DUQUESNE LIGHT COMPANY

Beaver Valley Power Station

Unit 2

INSERVICE TESTING (IST) PROGRAM FOR PUMPS AND VALVES

Issue 2 **Revision 0C**

C. L. Custer for JSH 8/4/98 Manager, System and Performance Engineering Department Review Date	Pages Issued i.-iv, 5, 6, 21-24, 63-66, 83, 84, 109-112, 201, 201A, 202, 275, 275A, 275B, 276, 277-279	OSC Review Date POLL #3193 8/3/98	Effective Date 8/14/98
8-7-98 General Manager, Nuclear Operations Approval Date			

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performance of the parent pump or other component is demonstrated by an applicable surveillance test.

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

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

The "Pump Outlines" section is a listing of all the pumps in the IST Program, their testing requirements, and their specific pump cold shutdown justification, refueling outage justification, and/or relief request reference numbers. The pumps are arranged according to system and pump mark number. The following abbreviations and designations are used on the Pump Outlines and throughout the IST Program for pumps:

N - Speed

P - Discharge Pressure

ΔP - Differential Pressure

Q - Flowrate

V - Vibration

2BVT - Unit 2 Beaver Valley Test

2OST - Unit 2 Operating Surveillance Test

Q - Quarterly Test Frequency

CSD - Cold Shutdown Frequency

R - Refueling Test Frequency

2 YR - Required every 2 years, but normally done at refueling

PRR - Pump Relief Request

PCSJ - Pump Cold Shutdown Justification

PROJ - Pump Refueling Outage Justification

X - Meets or exceeds OM-6 requirements

NA - Not Applicable

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The "Pump Cold Shutdown Justifications" section contains the detailed technical description of conditions prohibiting the required testing of safety-related pumps and an alternate test method to be performed during cold shutdowns. Beaver Valley Unit 2 reactor containment is maintained subatmospheric as required by technical specifications. The subatmospheric condition presents a hazardous working environment for station personnel and is considered inaccessible for surveillance testing. Surveillance testing that requires a reactor containment entry will be performed at cold shutdown and refueling. The pump cold shutdown justification(s) for a specific pump are referenced by the number(s) listed on the pump's outline sheets.

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

The "Pump Relief Requests" section contains the detailed technical description of particular conditions and equipment installations prohibiting the testing of some of the characteristics of safety-related pumps. An alternate test method and the frequency of revised testing is also included to meet the intent of 10CFR50.55a. The relief request(s) for a specific pump is referenced by the number(s) listed on the pump's testing outline sheet.

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

BVPS-2 IST

PUMP OUTLINE

Pump Name: 21A Recirculation Spray Pump	Pump Number: 2RSS*P21A	Code Class: 2	System: 13-Containment Depressurization
Function: Circulate containment sump water for long term containment depressurization. normally		Type: Vertical	Dwg. OM No.: 13-1 Dwg. Coord.: F-3
Remarks: Pump is tested during refueling outages at full flow through a test loop per PROJ1. Also see PRR1 and PRR2.			

Parameter	2OST-(Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	2BVT 1.13.5 ~~(R)~~ (2 yr)	X (PRR2)	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156A], Control Room, and local temporary suction pressure test gauge. See PRR2 for range and accuracy of temporary suction pressure test gauge.
Q	2BVT 1.13.5 ~~(R)~~ (2 yr)	X	Flow Indicator [2RSS-FI157A], Control Room.
V	2BVT 1.13.5 ~~(R)~~ (2 yr)	X	Portable monitoring equipment using velocity units.

OC

BVPS-2 IST

PUMP OUTLINE

Pump Name: 21B Recirculation Spray Pump	Pump Number: 2RSS*P21B	Code Class: 2	System: 13-Containment Depressurization	
Function: Circulate containment sump water for long term containment depressurization.			Type: Vertical	Dwg. OM No.: 13-1 Dwg. Coord.: E-8
Remarks: Pump is normally tested during refueling outages at full flow through a test loop per PROJ1. Also see PRR1 and PRR2.				

Parameter	2OST-(Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	2BVT 1.13.5 ~~(R)~~ (2 YR)	X (PRR2)	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156B], Control Room, and local temporary suction pressure test gauge. See PRR2 for range and accuracy of temporary suction pressure test gauge.
Q	2BVT 1.13.5 ~~(R)~~ (2 YR)	X	Flow Indicator [2RSS-FI157B], Control Room.
V	2BVT 1.13.5 ~~(R)~~ (2 YR)	X	Portable monitoring equipment using velocity units.

BVPS-2 IST

PUMP OUTLINE

Pump Name: 21C Recirculation Spray Pump	**Pump Number:** 2RSS*P21C	**Code Class:** 2	**System:** 13-Containment Depressurization

Function: Circulate containment sump water for long term containment depressurization and long term core recirculation.		**Type:** Vertical	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** E-5

Remarks: Pump is tested during refueling outages at full flow through a test loop per PROJ1. Also see PRR1 and PRR2.

Parameter	2OST-(Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	2BVT 1.13.5 ~~(R)~~ (2 YR)	X (PRR2)	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156C], Control Room, and local temporary suction pressure test gauge. See PRR2 for range and accuracy of temporary suction pressure test gauge.
Q	2BVT 1.13.5 ~~(R)~~ (2 YR)	X	Flow Indicator [2RSS-FI157C], Control Room.
V	2BVT 1.13.5 ~~(R)~~ (2 YR)	X	Portable monitoring equipment using velocity units.

BVPS-2 IST

PUMP OUTLINE

Pump Name: 21D Recirculation Spray Pump	**Pump Number:** 2RSS*P21D	**Code Class:** 2	**System:** 13-Containment Depressurization

Function: Circulate containment sump water for long term containment depressurization and long term core recirculation.	**Type:** Vertical	**Dwg. OM No.:** 13-1 **Dwg. Coord.:** E-6

Remarks: Pump is normally tested during refueling outages at full flow through a test loop per PROJ1. Also see PRR1 and PRR2.

