29	D3	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2
PSV30	D7	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2
PSV137	G2	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2
PSV138	G5	3	C	1"	PSV	SA	C	0	PSVT				NOTE 2









APPENDIX A
REQUEST FOR RELIEF
FOR PUMPS



PUMP RELIEF REQUEST NO. 1

SYSTEM: Safety Related

COMPONENT: All pumps listed in the program.

CLASS: 2 & 3

FUNCTION: To provide pumped liquid to safety related systems.

TEST REQUIREMENT: To measure bearing temperature.

BASIS FOR RELIEF: Industry data has shown that bearing temperature change due to degrading bearings only occurs after major degradation has occurred at the pump. Prior to this, the vibration measurement would provide the necessary information to warn the operator of an impending malfunction. Therefore, this parameter will not be measured since its information is after the fact.

ALTERNATE TESTING: None



PUMP RELIEF REQUEST NO. 2

SYSTEM: Diesel Generator Fuel Oil Transfer System

COMPONENTS: DFA-P01 and DFB-P01

P&ID & COORDINATES: 13-M-DFS-001 @ B-6 and B-2

CLASS: 3

FUNCTION: To provide fuel oil to the standby diesel generators.

TEST REQUIREMENTS: Measure displacement vibration amplitude of pump.

BASIS FOR RELIEF: These pumps are immersable centrifugal sump pumps located in the emergency fuel oil storage tanks, therefore, are inaccessible for this type of testing.

ALTERNATE TESTING: No alternate testing for this parameter is practical, however, all other parameters will be tested per Section XI requirements to show pump integrity.



PUMP RELIEF REQUEST NO. 3

SYSTEM:

Diesel Generator System

COMPONENTS:

DGA-P02, DGB-P02, DGA-P03, DGB-P03, DGA-P05, DGB-P05

P&ID AND COORDINATES:

DGS-003 @ C3, C7; DGS-004 @ F3, F6; DGS-005 @ D3, D7

TEST REQUIREMENTS:

An inservice test shall be conducted with the pump operating at nominal motor nameplate speed. The resistance of the system shall be varied until either the measured differential pressure or the measured flow rate equals the reference value. The test parameters shall then be measured and observed and compared to the corresponding reference values.

BASIS FOR RELIEF:

These pumps are supplied as an integral part of the Diesel Generator skid package. The operational readiness of these pumps will be ascertained by assuring the capacity of the pumps to fulfill their function during the monthly diesel generator Technical Specification surveillance test.

ALTERNATE TESTING:

Operate the pumps monthly when the Diesel Generator is functionally tested in accordance with Technical Specifications 3/4.8.1.

PUMP RELIEF REQUEST NO.4

SYSTEMS: Chemical and Volume Control, Safety Injection

COMPONENTS: CHA-P01, CHB-P01, CHE-P01, SIA-P05, and SIB-P05

P&ID & COORDINATES: 13-M-CHS-002 @ B3, D3, and G3
13-M-SIS-001 @ C14 and D14

CLASS: 2

FUNCTION: CHA-P01, CHB-P01, and CHE-P01 are the three charging pumps. SIA-P05 and SIB-P05 are the containment spray chemical addition pumps (SCAP). The charging pumps provide makeup to the reactor coolant system for chemistry and volume control. In addition they provide auxiliary spray to the pressurizer during the final stages of shutdown. The SCAP inject a controlled amount of hydrazine into the containment spray flow to remove radioactive elemental iodine from the containment atmosphere.

TEST REQUIREMENTS: The inlet pressure and differential pressure shall be measured or observed and recorded.

BASIS FOR RELIEF: These pumps are of positive displacement design and as such are designed to deliver constant capacity irrespective of inlet pressure or differential pressure across the pump. The parameters important to monitoring pump degradation are discharge pressure and flow rate. Measuring inlet pressure and differential pressure provides no meaningful information.

ALTERNATE TESTING: No alternate testing for these parameters is meaningful, however, discharge pressure will be measured and recorded and all other parameters will be tested per Section XI requirements to show pump integrity.

PUMP RELIEF REQUEST NO. 5

SYSTEM: Safety Related

COMPONENT: All pumps listed in the program

CLASS: 2 & 3

FUNCTION: To provide pumped liquid to safety related systems

TEST REQUIREMENTS: Measure displacement vibration amplitude of pump.

BASIS FOR RELIEF: Standard industry practice is to use vibration velocity as a basis for the establishment of vibration standards for machinery operating at speeds from 600 to 12,000 rpm. Vibration velocity is used because vibration velocity is independent of frequency in this rpm range, yielding a simple measure of the severity of vibration, see Ref. 1.

ALTERNATE TESTING: Measure vibration velocity of the pump. Allowable ranges for vibration velocity will be: Acceptable < 0.3 in /sec, alert 0.3 in /sec to 0.6 in /sec, Required Action > 0.6 in/sec, see Ref. 2.

Reference 1: Shock and Vibration Handbook, second Edition 1976, C. m. Harris and C. E. Crede, Page 19-2.

