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DUANE ARNOLD ENERGY CENTER

INSERVICE TESTING PROGRAM

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Iowa Electric Light and Power Company
Duane Arnold Energy Center
(Docket No. 50-331)

ASME INSERVICE TESTING PROGRAM

FOR

PUMPS AND VALVES

RECORD OF REVISIONS

<u>REVISION</u>	<u>DATE</u>
Original	March 1, 1978
Rev. 1	October, 1978
Rev. 2	May 1, 1980
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1.0 INTRODUCTION

Revision 5 of the Duane Arnold Energy Center (Unit 1) ASME Inservice Testing Program for Pumps and Valves will be in effect through February 1, 1985, the end of the first 120-month (10-year) inspection interval. The program will be updated prior to the start of the second inspection interval in accordance with the requirements of 10CFR 50.55a(g).

This document outlines the inservice testing (IST) program for Duane Arnold Energy Center, based on the requirements of Section XI of the ASME Boiler & Pressure Vessel Code, 1980 Edition through the Winter 1980 Addenda. All references to IWP or IWV in this document correspond to Subsections IWP or IWV, respectively, of ASME Section XI, 1980 Edition through the Winter 1980 Addenda unless otherwise noted.

The inservice inspection (ISI) classification boundaries for the Duane Arnold Energy Center are identical to the design classification or quality group boundaries shown on the plant piping and instrument diagrams (P&IDs). This IST program was developed using the ISI classification boundaries and the following documents:

- Title 10, Code of Federal Regulations, Part 50, paragraph 50.55a(g)
- NRC Regulatory Guides Division 1
- Standard Review Plan 3.9.6, "Inservice Testing of Pumps and Valves"
- Division 1 (Draft) Regulatory Guide and Value/Impact Statement, "Identification of Valves for Inclusion in Inservice Test Programs"
- "NRC Staff Guidance for Preparing Pump and Valve Testing Programs and Associated Relief Request," January 1978
- Final Safety Analysis Report, Duane Arnold Energy Center
- Technical Specifications, Duane Arnold Energy Center

The inservice tests identified in this program will verify the operational readiness of pumps and valves whose functions are required to mitigate the consequences of an accident or to bring the reactor to a cold shutdown condition. The ISI classification of each pump and valve matches the ISI classification indicated on the P&IDs excepting those pumps and valves in the IST boundaries that are identified as non-classed (NC).

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2.0 TESTING PROGRAM FOR PUMPS

2.1 General Information

2.1.1 Applicable Code

This Inservice Testing Program for ISI Class 1, 2, 3 and NC Pumps meets the requirements of Subsection IWP of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition through the Winter of 1980 Addenda. Where these requirements are determined to be impractical, specific requests for relief have been written and included in Section 2.2.

2.1.2 Pump Program Tables

The tables in Appendix A list all pumps included in the Duane Arnold Energy Center IST Program. Data contained in these tables identifies those pumps subject to inservice testing, the inservice test quantities, the inservice testing interval, and any applicable remarks. The column headings are listed and explained below:

- PUMP NUMBER: The pump identification number
- PUMP NAME: The system of which the pump is a component.
- CLASS: The ISI classification of the pump
- P&ID: The DAEC drawing number for the P&ID referring to the pump
- COOR: The drawing coordinate location of the pump on the P&ID
- SPEED, INLET PRES, DIFF PRES, FLOWRATE, VIBRATION AND BEARING TEMP: Inservice test quantities to be measured. When the character "Y" appears in a particular test quantity column, that quantity will be measured during inservice testing in accordance with Subsection IWP. If a modified test is planned or if the character "N" appears in a particular test quantity column, a request for relief number will be referenced. Requests for relief are identified PR-X. The requests for relief are included in Section 2.2.
- TEST INTERVAL: The frequency of testing.
- REMARKS: Remarks in the IST Program are coded as Note 001, Note 002, etc.