Parameter	2OST-(Frequency)	Req'd	Comments
N	NA	NA	Constant speed induction motor.
ΔP	2BVT 1.13.5 ~~(R)~~ (2 yr)	X (PRR2)	Calculated using Pump Discharge Pressure Indicator [2RSS-PI156D], Control Room, and local temporary suction pressure test gauge. See PRR2 for range and accuracy of temporary suction pressure test gauge.
Q	2BVT 1.13.5 ~~(R)~~ (2 yr)	X	Flow Indicator [2RSS-FI157D], Control Room.
V	2BVT 1.13.5 ~~(R)~~ (2 yr)	X	Portable monitoring equipment using velocity units.

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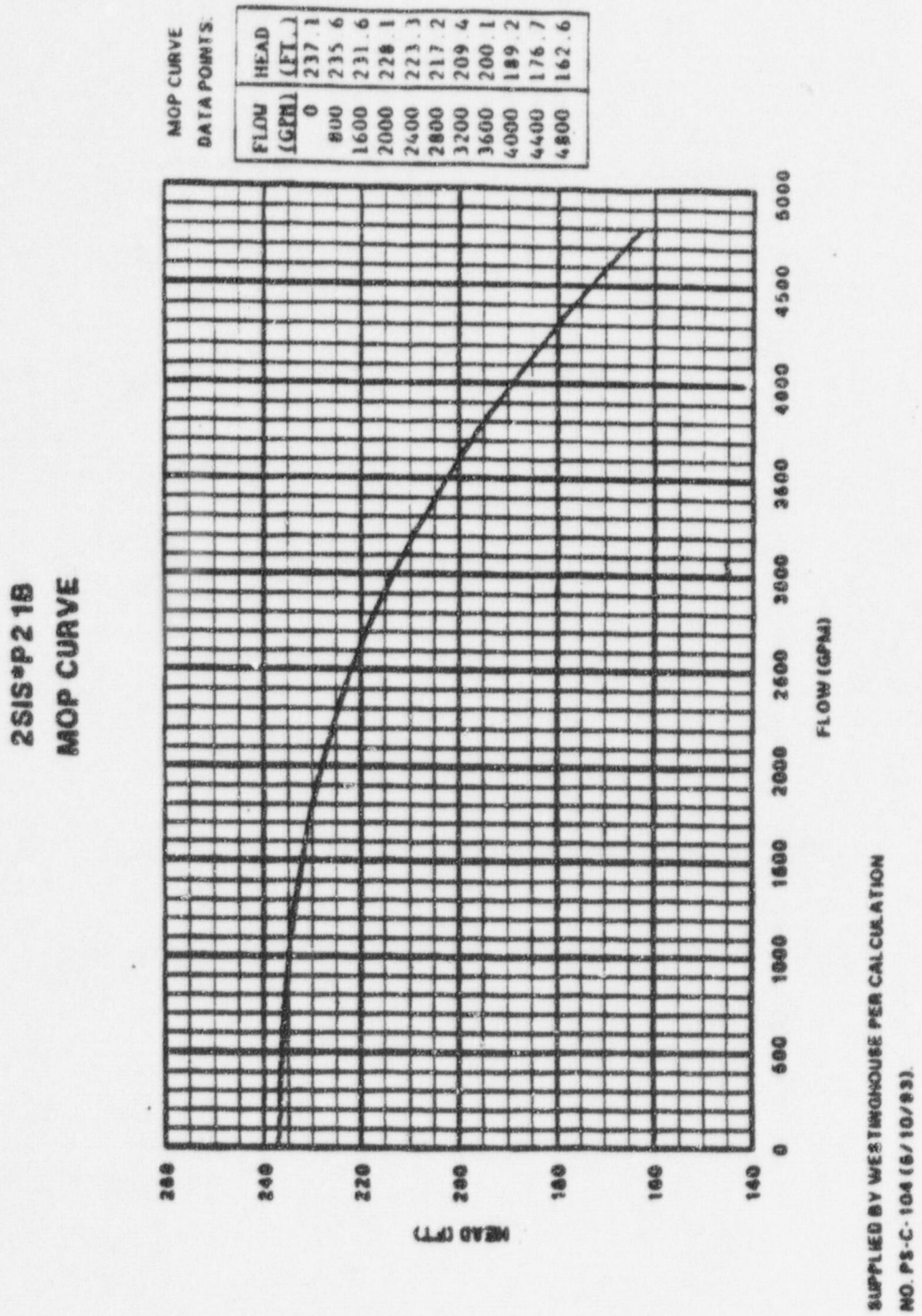
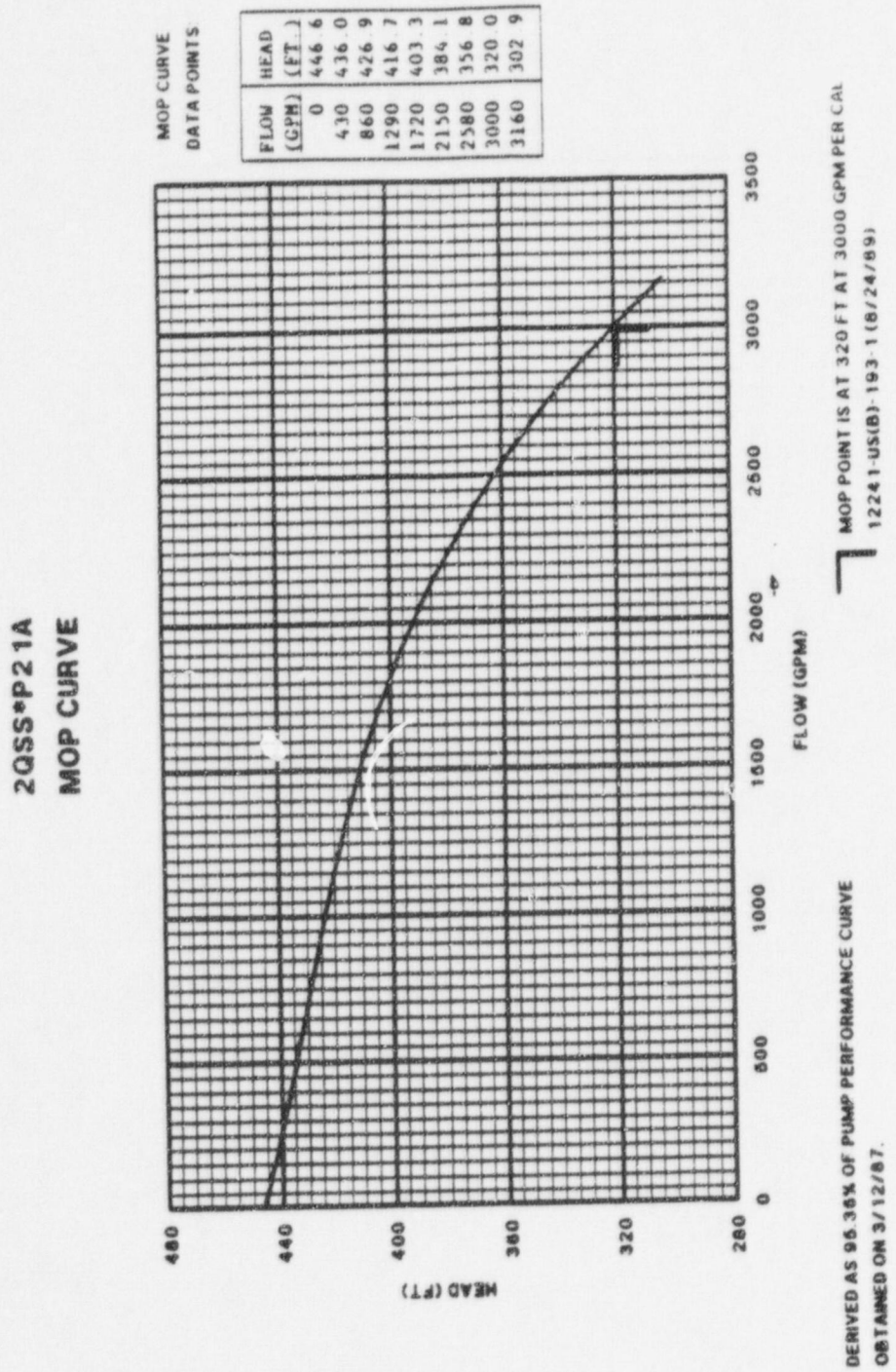
Pump Name: 21B Low Head Safety Injection Pump **Pump Number:** 2SIS*P21B