Reference 2: The Practical Vibration Primer, C. Jackson, 1981 Page 43, Figure 8.1

· APPENDIX B
REQUEST FOR RELIEF
FOR VALVES



VALVE RELIEF REQUEST NO. 1

SYSTEM: Chemical and Volume Control

COMPONENTS: CH-UV515, CH-UV516, CH-UV520, and CH-UV523,
CH-UV179, CH-V188, CH-UV500, CH-V177

P&ID COORDINATES: 13-M-CHS-001 @ H15, H15, E5, and F13
13-M-CHS-002 @ C7, D7, F6, and B8 respectively

CATEGORY: B, A, B, A, B, B, C, and C respectively

CLASS: CH-UV515 and CH-UV516 are Class 1; all others
are Class 2.

FUNCTION: Valves are contained in the normal
letdown/volume control make-up loop.

TEST REQUIREMENTS: Full stroke exercise test once every three
months.

BASIS FOR RELIEF: Disrupting normal flow paths in order to stroke
these valves could cause unwarranted transients
in the RCS volume.

ALTERNATE TESTING: Stroke test these valves during cold shutdown.



VALVE RELIEF REQUEST NO. 2

SYSTEM: Essential Cooling Water.

COMPONENTS: EW-UV65 and EW-UV145

P&ID COORDINATES: 13-M-EWS-001 @ C8 and C4

CATEGORY: B

CLASS: 3

FUNCTION: Valves open to provide Normal Chilled Water System with Essential Cooling Water in the event that the Normal Chilled Water System is inoperable.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: Full stroking or partial stroking these valves during operations or Cold Shutdown will produce a low pressure in the Normal Chilled Water System. This could lead to the system becoming inoperable.

ALTERNATE TESTING: Perform a full stroke exercise test during the refueling mode.

VALVE RELIEF REQUEST NO. 3

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIV205 and SIV206.

P&ID COORDINATES: 13-M-SIS-001 @ G14 and A14

CATEGORY: C

CLASS: 2

FUNCTION: These valves open to provide flow to the HPSI and CS pumps from the recirculation sump.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: This recirculation sump is normally dry so full flow cannot be established in this line.

ALTERNATE TESTING: Perform a Partial Stroke Exercise Test during refueling using test connections.



VALVE RELIEF REQUEST NO. 4

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIV114, SIV124, SIV134, and SIV144

P&ID COORDINATES: 13-M-SIS-002 @ F14, F11, F6, and F3

CATEGORY: C

CLASS: 2

FUNCTION: Valves open to provide flow paths from the low pressure safety injection headers to the primary loops.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: Flow cannot be established to exercise valves during operation or cold shutdown due to the pressure in the Primary Coolant System.

ALTERNATE TESTING: These valves will be full stroke exercised during refueling when the reactor head is removed.



VALVE RELIEF REQUEST NO. 5

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIV164 and SIV165

P&ID COORDINATES: 13-M-SIS-002 @ F9 and F5

CATEGORY: AC

CLASS: 2

FUNCTION: Valves open to provide flow from the Containment Spray Pump to the discharge nozzles.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: Flow cannot be established without discharging water into containment.

ALTERNATE TESTING: Perform a Partial Stroke Exercise Test during refueling using test connections.



VALVE RELIEF REQUEST NO. 6

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SI-V215, SI-V225, SI-V235, and SI-V245

P&ID COORDINATES: 13-M-SIS-002 @ A-15, A-12, A-7, and A-5

CATEGORY: AC

CLASS: 1

FUNCTION: Prevent backflow of Primary Coolant into the Safety Injection Tanks while providing a flow path for Safety Injection Water into the RCS loop.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: Full flow testing to stroke these valves is not practical during any plant mode other than when the reactor vessel head is removed, fuel is off loaded and core barrel is removed. Part stroke testing is possible but undesirable during normal operation because it would result in Safety Injection Tank level being reduced below minimum Tech Spec requirements. Part stroke testing is feasible during Hot Shutdown. Plant design conditions allows part Stroke testing with a maximum of 35gpm through the valve.

ALTERNATE TESTING: Part Stroke exercise during hot Shutdowns. Disassemble valves and verify freedom of disk motion on a 5 year basis such that one valve is inspected every 5 years.



VALVE RELIEF REQUEST NO. 7

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIV113, SIV123, SIV133, SIV143, SIV404, SIV405

P&ID COORDINATES: 13-M-SIS-002 @ F14, F11, F7, F4, 13-M-SIS-001 @ F5, B5

CATEGORY: C

CLASS: 2

FUNCTION: Valves open to provide a flow path from the Safety Injection System to the Primary Coolant Loop.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: These valves can only be exercised by initiation of flow through the valves and into the Reactor Coolant System. Safety Injection Pump heads are not sufficient to establish flow that will exercise these valves due to pressure of the Primary Coolant System.

ALTERNATE TESTING: Full Stroke exercise these valves during refueling utilizing the Safety Injection Pumps.



VALVE RELIEF REQUEST NO. 8

SYSTEM: Main Steam

COMPONENTS: SG-UV130, SG-UV135, SG-UV172, SG-UV175

P&ID COORDINATES: 13-M-SGS-002 @ G12, C12, G12 and C12

CATEGORY: B

CLASS: 2

FUNCTION: Downcomer feedwater control/isolation valves.

TEST REQUIREMENTS: Full stroke test every three months or Partial Stroke Test every three months and Full Stroke Test during cold shutdowns.

BASIS FOR RELIEF: Stroking these valves during power operation would isolate 15% of the normal feedwater to the steam generators and could cause an unwarranted plant transient.