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2.1.3 Measurement of Test Quantities

- SPEED: Per IWP-4400, shaft speed measurements are not applicable (NA) for pumps directly coupled to synchronous or induction-type drivers. For variable speed pumps, the pump speed is set at the reference speed per IWP-3100.
- INLET PRESSURE: For pumps taking suction from a tank or the residual heat removal (RHR) service water complex basin, inlet pressure will be calculated (using appropriate correction factors) from a measured tank or basin level. All other inlet pressure measurements will be taken using pressure instruments at or near the pump inlet.
- DIFFERENTIAL PRESSURE: Differential pressure will be calculated from inlet and discharge pressure measurements or by direct differential pressure measurement.
- FLOWRATE: Pump flowrate will be measured.
- VIBRATION: Pump vibration will be measured.
- BEARING TEMPERATURE: Pump bearing temperature(s) will be measured when practical.

2.1.4 Allowable Ranges of Test Quantities

The allowable ranges specified in Table IWP-3100-2 will be used for differential pressure, flow and vibration measurements except as discussed in PR-8. Should a measured test quantity fall outside the allowable range, the possibility of defining an expanded allowable range, in accordance with ASME Code interpretation XI-1-79-19, will be investigated. In some cases, the performance of a pump may be adequate to fulfill its safety function even though there may be some parameter variation outside of the allowable ranges.

2.1.5 Bearing Lubricant

As specified in Table IWP-3100-1, the pump bearing lubricant level or pressure will be observed during inservice testing.

2.1.6 Instrument Accuracy

Allowable instrument accuracies are given in Table IWP-4110-1. In some cases, relief has been requested from the requirements of Table IWP-4110-1. (See Relief Request No. PR-7)

2.1.7 Exempted Pumps

The reactor recirculation centrifugal pumps have been exempted from the IST program because they do not perform a safety function. The reactor recirculation jet pumps have been exempted from the IST program because Subsection IWP is applicable to centrifugal and positive displacement pumps only. These pumps have been exempted in accordance with IWP-1100.

SECTION 2.2

RELIEF REQUESTS FOR PUMP TESTING PROGRAM

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RELIEF REQUEST NO. PR-1

PUMP NUMBER:

DIESEL FUEL OIL PUMPS 1P-44A and 1P-44B

SECTION XI REQUIREMENTS:

Measure pump vibration amplitude quarterly and bearing temperature annually.
(IWP-3100)

BASIS FOR RELIEF:

The diesel fuel oil pumps and motors are inaccessible during operation. Both the pump and motor are submerged inside the diesel fuel oil tank (IT-35).

ALTERNATE TESTING:

No alternate testing is proposed.

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RELIEF REQUEST NO. PR-2

PUMP NUMBER:

EMERGENCY SERVICE WATER (ESW) PUMPS 1P-99A and 1P-99B.

SECTION XI REQUIREMENTS:

Measure bearing temperature annually. (IWP-3100)

BASIS FOR RELIEF:

The ESW pump motors are provided with roller bearings immersed in an integral oil bath reservoir. Discussions with the manufacturer of the motors (General Electric Company) indicate that measuring bearing temperatures would be difficult and of marginal value. Likewise, measuring oil temperature on an annual basis, is also questionable. It is estimated that approximately four hours of pump operation would be required for the oil temperature to stabilize. Furthermore, in this particular case due to the arrangement of the oil reservoir, oil temperature is more a function of winding and ambient air temperatures than of bearing temperature. It is likely that annual trends of oil temperature in this case would be of little value in determining the condition of pump bearings.

ALTERNATE TESTING:

No alternate testing is proposed.

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RELIEF REQUEST NO. PR-3

PUMP NUMBER:

HIGH PRESSURE COOLANT INJECTION (HPCI) booster and main pumps 1P-216
REACTOR CORE ISOLATION COOLING (RCIC) pump 1P-226

SECTION XI REQUIREMENTS:

Measure pump vibration amplitude quarterly and bearing temperature annually.
(IWP-3100)

BASIS FOR RELIEF:

These measurements require stationing a man in close proximity to the pumps in the HPCI and RCIC rooms. Because of the rooms' layout, the man would be in a confined area distant from the exits. Consequently, should an accident occur such as the rupture of a steam line rupture disc, which has occurred previously (Ref. RO 78-02), the man probably could not exit in time to prevent serious injury. Thus, measurement of HPCI and RCIC pump vibration and bearing temperatures represents a significant safety hazard.