Pump Name: 21A Quench Spray Pump

Pump Number: 2QSS*P21A



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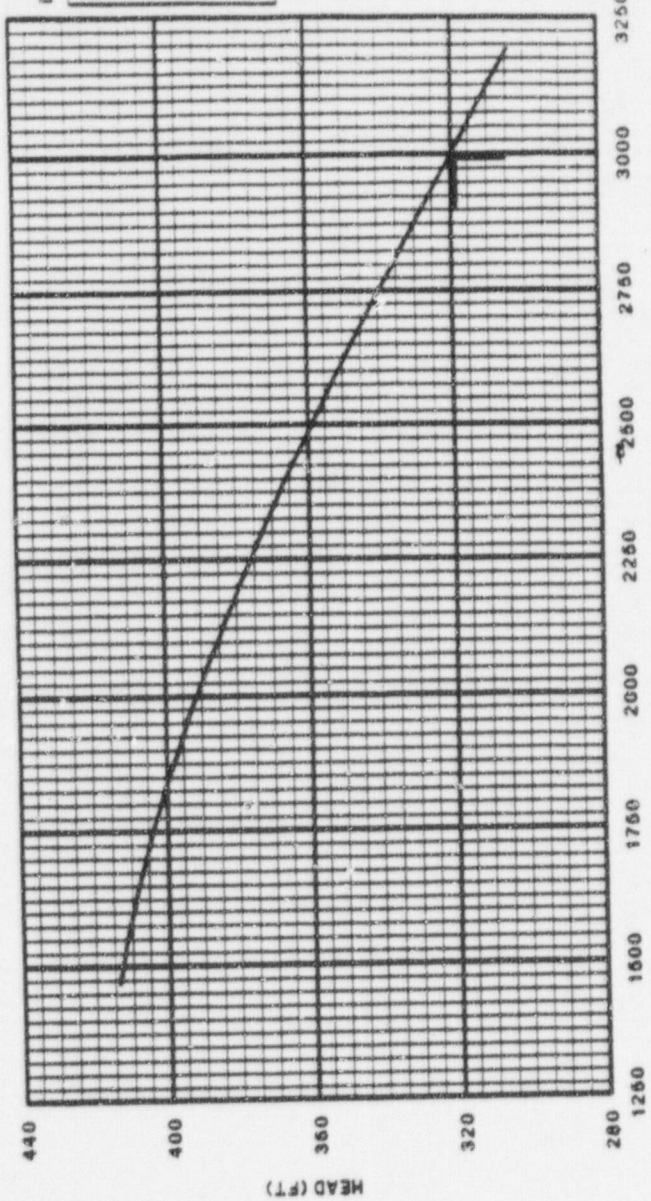
Pump Name: 21B Quench Spray Pump **Pump Number:** 2QSS*P21B

2QSS*P21B
MOP CURVE

MOP CURVE DATA POINTS

FLOW (GPM)	HEAD (FT.)
1470	413.8
1997	391.6
2488	359.7
3000	320.0
3190	304.7



MOP POINT IS AT 320 FT AT 3000 GPM PER CALC 12241-US(B)-193-1 (8/24/89) (REFERENCE EM 116394 DATED 5/19/98)

DERIVED AS 95.7% OF PUMP PERFORMANCE CURVE OBTAINED ON 5/11/98.