ALTERNATE TESTING: Full stroke test at cold shutdowns.



VALVE RELIEF REQUEST NO. 9

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIV217, SIV227, SIV237, SIV247, SIV540, SIV541,
SIV542, SIV543.

P&ID COORDINATES: 13-M-SIS-002 @ B14, B11, B6, B3, C14, C11, C6,
and C3.

CATEGORY: AC

CLASS: 1

FUNCTION: Valves open to provide a flow path from the
Safety Injection to the Primary Coolant Loop.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: These valves can only be exercised by initiation
of flow through the valves and into the Reactor
Coolant System. Safety Injection Pump heads are
not sufficient to exercise these valves due to
pressure of the Primary Coolant System.

ALTERNATE TESTING: Full stroke exercise these valves during
refueling when the reactor head is removed
utilizing the Safety Injection System.



VALVE RELIEF REQUEST NO. 10

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SI-V522, SI-V523, SI-V532, and SI-V533.

P&ID COORDINATES: 13-M-SIS-002 @ C3, F2, C10, and F10.

CATEGORY: AC

CLASS: 1

FUNCTION: Valves open to provide a flow path for the HPSI system to the shutdown cooling lines.

TEST REQUIREMENTS: Full stroke exercise test every three months.

BASIS FOR RELIEF: These valves can only be exercised by initiation of flow through the valves and into the Reactor Coolant System. Safety Injection Pumps are not sufficient to exercise these valves due to pressure of the Primary Coolant System.

ALTERNATE TESTING: Full stroke exercise test these valves during the refueling mode when the reactor head is removed utilizing the Safety Injection System.



VALVE RELIEF REQUEST NO. 11

SYSTEM: Auxiliary Feedwater

COMPONENTS: AFV024, AFV079, and AFV080

P&ID COORDINATES: 13-M-ASF-001 @ C5, D2, and C2

CATEGORY: C

CLASS: 2, 3

FUNCTION: Valves open to provide a flow path for auxiliary feedwater to the Steam Generators.

TEST REQUIREMENTS: Full stroke test every three months or Partial Stroke Test every three months and Full Stroke Test during cold shutdown.

BASIS FOR RELIEF: Stroking these valves during power operation would require injection of cold Auxiliary Feedwater into a hot steam generator. In addition to possibly causing an unwarranted plant transient, this reduces the quality of steam exiting the steam generator.

ALTERNATE TESTING: Full stroke test at cold shutdown



3



VALVE RELIEF REQUEST NO. 12

SYSTEM: Chemical and Volume Control

COMPONENTS: CHV431, CH-HV203, CH-HV205

P&ID COORDINATES: 13-M-CHS-001 @ G11, H12

CATEGORY: C, B, B

CLASS: 1

FUNCTION: Valves open to provide a flow path for Auxiliary Spray to the pressurizer.

TEST REQUIREMENTS: Full stroke exercise every three months or partial stroke exercise every three months and Full Stroke Test during cold shutdown.

BASIS FOR RELIEF: Exercising these valves is not possible during power operation. Their function is to protect the charging system from Reactor Coolant System pressure during normal operation and to provide auxiliary spray to cool the pressurizer when the RCS pressure has dropped below the pressure required to use the reactor coolant pumps.

ALTERNATE TESTING: Full stroke test at cold shutdown.



VALVE RELIEF REQUEST NO. 13

SYSTEM: Chemical Volume and Control

COMPONENTS: CHV787, CHV802, CHV807, CHV812, CHV866, CHV867,
CHV868, CHV869, CHV835, CHV255

P&ID COORDINATES: 13-M-CHS-001 @ H1, G1, F1, E1, H1, G1, F1, E1,
G3, G4.

CATEGORY: HV255 is Category A, V835 is Category AC, all
others are Category C.

CLASS: CHV835 and HV255 - Class 2, all others Class 1.

FUNCTION: Valves are open to provide a flow path for seal
injection to the reactor coolant pumps.

TEST REQUIREMENTS: Full stroke test every three months or partial
stroke test every three months and full stroke
test at cold shutdown.

BASIS FOR RELIEF: These valves are open during normal operation to
provide Seal Injection to the Reactor Coolant
Pump. Stroking these valves would require
discontinuing seal injection to the pumps and
compromise Reactor Coolant Pump integrity.

ALTERNATE TEST: Full stroke test at cold shutdown.



VALVE RELIEF REQUEST NO. 14

SYSTEM: Chemical and Volume Control

COMPONENTS: CH-HV524, CH-VM70, CHV433, CHV429

P&ID COORDINATES: 13-M-CHS-001 @ D16, F15, G9, D16

CATEGORY: A, AC, C, C

CLASS: 2, 2, 1, 2,

FUNCTION: Valves are open to provide a flow path for the charging flow to the Reactor Coolant System and the pressurizer auxiliary spray.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: These valves are open during normal operation to maintain reactor coolant system chemistry and purity and maintain RCS volume. Stroking these valves during normal operation could upset the chemical balance and cause unwarranted transients.

ALTERNATE TEST: Full stroke test at cold shutdown.



VALVE RELIEF REQUEST NO. 15

SYSTEM: Nuclear Cooling Water

COMPONENTS: NCV118, NCUV401, NCUV402, NCUV403.