ALTERNATE TESTING:

Installation of permanent sensors for bearing temperature and vibration with remote readouts is under evaluation and is slated for completion in 1985. At that time measurements will be taken in accordance with IWP-3100 or request for relief will be submitted.

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RELIEF REQUEST NO. PR-4

PUMP NUMBER:

RHR SERVICE WATER PUMPS 1P-22A, B, C, & D
 ESW PUMPS 1P-99A & B
 RIVER WATER PUMPS 1P-117A, B, C, & D
 DIESEL FUEL OIL TRANSFER PUMPS 1P-44A & B
 STANDBY LIQUID CONTROL PUMPS 1P-230A & B

SECTION XI REQUIREMENTS:

Measure pump inlet pressure before starting the pump and during the test.
 (Table IWP-3100-1)

BASIS FOR RELIEF:

Pumps other than 1P-230 A & B are submerged and have inlet pressures which correspond to levels of the wet pit, the river, or diesel oil storage tank. Because these levels remain relatively constant before and during the test, only one measurement per test is necessary.

In the case of the standby liquid control (SBLC) pumps, no gauge is installed at the pump suction and suction pressure is assumed to be equivalent to the static head corresponding to the average height of test tank level above the pump suction.

ALTERNATE TESTING:

One inlet pressure, based on wet pit, river, or oil tank level, will be calculated per test.

One suction pressure for the SBLC Pumps will be calculated from the average test tank level during the test.

RELIEF REQUEST NO. PR-5

PUMP NUMBER:

RIVER WATER PUMPS 1P-117A, B, C, and D
CORE SPRAY PUMPS 1P-211A and B
HPCI PUMP 1P-216
RCIC PUMP 1P-226
RHR PUMPS 1P-229A, P, C, and D

SECTION XI REQUIREMENT:

Reference values shall be at points of operation readily duplicated during subsequent inservice testing. (IWP-3110)

BASIS FOR RELIEF:

Operating experience has shown that flowrates (independent variables during inservice performance testing) cannot be readily duplicated with the present flow control systems. Efforts to exactly duplicate reference values would require excessive valve manipulation which could ultimately result in damage to valves or operators.

ALTERNATE TESTING:

DAEC will implement an alternate means of measuring pump performance. Reference values will be established for flowrate (Q_r) and differential pressure (dP_r) during the reference value tests. However, in lieu of duplicating Q_r during subsequent inservice performance tests, a flowrate (Q_l), lower than Q_r , will be obtained and recorded along with the corresponding differential pressure (dP_l). Next, a flowrate (Q_h), higher than Q_r , will be obtained and recorded along with its corresponding differential pressure (dP_h). These two points, (Q_l, P_l) and (Q_h, P_h), define a small portion of the pump curve which intersects the vertical line defined by Q_r (See Figure PR-5.1). Using linear interpolation between the two points, a differential pressure (dP) will be computed from the intersection of the pump curve and the vertical line established by Q_r . This computed value for dP will be recorded and compared to the reference differential pressure (dP_r) per table IWP-3100-2.

The alternate testing procedure described above assumes that the pump curve is nearly linear between Q_l and Q_h . Procedural limits for Q_l and Q_h have been established and individual pump curves have been analyzed to ensure near linearity between Q_l and Q_h .