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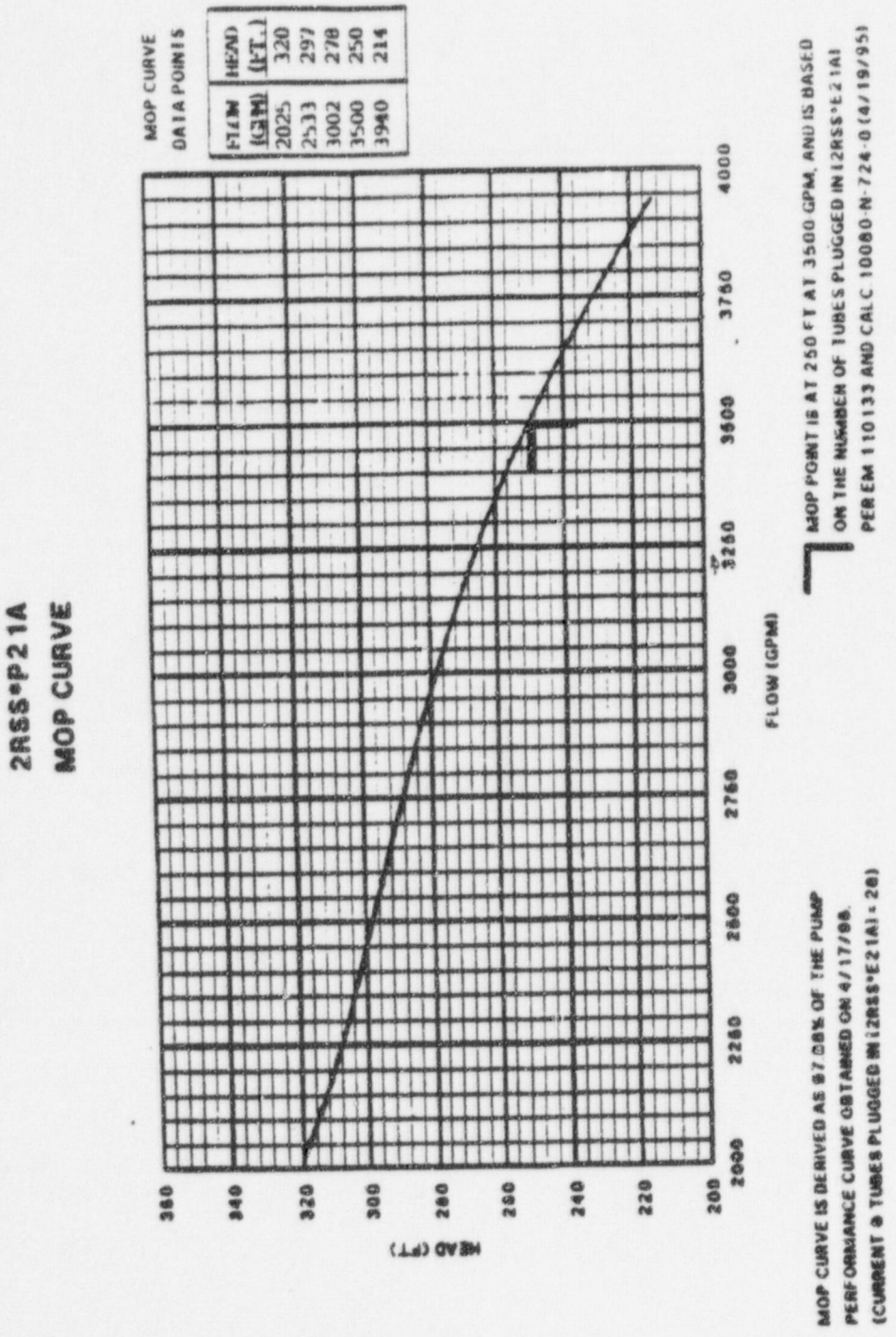
Pump Name: 21A Recirculation Spray Pump **Pump Number:** 2RSS*P21A



SECTION VII: VALVE TESTING REQUIREMENTS

The Inservice Test (IST) Program for valves at Beaver Valley Power Station (BVPS), Unit 2, is based on the following:

- American Society of Mechanical Engineers (ASME) / American National Standards Institute (ANSI) Operational and Maintenance (OM) Standard, Part 10, "Inservice Testing of Valves in Light Water Reactor Power Plants" (OM-10), OMa-1988 addenda to the OM-1987 Edition, in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1989 edition (the Code).
- Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"
- NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"

The valves included in this program are all ASME Class 1, 2 or 3 required to perform a specific function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident. The pressure-relief devices covered are those for protecting systems or portions of systems which perform a required function in shutting down a reactor to the cold shutdown condition, in maintaining cold shutdown condition, or in mitigating the consequences of an accident, at BVPS, Unit 2. 0c

The requirements of the Code and Generic Letter No. 89-04 including Supplement 1 (NUREG-1482) will be followed at all times unless specific relief has been granted by the NRC.

A. Category A valves are valves for which seat leakage in the closed position is limited to a specific maximum amount for fulfillment of their function. Category B valves are valves for which seat leakage in the closed position is inconsequential for fulfillment of their function. Active Category A and B valves shall be full-stroke exercised nominally every three months to the position required to fulfill their function unless such operation is not practicable during plant operation. If only limited operation is practicable during plant operation, the valves may be part-stroke exercised during plant operation and full-stroke exercised during cold shutdowns. If exercising is not practicable during plant operation, the valves may be limited to full-stroke exercising during cold shutdowns. If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, the valves may be limited to part-stroke exercising during cold shutdowns, and full-stroke exercising during refueling outages. If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages. Exception is taken to part-stroke exercising motor-operated valves, unless specifically stated. This is necessary because the motor-operated valve circuitry prevents throttling of these valves. Under normal operation, the valves must travel to either the full open or shut position prior to reversing direction. In the case of frequent cold shutdowns, these valves need not be exercised more often than once every three months. All valve exercising required to be performed during a refueling outage shall be completed prior to returning the plant to operation. For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months prior to placing the system in an operable status, the valves shall be exercised and the schedule resumed.