P&ID COORDINATES: 13-M-NCS-003 @ E6, E7, F7, and F6

CATEGORY: A, C

CLASS: 2

FUNCTION: Valves open to provide a flow path for nuclear cooling water supply to the reactor coolant pump lube oil coolers.

TEST REQUIREMENTS: Full stroke tested every three months or partial stroke tested every three months and full stroke tested at cold shutdown.

BASIS FOR RELIEF: These valves are open during normal operation to allow a supply of nuclear cooling water to the reactor coolant pump coolers. Stroking these valves could cause overheating of the reactor coolant pump motor air coolers, lube oil coolers, thrust bearing oil coolers, and seal coolers and compromise the integrity of the pumps.

ALTERNATE TESTING: Full stroke test these valves during cold shutdown.

VALVE RELIEF REQUEST NO. 16

SYSTEM: Main Steam

COMPONENTS: SGV003, SGV005, SGV006, SGV007, SGV642, SGV652, SGV653, SGV693.

P&ID COORDINATES: 13-M SGS-002 @ E10, A10, G11, G10, C10, C11

CATEGORY: AC

CLASS: 2

FUNCTION: Valves open to provide a flow path for feedwater flow to the steam generator.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: These valves are in the feedwater inlet lines to each steam generator and are open during power operation. Full or partial stroking of these valves during operation could secure feedwater and cause a reactor trip.

ALTERNATE TESTING: Full stroke test at refueling.



VALVE RELIEF REQUEST NO. 17

SYSTEM: Chemical and Volume Control

COMPONENTS: CHV190

P&ID COORDINATES: 13-M-CHS-002 @ A8

CATEGORY: C

CLASS: 2

FUNCTION: Valve opens with differential pressure to provide gravity flow from the Refueling Water Tank to the suction of the charging pumps.

TEST REQUIREMENTS: Full stroke exercise test once every three months.

BASIS FOR RELIEF: The gravity feed suction path is isolated during normal operation. Stroking this valve during normal operation would disrupt normal letdown and charging.

ALTERNATE TESTING: Full stroke test during cold shutdown.



VALVE RELIEF REQUEST NO. 18

SYSTEM: Chemical and Volume Control

COMPONENTS: CH-UV505 and CH-UV506

P&ID COORDINATES: 13-M-CHS-002 @ G13 and G14

CATEGORY: A

CLASS: 2

FUNCTION: Valves provide containment isolation on Reactor Coolant Pump seal water bleed off lines.

TEST REQUIREMENTS: Full stroke exercise once every three months.

BASIS FOR RELIEF: These valves are open during normal operation to provide seal water bleed off on the reactor coolant pumps. Stroking these valves would require discontinuing seal injection to the pumps and compromise Reactor Coolant Pump integrity.

ALTERNATE TESTING: Full stroke test during cold shutdown.

VALVE RELIEF REQUEST NO. 19

SYSTEM: Chemical and Volume Control, Service Gas, Containment Hydrogen Control, and Instrument and Service Air.

COMPONENTS: CH-V494, GA-V011, GA-V015, HP-V002, HP-V004, and IA-V021.

P&ID COORDINATES: 13-M-CHS-003 @ E6 and 13-M-GAS-001 @ F2 and 13-M-HPS-001 @ F7, C7 and 13-M-IAS-003 @ G5.

CATEGORY: AC

CLASS: 2

FUNCTION: In board containment isolation valves.

TEST REQUIREMENTS: Check valves shall be exercised at least once every three months.

BASIS FOR RELIEF: Valves must be tested in a manner that proves that the disk is on its seat. Plant conditions and ALARA concerns make test impractical during plant operation.

ALTERNATE TESTING: Check valves will be exercised during refueling.



VALVE RELIEF REQUEST NO. 20

SYSTEM: Main Steam

COMPONENTS: SG-HV178, SG-HV179, SG-HV184, SG-HV185

P&ID COORDINATES: 13-M-SGS-001 @ E14, A14, F14, C14

CATEGORY: B

CLASS: 2

FUNCTION: Main steam atmospheric dump valves for plant
cooldown during loss of the condenser.

TEST REQUIREMENTS: Full stroke exercise test once every three
months.

BASIS FOR RELIEF: Stroking the atmospheric dump valves during
normal operation could initiate an unwarranted
transient.

ALTERNATE TESTING: Full stroke test during cold shutdown.

VALVE RELIEF REQUEST NO. 21

SYSTEM: Auxiliary Feedwater

COMPONENTS: AFV015

P*ID COORDINATES: 13-M-AFS-001 @ D5

CATEGORY: C

CLASS: 3

FUNCTION: Valve opens to provide a flow path for auxiliary feedwater from the turbine driven Auxiliary Feedwater Pump to the steam generators.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: Stroking this valve during power operation would require injection of cold auxiliary feedwater into a hot steam generator. In addition to possibly causing an unwarranted plant transient, this reduces the quality of steam exiting the steam generator. The valve cannot be stroked during cold shutdown due to the turbine needs for main steam at normal operating pressure to get full flow out of the pump.

ALTERNATE TESTING: The valve will be full stroke tested during the flow test required by PVNGS Technical Specification 3/4.7.1.2C.



VALVE RELIEF REQUEST NO. 22

SYSTEM: Chemical and Volume Control System

COMPONENTS: CHHV530 and CH-HV531

P&ID COORDINATES: 13-M-CHS-002 @ B15 and C14

CATEGORY: B

CLASS: 2

FUNCTION: Safety Injection Pump to Refueling Water Tank
Suction Isolation Valves.