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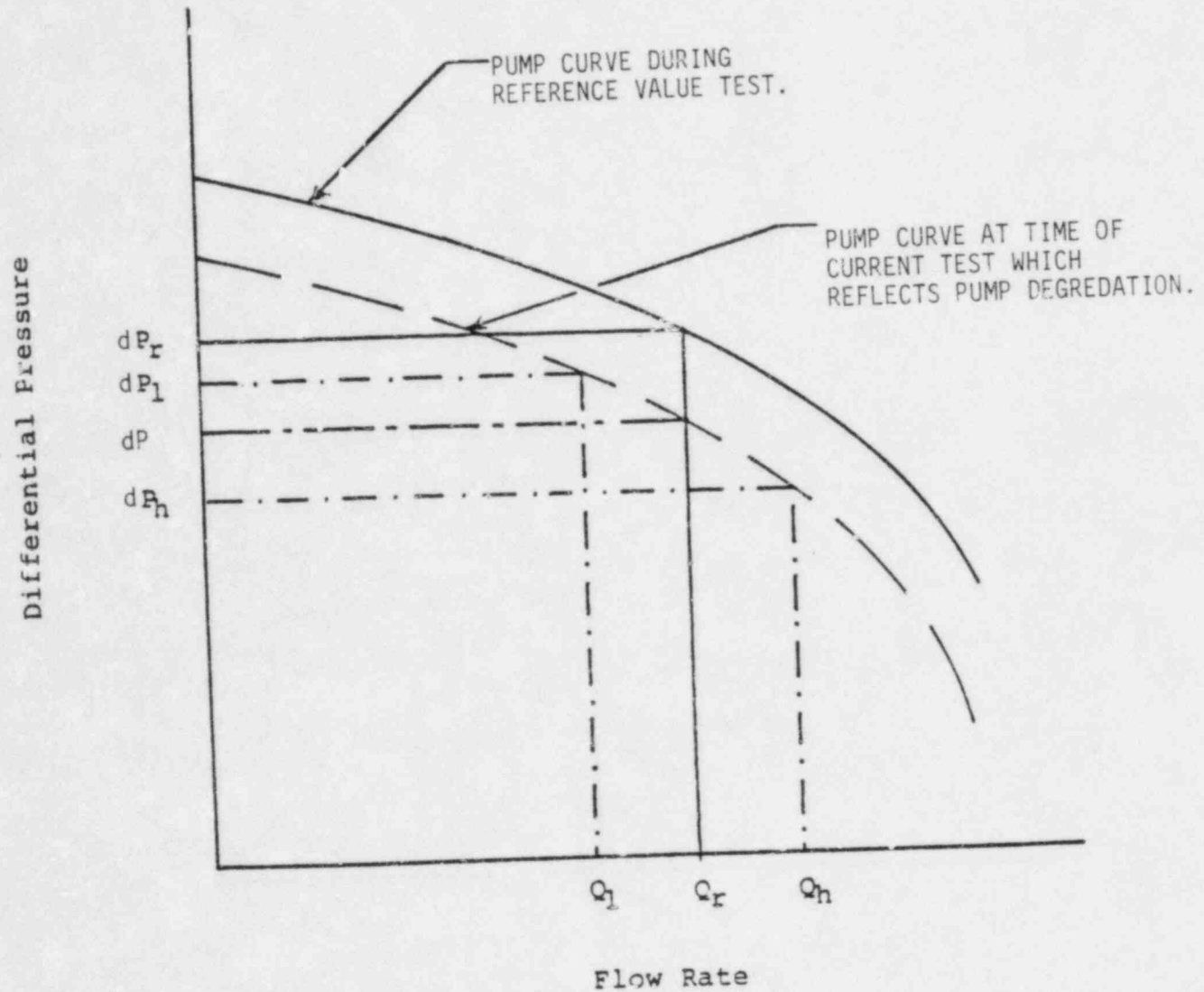


Figure PR-5.1 Alternate Testing Approach for Determination of Hydraulic Change

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RELIEF REQUEST NO. PR-6

PUMP NUMBER:

DIESEL FUEL OIL TRANSFER PUMPS 1P-44A and B

SECTION XI REQUIREMENTS:

Each pump shall be run at least five minutes under conditions as stable as system permits. (IWP-3500)

BASIS FOR RELIEF:

The diesel fuel oil transfer pumps cannot be operated for five minutes because the available capacities of the diesel oil day tanks are too small. Sufficient volume for both five minutes of operation and flow measurement by increase in tank level is required. Since the tank is filled at the end of each diesel generator operability test, about two hours of operation of the diesel generator would be needed to reduce the tank level to that required for retesting of the fuel oil pumps. The additional hour of operation of the diesel generator, beyond the one hour technical specification requirement, is unacceptable.