BVPS-2 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
2SIS*138	1	C	2	Check		11-1	C-9	QS	VROJ24	2OST 11 14B FS FD (R)
2SIS*139	1	C	2	Check		11-1	C-8	QS	VROJ24	2OST 11 14B FS FD (R)
2SIS*141	1	A/C	12	Check		8-1	E-8	QS	~~VRR~~ VROJ50	2OST 10 1 PS FD(CSD) 2BVT 1 11 3 FS FD (R)
								LT		2OST 11 4 Leak Test (2 YR)(CSD or R per Tech Specs)
2SIS*142	1	A/C	12	Check		11-2	F-9	QS	~~VRR~~ VROJ50	2BVT 1 11 3 FS FD (R)
								LT		2OST 11 5 Leak Test (2 YR)(R per Tech Specs)
2SIS*145	1	A/C	12	Check		8-1	D-8	QS	~~VRR~~ VROJ50	2OST 10 2 PS FD(CSD) 2BVT 1 11 3 FS FD (R)
								LT		2OST 11 4 Leak Test (2 YR)(CSD or R per Tech Specs)
2SIS*147	1	A/C	12	Check		11-2	F-7	QS	~~VRR~~ VROJ50	2BVT 1 11 3 FS FD (R)
								LT		2OST 11 5 Leak Test (2 YR)(R per Tech Specs)
2SIS*148	1	A/C	12	Check		11-2	F-4	QS	~~VRR~~ VROJ50	2BVT 1 11 3 FS FD (R)
								LT		2OST 11 5 Leak Test (2 YR)(R per Tech Specs)
2SIS*151	1	A/C	12	Check		8-1	D-5	QS	~~VRR~~ VROJ50	2BVT 1 11 3 FS FD (R)
								LT		2OST 11 4 Leak Test (2 YR)(R per Tech Specs)
2SIS*RV175	2	A/C	¼x1	Relief		11-2	F-1	SPT		2BVT 1 60 5 (10 YR)
								LTJ		2BVT 1 47 5 Leak Test (SP)
2SIS*545	1	A/C	6	Check		11-1	A-9	QS	VROJ25	2OST 11 14A FS FD (R)
								LT		2OST-11 36 - Leak Test (2 YR)

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BVPS-2 IST
VALVE OUTLINE

SYSTEM NAME: Safety Injection SYSTEM NUMBER: 11

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
2SIS*546	1	A/C	6	Check		11-1	A-9	QS	VROJ25	2OST-11.14A FS FD (R)
								LT		2OST-11.14B - Leak Test (2 YR)
2SIS*547	1	A/C	6	Check		11-1	A-9	QS	VROJ26	2OST-11.14B FS FD (R)
								LT		2OST-11.14B - Leak Test (2 YR)
2SIS*548	1	A/C	6	Check		11-1	A-10	QS	VROJ27	2OST-11.14A FS FD (R)
								LT		2OST-11.14B - Leak Test (2 YR)
2SIS*550	1	A/C	6	Check		11-1	A-10	QS	VROJ27	2OST-11.14A FS FD (R)
								LT		2OST-11.14B - Leak Test (2 YR)
2SIS*552	1	A/C	6	Check		11-1	A-10	QS	VROJ27	2OST-11.14A FS FD (R)
								LT		2OST-11.14B - Leak Test (2 YR)
2SIS*MOV836	2	A	3	Gate	S	11-1	D-5	QST	VROJ28	2OST-1.10 Stroke & Time Open/Closed (CSD or R) (RPV)
								LT		2BVT-1.47.11 Leak Test (2 YR)
2SIS*MOV840	2	A	1	Globe	S	11-1	D-6	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT		BVT-1.47.11 Leak Test (2 YR)
2SIS*MOV841	2	B	3	Gate	O	11-1	B-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
2SIS*MOV842	2	A	2	Globe	S	11-2	F-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q) (RPV)
								LTJ		2BVT-1.47.5 Leak Test (SP)
2SIS*RV858A	2	C	1x2	Relief		11-2	D-4	SPT		2BVT-1.60.5 (10 YR)
2SIS*RV858B	2	C	1x2	Relief		11-2	D-7	SPT		2BVT-1.60.5 (10 YR)
2SIS*RV858C	2	C	1x2	Relief		11-2	D-9	SPT		2BVT-1.60.5 (10 YR)
2SIS*MOV863A	2	B	8	Gate	S	11-1	E-7	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)
2SIS*MOV863B	2	B	8	Gate	S	11-1	F-6	QST		2OST-47.3A(3B) Stroke & Time Open (Q) (RPV)

BVPS 2 IST
VALVE OUTLINE

SYSTEM NAME: Safety Injection

SYSTEM NUMBER: 11

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
2SIS*MOV865A	2	B	12	Gate	O	11-2	F-4	QST	VCSJ9	20M 51 4 C & 20ST 1 10 Stroke & Time Closed (CSD) 2BVT 1 11 3 (RPV)
2SIS*MOV865B	2	B	12	Gate	O	11-2	F-7	QST	VCSJ9	20M 51 4 C & 20ST 1 10 Stroke & Time Closed (CSD) 2BVT 1 11 3 (RPV)
2SIS*MOV865C	2	B	12	Gate	O	11-2	F-8	QST	VCSJ9	20M 51 4 C & 20ST 1 10 Stroke & Time Closed (CSD) 2BVT 1 11 3 (RPV)
2SIS*MOV867A	2	B	3	Gate	S	11-1	B-2	QST		20ST 47 3A(3B) Stroke & Time Open (Q) (RPV)
2SIS*MOV867B	2	B	3	Gate	S	11-1	C-2	QST		20ST 47 3A(3B) Stroke & Time Open (Q) (RPV)
2SIS*MOV867C	2	A	3	Gate	S	11-1	C-5	QST		20ST 47 3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT		2BVT 1 47 11 Leak Test (2 YR)
2SIS*MOV867D	2	A	3	Gate	S	11-1	C-4	QST		20ST 47 3A(3B) Stroke & Time Open/Closed (Q) (RPV)
								LT		2BVT 1 47 11 Leak Test (2 YR)
2SIS*HCV868A	2	B	1	Globe	S	11-1	D-5	QST	VCST33	~~20ST 47 3A(3B)~~ Stroke & Time Open/Closed and Fail Closed ~~(Q)~~ (CSD) 20ST 1 10 (RPV)
2SIS*HCV868B	2	B	1	Globe	S	11-1	B-3	QST	VCST33	~~20ST 47 3A(3B)~~ Stroke & Time Open/Closed and Fail Closed ~~(Q)~~ (CSD) 20ST 1 10 (RPV)
2SIS*MOV868A	2	A	3	Gate	S	11-1	A-3	QST	VROJ29	20ST 1 10 Stroke & Time Open/Closed (CSD or R) (RPV)
								LT		2BVT 1 47 11 Leak Test (2 YR)
2SIS*MOV869B	2	A	3	Gate	S	11-1	B-3	QST	VROJ29	20ST 1 10 Stroke & Time Open/Closed (CSD or R) (RPV)
								LT		2BVT 1 47 11 Leak Test (2 YR)
2SIS*AOV889	2	A	3/4	Globe	S	11-2	F-1	QST		20ST 47 3A(3B) Stroke & Time Closed (Q) (RPV)
								LTJ		2BVT 1 47 5 Leak Test (SP)