TEST REQUIREMENTS: Full stroke test every three months or partial
stroke test every three months and full stroke
test during cold shutdown.

BASIS FOR RELIEF: Stroking these valves during operation would
violate PVNGS Technical Specifications, Limiting
Conditions for Operation, requiring two
independent flow paths capable of taking suction
from the Refueling Water Tank on a safety
injection acuation signal.

ALTERNATE TESTING: Full stroke test at cold shutdown.



VALVE RELIEF REQUEST NO. 23

SYSTEM: Containment Purge

COMPONENTS: CPUV2A, CPUV2B, CPUV3A, CPUV3B

CATEGORY: A

CLASS: 2

FUNCTION: These valves are 42" containment purge supply and exhaust isolation valves.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: PVNGS Technical Specifications, Limiting Condition for Operation, requires each 42 inch containment purge supply and exhaust isolation valve be sealed closed during operation.

ALTERNATE TESTING: Full stroke test these valves during cold shutdown.



VALVE RELIEF REQUEST NO. 24

SYSTEM: Reactor Coolant System

COMPONENTS: RCHV430, RCHV431, RCHV432, RCHV433, RCHV446,
RCHV447, RCHV448, RCHV449, RCHV450, RCHV451,
RCHV452, RCHV453

P&ID COORDINATES: 13-M-RCS-002 @ D11, H11, H4, D4, B12, E12, E5,
B5, B10, E3, and B3.

CATEGORY: B

CLASS: 1

FUNCTION: Reactor Coolant Pump Seal System High Pressure
Cooler and Controlled Leakoff Isolation Valves.

TEST REQUIREMENTS: Full stroke test every three months or partial
stroke test every three months and full stroke
test during cold shutdown.

BASIS FOR RELIEF: Stroking any of these valves during normal
operation would disrupt the normal flow in
reactor coolant pump seal injection system and
thereby compromise reactor coolant pump integrity.

ALTERNATE TESTING: Full stroke test at cold shutdown.



VALVE RELIEF REQUEST NO. 25

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIHV604, SIHV609, SIHV321, and SIHV331

P&ID COORDINATES: 13-M-SIS-001 @ G3, C3

CATEGORY: SIHV321 and SIHV331 are Category A.
SIHV604 and SIHV609 are Category B.

CLASS: 2

FUNCTION: Isolation Valves in the long term recirculation lines to the reactor coolant system hot legs.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: The PVNGS Technical Specifications require these valves be closed with power to the valve operators removed during normal operations.

ALTERNATE TESTING: Full stroke test these valves during cold shutdown.



VALVE RELIEF REQUEST NO. 26

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIHV683 and SIHV692

P&ID COORDINATES: 13-M-SIS-001 @ F13 and B13

CATEGORY: B

CLASS: 2

FUNCTION: These valves isolate the LPSI pumps from refueling water tank suction paths when lined up for shutdown cooling.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: PVNGS Technical Specification require two independent LPSI pump suction paths to the Refueling Water Tank during normal operations.

ALTERNATE TESTING: Full stroke test during cold shutdown.



VALVE RELIEF REQUEST NO. 27

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIUV611, SIUV621, SIUV631, SIUV641

P&ID COORDINATES: 13-M-SIS-002 @ C16, C13, C8, and C5.

CATEGORY: B

CLASS: 2

FUNCTION: Safety Injection Tank fill and drain valves.

TEST REQUIREMENTS: Full stroke test every three months or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: Stroking these valves when not performing a filling evolution on the tanks could result in an unwarranted level decrease in the tanks.

ALTERNATE TESTING: Full stroke test during cold shutdown.



VALVE RELIEF REQUEST NO. 28

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIUV614, SIUV624, SIUV634, SIUV644

P&ID COORDINATES: 13-M-SIS-002 @ B16, B12, B7, and B4.

CATEGORY: B

CLASS: 1

FUNCTION: Safety Injection Tank Isolation Valves

TEST REQUIREMENTS: Full stroke test quarterly or partial stroke test every three months and full stroke test during cold shutdown.

BASIS FOR RELIEF: The PVNGS Technical Specifications require the isolation valves to be key-locked open and power to the valve removed.

ALTERNATE TESTING: Full testing during cold shutdown.



VALVE RELIEF REQUEST NO. 29

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIUV651, SIUV652, SIUV653, SIUV654, SIUV655,
SIUV656

P&ID COMPONENTS: 13-M-SIS-002 @ C3, C10, E3, E10, G3, G10.

CATEGORY: SIUV651 and SIUV652 are Category B; all others
are Category A.

CLASS: SIUV655, and SIUV656 are Class 2; all others are
Class 1.

FUNCTION: Shutdown Cooling Isolation Valves.

TEST REQUIREMENTS: Full stroke test every three months or partial
stroke test every three months and full stroke
test during Cold Shutdown.

BASIS FOR RELIEF: These valve are provided with interlocks that
prevent them from being opened if the pressurizer
pressure is in excess of 400 psig.

ALTERNATE TESTING: Full stroke test during Cold Shutdown.

VALVE RELIEF REQUEST NO. 30

SYSTEM: Instrument Air

COMPONENTS: IA-UV-2

P&ID COMPONENTS: 13-M-IA^S-003

CATEGORY: A

CLASS: 2

FUNCTION: Instrument Air Containment Isolation Valve.