ALTERNATE TESTING:

As soon as the diesel fuel oil transfer pumps reach stable operation at the reference conditions, as indicated by a steady reading of the discharge pressure gauges, test data will be recorded.

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RELIEF REQUEST NO. PR-7

PUMP NUMBER:

DIESEL OIL TRANSFER PUMPS 1P-44A and B
RIVER WATER PUMPS 1P-117A, B, C and D
HPCI PUMP 1P-216
RCIC PUMP 1P-226

SECTION XI REQUIREMENTS:

Instrument accuracy shall be within the limits of Table IWP-4110-1.

BASIS FOR RELIEF.

Based on engineering judgement, the difference between an instrument with an accuracy of + 2.0 percent of full scale and one with an accuracy of + 2.25 percent of full scale is insignificant. The costs due to replacing the existing instrumentation with new devices that meet the limits of Table IWP-4110-1 are not justified since there will be no corresponding improvement in the level of plant safety.

ALTERNATE TESTING:

Inservice test measurements of pressure, differential pressure, and flowrate will be taken using instruments with instrument accuracies that are less than or equal to + 2.25 percent of full scale.

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RELIEF REQUEST NO. PR-8

PUMP NUMBER:

All pumps (except Diesel Fuel Oil Transfer Pumps 1P-44 A & B).

SECTION XI REQUIREMENTS:

At least one displacement vibration amplitude (peak-to-peak composite) shall be read during inservice testing. (IWP-4510)

BASIS FOR RELIEF:

Measuring vibration in velocity units rather than amplitude is an industry accepted method considered to be more sensitive to small changes that oftentimes are indicative of developing mechanical problems. Velocity measurements detect not only high-amplitude vibration, characteristic of major mechanical problems, but low-amplitude vibrations caused by misalignment, imbalance, or bearing wear.

ALTERNATE TESTING:

Where practical, pump vibration measurements will be taken in velocity units. In all other cases, displacement measurements will conform to Paragraph IWP 4510. Acceptance criteria for velocity measurements will conform to ASME Publication 78-WA/NE-5 and Table PR-8.1.

TABLE PR-8.1

(1)

ALLOWABLE RANGES OF TEST QUANTITIES

QUANTITY	ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
		LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
v When $0 \leq v_r \leq .15$ in/sec	0 to .3 in/sec	None	.3 in/sec to .45 in/sec	None	$v > .45$ in/sec
v When $.15$ in/sec $< v_r$ $< .3$ in/sec	0 to .45 in/sec	None	.45 in/sec to .75 in/sec	None	$v > .75$ in/sec
v When $.3$ in/sec $< v_r$ $< .6$ in/sec	0 to .9 in/sec	None	.9 in/sec to 1.5 in/sec	None	$v > 1.5$ in/sec
v When $.6$ in/sec $< v_r$ < 1.0 in/sec	0 to 1.1 in/sec	None	1.1 in/sec to 1.5 in/sec	None	$v > 1.5$ in/sec

Where:

 v = velocity measured in inches/second, peak. v_r = reference velocity measured.

(1) See ASME Technical Paper 78-WA/NE-5.

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RELIEF REQUEST NO. PR-9

PUMP NUMBER:

SCREEN WASH PUMPS 1P-112A and B

SECTION XI REQUIREMENTS:

An inservice test shall be run on each pump nominally every 3 months during normal plant operation. (IWP-3400)

BASIS FOR RELIEF:

There is currently no permanent instrumentation installed nor are there provisions for the installation of temporary instrumentation. An engineering evaluation is underway to identify instrumentation requirements and initiate necessary system modifications. Modifications will be accomplished during 1985.

ALTERNATE TESTING:

No alternate testing is proposed until modifications are completed. These pumps are currently test-operated as part of the DAEC surveillance test program.

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RELIEF REQUEST NO. PR-10

PUMP NUMBER:

DIESEL FUEL OIL PUMPS 1P-44 A & B

SECTION XI REQUIREMENTS:

Pump test results shall be analyzed per IWP-3200.