BVPS-2 IST
VALVE OUTLINE

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

Valve Mark Number	Valve Class	Valve Category	Valve Size (in.)	Valve Type	NSA	Drawing		Test Requirement	VCSJ, VROJ or Relief Requests	Comments
						OM No.	Coord.			
2SIS*894	2	C	4	Check		11-1	E-3	QS		2OST-11.1.FS,FD (Q)
								QS		2OST-11.2-FS,RD (Q)
2SIS*895	2	C	4	Check		11-1	G-4	QS		2OST-11.2-FS,FD (Q)
								QS		2OST-11.1-FS,RD (Q)
2SIS*MOV8808A	2	A	14	Gate	O	11-1	E-1	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
								LT		2BVT 1.47.11-Leak Test (2 YR)
2SIS*MOV8808B	2	A	14	Gate	O	11-1	G-2	QST		2OST-47.3A(3B) Stroke & Time Closed (Q),(RPV)
								LT		2BVT 1.47.11-Leak Test (2 YR)
2SIS*MOV8811A	2	B	10	Gate	S	11-1	E-5	QST		2OST-47.3A(3B) Stroke & Time Open (Q),(RPV)
2SIS*MOV8811B	2	B	10	Gate	S	11-1	F-5	QST		2OST-47.3A(3B) Stroke & Time Open (Q),(RPV)
2SIS*RV8964A	2	C	½x1	Relief		11-1	F-7	SPT		2BVT 1.60.5-(10 YR)
2SIS*RV8964B	2	C	½x1	Relief		11-1	G-8	SPT		2BVT 1.60.5-(10 YR)
2SIS*RV8965	2	C	½x1	Relief		11-1	F-7	SPT		2BVT 1.60.5-(10 YR)
2SIS*MOV8887A	2	B	10	Gate	O	11-1	F-7	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q),(RPV)
2SIS*MOV8887B	2	B	10	Gate	O	11-1	F-8	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q),(RPV)
2SIS*MOV8888A	2	A	10	Gate	O	11-1	E-8	QST		2OST-47.3A(3B) Stroke & Time Open/Closed (Q),(RPV)
								LT		2BVT 1.47.11-Leak Test (2 YR)

VALVE COLD SHUTDOWN JUSTIFICATION 32

Valve Mark No(s): 2CHS*HCV142

Category: A **Class:** 2

System: 7 - Chemical and Volume Control

Function: This residual heat removal (RHR) system letdown flow control valve must close to provide containment isolation of penetration no. 28.

Test Requirement: Per OM-10, Paragraph 4.2.1.6, "Fail-Safe Valves," valves with fail-safe actuators shall be tested by observing the operation of the actuator upon loss of valve actuating power in accordance with the exercising frequency specified in Paragraph 4.2.1.1, "Exercising Test Frequency," which states that active Category A valves shall be tested nominally every 3 months.

Basis for CSJ: This valve is normally closed during plant operation. Its safety position is closed for containment isolation of penetration no. 28. Full-stroke exercising in the closed direction is performed quarterly as required by OM-10, Paragraph 4.2.1.1. Fail-safe testing requires a local observation of the valve actuator following ~~de-energization of the valve~~ a loss of valve actuating power. 0c However, this valve is located inside containment which is not accessible during plant operation. Therefore, fail-safe testing in the closed direction in conjunction with the quarterly stroke test cannot be performed during plant operation. Per OM-10, Paragraphs 4.2.1.6 and 4.2.1.2(c), if the fail-safe exercising frequency is not practicable during plant operation, it may be limited to fail-safe testing during cold shutdowns.

Alternate Test: Full-stroke exercised and timed closed quarterly per 2OST-47.3A (Containment Penetration and ASME XI Valve Test) and 2OST-47.3B (Containment Penetration and ASME XI Valve Test - Refueling). Failed closed during cold shutdowns per 2OST-1.10 (Cold Shutdown Valve Exercise Test).

References: OM-10, Paragraphs 4.2.1.1, 4.2.1.2(c) and 4.2.1.6.

VALVE COLD SHUTDOWN JUSTIFICATION 33

Valve Mark No(s): 2SIS*HCV868A
2SIS*HCV868B

Category: B **Class:** 2

System: 11 - Safety Injection

Function: These high head safety injection (HHSI) discharge to cold leg injection hand control valves must open and close to provide a throttled emergency boration flowpath when normal charging is lost.

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

Basis for CSJ: These valves are normally closed. Their safety position is throttled to provide an emergency boration flowpath to the cold legs in the event that the normal charging path is lost. Full or part-stroke exercising in the open and closed directions cannot be performed during plant operation because flow is required to properly close these valves. Operation of the HHSI pumps to provide the flow necessary to stroke these valves closed cannot be performed during plant operation because this will inject relatively cold water into the RCS cold legs and cause thermal shock to system piping and components which will result in an increased probability of system and component failures. OM-10, Paragraph 4.2.1.2 (c) states, "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns."