TEST REQUIREMENTS: Full stroke test during normal operation or part stroke test during normal operation and full stroke test during Cold Shutdown.

BASIS FOR RELIEF: Stroking this valve during normal operation would isolate Letdown from the Reactor Coolant System which could cause unwarranted transients in the RCS volume. Part Stroking testing is not practical because the valve is a solenoid valve.

ALTERNATE TESTING: Stroke test during Cold Shutdown.



INSERVICE TESTING PROGRAM

ISI CLASS 1, 2 & 3 VALVES

PALO VERDE NUCLEAR GENERATING STATION

SYSTEM										P & ID		PAGE	
SAFETY INJECTION AND SHUTDOWN COOLING										13-M-SIS-002		136 of 146	
VALVE NUMBER	COORDINATES	ISI CLASS	VALVE CATEGORY	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	STROKE DIRECTION	TEST	TEST MODE	MAX. STROKE TIME	RELIEF REQUEST	REMARKS
UV647	G5	2	B	2"	GL	MO	C	O	FST VPI	OP RF	10s		NOTES 6
UV648	B5	1	B	1"	GL	AO	C	C	FST FT VPI	OP OP RF	10s		NOTE 12
* UV651	C3	1	B A	16"	GA	MO	C	O/C	FST VPI LT	CS RF RF	160s	VRR-29	NOTES 6, 12
* UV652	C10	1	B A	16"	GA	MO	C	O/C	FST VPI LT	CS RF RF	160s	VRR-29	NOTES 6, 12
* UV653	E3	1	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9
* UV654	E10	1	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9
UV655	G3	2	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9
UV656	G10	2	A	16"	GA	MO	C	O/C	FST VPI AJLT	CS RF RF	80s	VRR-29	NOTES 6, 9

ATTACHMENT 2



100-100000

100-100000

100-100000

VALVE RELIEF REQUEST NO. 29

SYSTEM: Safety Injection and Shutdown Cooling

COMPONENTS: SIUV651, SIUV652, SIUV653, SIUV654, SIUV655,
SIUV656

P&ID COMPONENTS: 13-M-SIS-002 @ C3, C10, E3, E10, G3, G10.

CATEGORY: ~~SIUV651 and SIUV652 are Category B; all others~~
~~are Category A~~ *A*

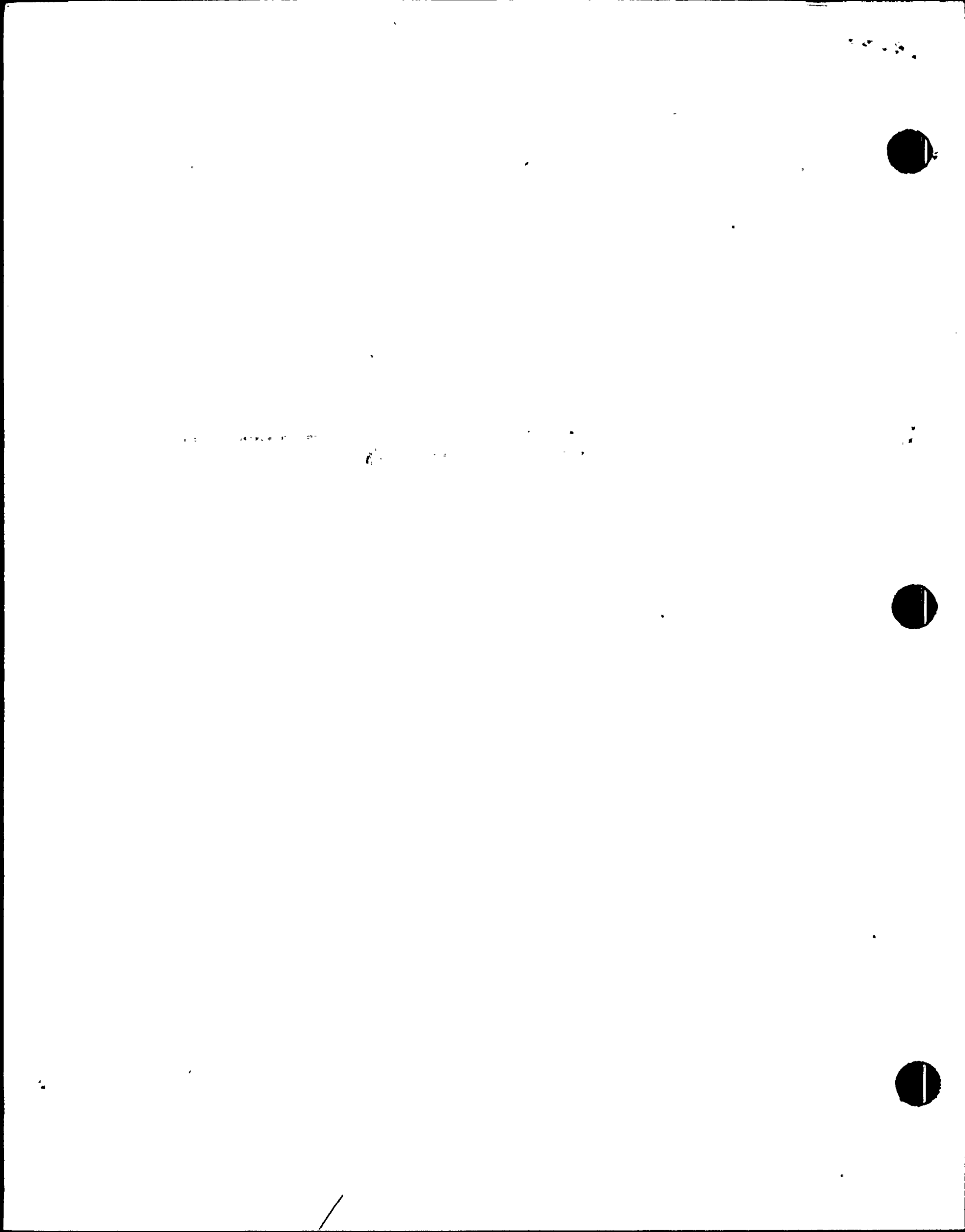
CLASS: SIUV655, and SIUV656 are Class 2; all others are
Class 1.