BASIS FOR RELIEF:

The ASME recognizes that the characteristics of systems containing other than steam or water (eg. fuel oil) may not necessarily lend themselves to the type and detailed requirements as specified by Subsection IWP. This is so stated in the ASME response to WPPSS inquiry, File no. BC 77-666/NI 77-371 dated 1/8/79. (See Appendix C) In cases where test data is erratic or questionable, strict compliance with the Section XI requirements will likely result in unnecessary pump maintenance and excessive testing of the fuel oil pumps and the emergency diesel generators.

ALTERNATE TESTING:

Analysis of the quarterly test data will be based on IWP-3200. In those cases where the test results are obviously erratic or misleading, alternate acceptance criteria will be developed.

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3.0 INSERVICE TESTING PROGRAM FOR VALVES

3.1 General Information

This testing program for ISI Class 1, 2, 3, and NC valves meets the requirements of Subsection IWV of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition through the Winter 1980 Addenda. Where these requirements are determined to be impractical, specific requests for relief have been written and included in Section 3.2.

The tables in Appendix B list all ISI Class 1, 2, 3, and NC valves that have been assigned valve categories. Valves exempt per IWV-1200 are not listed. The following information is included for each valve:

- VALVE NUMBER: The valve identification number.
- P&ID COORDINATE: The drawing coordinate location on the P&ID for the valve.
- CLASS: The ISI Classification of the valve.
- VALVE CATEGORY: The category(s) assigned to the valve based on the definitions per IWV-2200. Four (4) separate categories are defined in the Code:
 - CATEGORY A - Valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment or their safety function.
 - CATEGORY B - Valves for which a specific amount of leakage in the closed position is not measured but which require stroke testing to verify their ability to fulfill their safety function.
 - CATEGORY C - Valves which are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves).
 - CATEGORY D - Valves which are actuated by an energy source capable of only a single operation (eg. explosively-actuated valves).
- VALVE SIZE: The nominal size of the valve in inches.

- VALVE TYPE: The valve body design as indicated by the following abbreviations:

ANGLE	ANG
BALL	BAL
BUTTERFLY	BTF
CHECK	CK
EXCESS FLOW CHECK	XFC
GATE	GA
GLOBE	GL
NEEDLE	NDL
NOTCHED GLOBE	NGL
PLUG	PLG
RELIEF	RV
RUPTURE DIAPHRAGM	RPD
SAFETY	SV
SHEAR	SH
STOP CHECK	SCK
3-WAY	3WY
4-WAY	4WY

- ACTUATOR TYPE: The type of valve actuator as indicated by the following abbreviations:

MOTOR OPERATOR	MO
AIR-PILOT OPERATOR	AP
AIR OPERATOR	AO
SOLENOID OPERATOR	SO
HYDRAULIC OPERATOR	HO
EXPLOSIVE ACUTATOR	EXP
MANUAL	M
SELF ACTUATED & MANUAL OPERATED	MSA
SELF ACTUATED	SA
SELF ACTUATED & MOTOR OPERATED	SAM
SELF ACTUATED & PILOT OPERATED	SAP
SELF ACTUATED, TESTABLE CHECK	SAT

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- NORMAL POSITION: The position of the valve during normal plant operation, specified as follows:

O	Normally Open
C	Normally Closed
O/LO	Normally Open/Locked Open
O/LC	Normally Open/Locked Closed
O/KL	Normally Open/Key Locked
O/FO	Normally Open/Fail Open
O/FC	Normally Open/Fail Closed
O/KO	Normally Open/Key Locked and Fail Open
C/LO	Normally Closed/Locked Open
C/LC	Normally Closed/Locked Closed
C/KL	Normally Closed/Key Locked
C/FO	Normally Closed/Fail Open
C/FC	Normally Closed/Fail Closed
C/KC	Normally Closed/Key Locked and Fail Closed
NE	Normally Energized
ND	Normally De-energized

Valves with fail-safe positions are indicated as either FO-fail open or FC-fail closed.