Alternate Test: Full-stroke exercised and timed open and closed during refueling outages per 2OST-1.10 (Cold Shutdown Valve Exercise Test)

References: OM-10, Paragraphs 4.2.1.1 and 4.2.1.2(e).
NUREG 1482, Section 3.1.1.1

SECTION X: VALVE REFUELING OUTAGE JUSTIFICATIONS

VALVE REFUELING OUTAGE JUSTIFICATION 49

Valve Mark No(s): 2IAC*22

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

System: 34 - Compressed Air (Containment Instrument Air)

Function: This containment instrument air header inside containment isolation check valve must close to provide containment isolation of penetration no. 59.

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

Basis for ROJ: This check valve is normally open and will remain open during operation of the containment instrument air system. Its safety position is closed for containment isolation of penetration no. 59. Full or part-stroke exercising in the closed direction can only be verified by cycling the mechanical weight loaded swing arm of the check valve or by leak testing. Because this check valve is located inside containment, it is not accessible for testing during plant operation. OM-10, Paragraph 4.3.2.2(c) states, "If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns." In addition, full or part-stroke exercising in the closed direction may not be possible during cold shutdown if the containment instrument air system is still in service. OM-10, Paragraph 4.3.2.2(e) states, "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages."

Alternate Test: Full-stroke exercised closed by mechanical exerciser using its weight loaded swing arm during cold shutdowns when the containment instrument air system is shutdown, or at least during refueling outages per 2OST-1.10 (Cold Shutdown Valve Exercise Test).

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

VALVE REFUELING OUTAGE JUSTIFICATION 50

Valve Mark No(s): 2SIS*141, 2SIS*142, 2SIS*145, 2SIS*147, 2SIS*148, 2SIS*151

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

System: 11 - Safety Injection

Function: These Safety Injection (SI) Accumulator series discharge check valves must open upon depressurization of the RCS during a loss of coolant accident (LOCA) to provide a flowpath from the SI Accumulators to the reactor coolant system (RCS) cold legs. [2SIS*141 and 145] must also open to provide a flowpath for the residual heat removal (RHR) system when it is placed into service for cooldown of the plant to cold shutdown conditions.

Test Requirement: Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months. Per OM-10, Paragraph 4.3.2.4(a), "Valve Obturator Movement," the necessary valve obturator movement shall be demonstrated by exercising the valve and observing that the obturator opens to the position required to fulfill its function. 0a

Basis for ROJ: These check valves are normally closed as pressure isolation valves (PIV's) during plant operation to isolate the lower pressure SI Accumulators from the high pressure RCS. Their safety position is open for passive low pressure injection of the SI Accumulators into the RCS cold legs during a LOCA. An additional safety position for [2SIS*141 and 145] is open to support RHR system operation during cooldown of the plant to cold shutdown conditions. Full or part-stroke exercising in the open direction cannot be performed during plant operation because the RCS is at a higher pressure than the SI Accumulators. During cold shutdowns, [2SIS*141 and 145] are capable of being part-stroke exercised in the open direction during RHR system operation. However, full-stroke exercising of all six check valves in the open direction by initiating the maximum required accident condition flowrate in accordance with Generic Letter No. 89-04, Position 1, in addition to part-stroke exercising the remaining four check valves in the open direction, cannot be performed during cold shutdowns because of a lack of installed instrumentation. A proposed alternate method which measures a flow coefficient value (C_v) during a blowdown at reduced accumulator pressure (see next paragraph), also cannot be performed during cold shutdowns because of a lack of

VALVE REFUELING OUTAGE JUSTIFICATION 50

Basis for ROJ:

installed instrumentation and an uncontrolled test volume change if the SI Accumulator discharge MOV isolation valves are opened at low RCS pressure. In addition, the reduced pressure which is required to perform this alternate test method may not always be obtainable during each cold shutdown. Therefore, stroke testing, if attempted at cold shutdowns, could extend the length of a plant shutdown due to the extensive preparatory work in establishing the proper RCS and SI Accumulator conditions necessary to perform the test, due to delays involved with installation and removal of test equipment inside containment, and for delays while the SI Accumulators are re-filled and pressurized. For [2SIS*141 and 145], OM-10, Paragraph 4.3.2.2(d) states, "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdown, and full-stroke during refueling outages." For the remaining check valves, OM-10, Paragraph 4.3.2.2(e) states, "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

These SI Accumulator series discharge check valves will be full-stroke exercised in the open direction during each refueling outage using a method similar to the test used at the Fort Calhoun Nuclear Station (Reference: NUREG-1482, Section 4.1.2, "Exercising Check Valves with Flow and Nonintrusive Techniques," Issue 1). The test method will measure a flow coefficient value (C_v) during a blowdown at reduced accumulator pressure. The SER for the Fort Calhoun test method will be followed and the recommendations incorporated.

Alternate Test:

[2SIS*141 and 145] will be part-stroke exercised open during cold shutdowns per 2OST-10.1 and 2OST-10.2 (RHR Pump Performance Tests). The remaining check valves will be full-stroke exercised open during refueling outages per 2BVT 1.11.3 (SI Accumulator Discharge Check Valves Full Stroke Test). As a special test after maintenance, 2OST-11.15 may be performed to part-stroke exercise applicable check valve(s) in the open direction.

References:

OM-10, Paragraphs 4.3.2.1, 4.3.2.4(a), 4.3.2.2(d) and 4.3.2.2(e).
Generic Letter No. 89-04, Position 1.
NUREG-1482, Section 4.1.2 (Issue 1).