FUNCTION: Shutdown Cooling Isolation Valves.

TEST REQUIREMENTS: Full stroke test every three months or partial
stroke test every three months and full stroke
test during Cold Shutdown.

BASIS FOR RELIEF: These valve are provided with interlocks that
prevent them from being opened if the pressurizer
pressure is in excess of 400 psig.

ALTERNATE TESTING: Full stroke test during Cold Shutdown.



APPENDIX 3A

4. The space within the opening is sufficiently occupied by piping and pipe supports to preclude missile penetration.

The roof of the Main Steam Support Structure is elevated from the top of the walls to allow the escape of steam in the event of a major pipe break. The roof is cantilevered beyond the wall to provide the necessary missile protection.

Question 3A.14 (NRC Question 450.2) (3.5.1.4)

Describe the protection of the control room air intakes and diesel generator exhaust pipes from tornado-generated missiles.

RESPONSE:

- The control room air intakes are enclosed within a box structure located within the Control Building (See figure 3A-7). The wall sections, exposed to tornado-generated missiles are designed to withstand such impact without adverse effect upon the system.
- The diesel generator exhaust pipes are enclosed within a 1'9" thick vertical, concrete chimney which is designed to withstand tornado-generated missile impact. A thick, steel pipe sleeve, also capable of withstanding tornado-generated missile impact, provides protection for the exhaust piping at the vent opening at the top of the chimney.

Question 3A.15 (NRC Question 210.1) (3.9.6)

There are several safety systems connected to the reactor coolant pressure boundary that have design pressure below the rated reactor coolant system (RCS) pressure. There are also some systems which are rated at full reactor pressure on the discharge side of pumps but have pump suction below RCS pressure. In order to protect these systems from RCS pressure, two

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Leak rates higher than 1 GPM will be considered if the leak rate changes are below 1 GPM above the previous test leak rate or system design precludes measuring 1 GPM with sufficient accuracy. These items will be reviewed on a case by case basis.

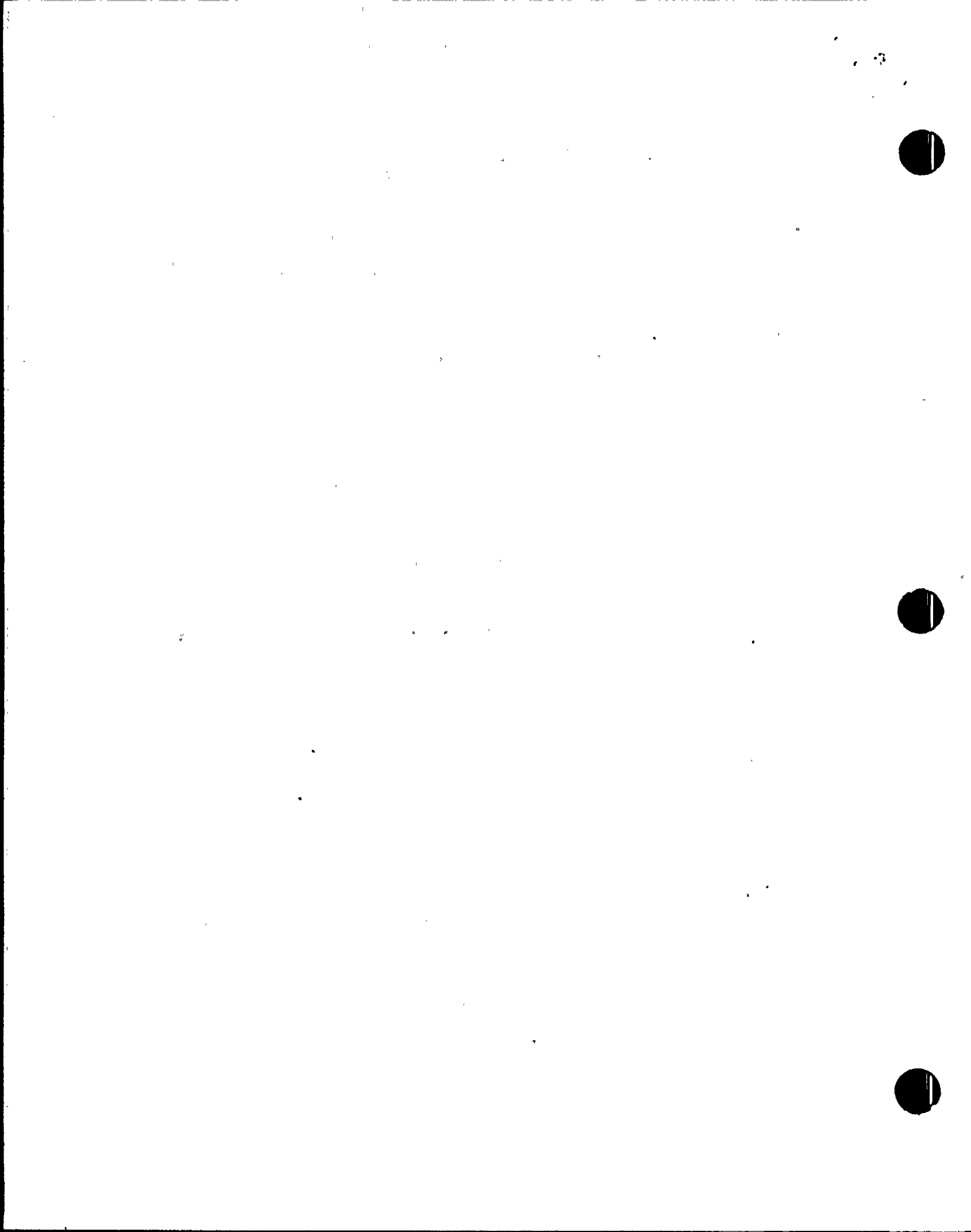
The Class 1 to Class 2 boundary will be considered the isolation point which must be protected by redundant isolation valves.