SECTION XI: VALVE RELIEF REQUESTS

VALVE RELIEF REQUEST 1

Valve Mark No(s):	2SIS*141, 2SIS*142, 2SIS*145, 2SIS*147, 2SIS*148, 2SIS*151
Category: A/C	**Class:** 1
System:	11 - Safety Injection
Function:	These Safety Injection (SI) Accumulator series discharge check valves must open upon depressurization of the RCS during a loss of coolant accident (LOCA) to provide a flowpath from the SI Accumulators to the reactor coolant system (RCS) cold legs. [2SIS*141 and 145] must also open to provide a flowpath for the residual heat removal (RHR) system when it is placed into service for cooldown of the plant to cold shutdown conditions.
Test Requirement:	Per OM-10, Paragraph 4.3.2.1, "Exercising Test Frequency," check valves shall be exercised nominally every 3 months. Per OM-10, Paragraph 4.3.2.4(a), "Valve Obturator Movement," the necessary valve obturator movement shall be demonstrated by exercising the valve and observing that the obturator opens to the position required to fulfill its function.
Basis for Relief:	In accordance with 10CFR50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative would provide an acceptable level of quality and safety. These check valves are normally closed as pressure isolation valves (PIV's) during plant operation to isolate the lower pressure SI Accumulators from the high pressure RCS. Their safety position is open for passive low pressure injection of the SI Accumulators into the RCS cold legs during a LOCA. An additional safety position for [2SIS*141 and 145] is open to support RHR system operation during cooldown of the plant to cold shutdown conditions. Full or part-stroke exercising in the open direction cannot be performed during plant operation because the RCS is at a higher pressure than the SI Accumulators. During cold shutdowns, [2SIS*141 and 145] are capable of being part-stroke exercised in the open direction during RHR system operation. However, full-stroke exercising of all six check valves in the open direction by initiating the maximum required accident condition flowrate in accordance with Generic Letter No. 89-04, Position 1, in addition to part-stroke exercising the remaining four check valves in the open direction, cannot be performed during cold shutdowns because of a lack of installed instrumentation. A proposed alternate method which measures a flow coefficient value (C_v) during a blowdown at reduced accumulator pressure (see next paragraph), also cannot be performed during cold shutdowns because of a lack of

VALVE RELIEF REQUEST 1

Basis for Relief:

installed instrumentation and an uncontrolled test volume change if the SI Accumulator discharge MOV isolation valves are opened at low RCS pressure. In addition, the reduced pressure which is required to perform this alternate test method may not always be obtainable during each cold shutdown. Therefore, stroke testing, if attempted at cold shutdowns, could extend the length of a plant shutdown due to the extensive preparatory work in establishing the proper RCS and SI Accumulator conditions necessary to perform the test, due to delays involved with installation and removal of test equipment inside containment, and for delays while the SI Accumulators are re-filled and pressurized. For [2SIS*141 and 145], OM-10, Paragraph 4.3.2.2(d) states, "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdown, and full-stroke during refueling outages." For the remaining check valves, OM-10, Paragraph 4.3.2.2(e) states, "If exercising is not practicable during plant operation or during cold shutdowns, it may be limited to full-stroke during refueling outages."

Relief is requested to full-stroke exercise the SI Accumulator series discharge check valves in the open direction during each refueling outage using a method similar to the test used at the Fort Calhoun Nuclear Station (Reference: NUREG-1482, Section 4.1.2, "Exercising Check Valves with Flow and Nonintrusive Techniques," Issue 1). The test method will measure a flow coefficient value (C_v) during a blowdown at reduced accumulator pressure. The SER for the Fort Calhoun test method will be followed and the recommendations incorporated.

Alternate Test:

[2SIS*141 and 145] will be part-stroke exercised open during cold shutdowns per 2OST-10.1 and 2OST-10.2 (RHR Pump Performance Tests). The remaining check valves will be full-stroke exercised open during refueling outages per 2BVT 1.11.3 (SI Accumulator Discharge Check Valves Full Stroke Test). As a special test after maintenance, 2OST-11.15 may be performed to part-stroke exercise applicable check valve(s) in the open direction.

References:

OM-10, Paragraphs 4.3.2.4, 4.3.2.4(a), 4.3.2.2(d) and 4.3.2.2(e).
Generic Letter No. 89-04, Position 1.
NUREG-1482, Section 4.1.2 (Issue 1).

DELETED

This Relief Request was converted into VROJ51 per the NRC SER for the Second 10-Year Interval for Pumps and Valves Inservice Testing (IST) Program - BVPS-2, dated November 18, 1997.

VALVE RELIEF REQUEST 2

Valve Mark No(s): 2EGA*SOV202-1
2EGA*SOV202-2
2EGA*SOV203-1
2EGA*SOV203-2

Category: B **Class:** 3

System: 36 - 4KV Station Service (Diesel Air Start)

Function: These Emergency Diesel Generator air start solenoid valves must open to permit air to start the Emergency Diesel Generators.

Test Requirement: Per OM-10, Paragraph 4.2.1.3, "Valve Obturator Movement," the necessary valve obturator movement shall be determined by exercising the valve while observing an appropriate indicator, such as indicating lights which signal the required change of obturator position. Per OM-10, Paragraphs 4.2.1.4(a) and (b), "Power-Operated Valve Stroke Timing," the stroke time of all power-operated valves shall be measured to at least the nearest second with a limiting value of full-stroke time specified.

Basis for Relief: In accordance with 10CFR50.55a(f)(5)(iii), relief is requested on the basis that compliance with the code requirements is impractical for BVPS-2.

These valves are quick acting and do not have position indication. Therefore, in accordance with NUREG-1482, Section 4.2.8, "Solenoid-Operated Valves," operation of these valves will be monitored by timing the starting time to rated speed of each Emergency Diesel Generator (EDG). Individual valves will be tested by isolating one bank of air prior to starting the EDG on an alternating frequency. This will ensure each bank is capable of starting the EDG's in the required time and that the air start solenoids are not degrading. Per NUREG-1482, Section 3.4, "Skid-Mounted Components and Component Subassemblies," the staff has determined that the testing of the major component is an acceptable means for verifying the operational readiness of the skid-mounted and component subassemblies if the licensee documents this approach in the IST Program.

Alternate Test: Stroked and indirectly timed on an alternating frequency in conjunction with 2OST-36.1 and 2OST-36.2 (Emergency Diesel Generator Monthly Tests). Assign a limiting stroke time based on the EDG starting requirements ~~for ESF response time (EDG ready to accept load is~~ ≤10 seconds). | oc

References: OM-10, Paragraphs 4.2.1.3, 4.2.1.4(a), and 4.2.1.4(b).
NUREG-1482, Sections 3.4 and 4.2.8.