In cases where pressure isolation is provided by two valves, both will be independently leak tested. When three or more valves provide isolation, only two of the valves need to be leak tested.

Provide a list of all pressure isolation valves included in your testing program along with four sets of Piping and Instrument Diagrams which describe your reactor coolant system pressure isolation valves. Also discuss in detail how your leak testing program will conform to the above staff position.

RESPONSE: PVNGS Operations plans to conduct periodic testing of the pressure isolation valves indicated below:

1. Loop 1A RC/SI Check SIV237
2. Loop 1B RC/SI Check SIV247
3. Loop 2A RC/SI Check SIV217
4. Loop 2B RC/SI Check SIV227
5. Loop 1A SIT Check SIV235
6. Loop 1B SIT Check SIV245
7. Loop 2A SIT Check SIV215
8. Loop 2B SIT Check SIV225
9. Loop 1A SI Header Check SIV542
10. Loop 1B SI Header Check SIV543
11. Loop 2A SI Header Check SIV540
12. Loop 2B SI Header Check SIV541
13. Loop 1 HP Long Term Recirculation Check SIV522



- 14. Loop 1 HP Long Term Recirculation Check SIV523
- 15. Loop 2 HP Long Term Recirculation Check SIV532
- 16. Loop 2 HP Long Term Recirculation Check SIV533

Adequate test connections have been provided to facilitate testing of the above listed valves.

Surveillance requirements will be included in the Technical Specifications to verify leakage is within limits: ^{FOR THE ABOVE LISTED CHECK VALVES}

- prior to reaching power operation following a refueling outage
- prior to returning the valve to service following maintenance, repair or replacement work on the valve
- following valve actuation due to system response to an engineered safety feature actuation signal.

INSERT #1

The Technical Specifications will include a limiting condition for operation to limit leakage from any reactor coolant system pressure isolation valve to ~~1/2 gal/min per 1 inch of nominal valve diameter, not to exceed 5 gal/min.~~ ^{ONE gal/min} Leak rates higher than ~~1/2 gal/min per 1 inch of nominal valve diameter, not to exceed 5 gal/min~~ ^{ONE gal/min} will be considered acceptable if the leak rate changes are below one gal/min above the previous test leak rate or system design precludes measuring one gal/min with sufficient accuracy.

The Class 1 to Class 2 boundary will be considered the isolation point which must be protected by redundant isolation valves.

Where pressure isolation is provided by two valves, both will be leak tested. When three or more valves provide isolation, only two of the valves will be leak tested.

The four sets of P&ID's have previously been given to the NRC during the working meeting. Procedures for leak testing of these valves will be available onsite for NRC Review 60 days prior to fuel load of Unit 1.



10/1/54

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TO THE DIRECTOR, FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C.

INSERT 1

PVNGS Operations also plans to conduct periodic testing of the pressure isolation valves indicated below:

17. Loop 1 LP Long Term Recirculation MOV SIUV-651.
18. Loop 2 LP Long Term Recirculation MOV SIUV-652.
19. Loop 1 LP Long Term Recirculation MOV SIUV-653.
20. Loop 2 LP Long Term Recirculation MOV SIUV-654.

Surveillance requirement will be included in the Technical Specification to verify leakage is within limits for the above listed MOV's:

Leak rates greater than 1 gpm but less than or equal to 5.0 gpm will be acceptable provided, for each subsequent test, the least measured leak rate has not exceeded the rate determined by the previous test by an amount that reduces the margin between the measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater. Leakage rates greater than 5.0 gpm are unacceptable. In addition, leak tests shall be performed after the last disturbance at refueling outages and after maintenance or repair. The requirement to test after each disturbance will not apply for the SDCS MOV suction pressure isolation valves.