- TEST: The test(s) that will be performed to fulfill the requirements of Subsection IWV. The test definitions and abbreviations used are identified in Table 3.1-1.
- TEST FREQUENCY: The frequency at which the above mentioned tests will be performed. Test frequencies are defined in Table 3.1-2.
- MAXIMUM STROKE TIME: The limiting maximum value of full stroke time, in seconds, for power-operated valves in Category A or B.
- MAXIMUM LEAKAGE: The maximum leakage allowed during the specified leaktest. The abbreviations for the units of measurement are:
 - C Standard cubic centimeters per minute.
 - P Pressure decay in pounds per square inch per minute
 - G Gallons per minute
- RELIEF REQUEST: The reference to a relief request in Section 3.2 for valve testing. Requests for relief are identified as VR-XX.
- REMARKS: Remarks in the IST Program are coded as NOTE 001, NOTE 002, etc.

TABLE 3.1-1
INSERVICE VALVE TESTS

<u>TEST</u>	<u>TEST NAME</u>	<u>TEST DESCRIPTION</u>
AT-1	Type C leaktest	Containment isolation valves will be seat leak tested in accordance with DAEC Technical Specification requirements and Appendix J, 10CFR50.
AT-2	Excess flow check valve test	Excess flow check valves will be tested in accordance with DAEC Technical Specifications, Section 4.7.D.
AT-3	Safety and relief valve	Safety and relief valve leakage is continuously monitored by the safety and relief valve tailpipe temperature monitor. An alarm at 250°F indicates safety or relief valve leakage. Refer to DAEC Technical Specifications, Section 4.6.D.
AT-4	Vacuum breaker leaktest	The suppression chamber-drywell vacuum breaker will be leak tested in accordance with DAEC Technical Specifications, Section 4.7.4.
AT-5	Pressure isolation valve leaktest	Those valves so designated will be leak tested in accordance with IWV-3420 using water as a test medium.
BTO	Full-stroke exercise test to the OPEN position (IWV-3412 and 3413)	Exercise testing in the open direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction tested and timed (open) is based on the direction the valve disk must travel to fulfill a safety function.
BTC	Full-stroke exercise test to the CLOSE position (IWV-3412 and 3413)	Exercise testing in the close direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction tested and timed (close) is based on the direction the valve disk must travel to fulfill a safety function.
BTD	Full-stroke exercise test to de-energized position	Solenoid valves, which direct control air to main air-operated valves, are shown to stroke to their de-energized position by the proper operation of the associated main valves.

TABLE 3.1-1

INSERVICE VALVE TESTS (continued)

<u>TEST</u>	<u>TEST NAME</u>	<u>TEST DESCRIPTION</u>
BTE	Full-stroke exercise test to energized position valves.	Solenoid valves, which direct control air to main air-operated valves, are shown to stroke to their energized position by the proper operation of the respective main valves.
CT-CO	Check valve exercise test to OPEN position (IWV-3412)	Check valves will be exercised from the fully closed to the fully open positions. Verification of safety basis system flow through a check valve shall be an adequate demonstration that the valve is full open. The stroke direction tested (open) is based on the direction the valve disk must travel to fulfill a safety function.
CT-CC	Check valve exercise test to CLOSED position (IWV-3412)	Check valves will be exercised from the fully open to the fully closed positions. The stroke direction tested (closed) is based on the direction the valve disk must travel to fulfill a safety function.
CT-SP	Relief valve set point verification test (IWV-3510)	Relief and safety valve set point will be verified in accordance with IWV-3510.
DT	Explosive valve test (IWV-3610 and 3620)	Explosively-actuated valves will be tested in accordance with IWV-3610.
FST	Fail-safe test (IWV-3415)	All valves with fail-safe actuators will be tested to verify proper fail-safe operation upon loss of actuator electric power.
PIT	Position indication checks (IWV-3300)	All valves with position indicators will be checked to verify that remote valve indicators accurately reflect valve operation

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TABLE 3.1-2
TEST FREQUENCY

(1)

<u>TEST FREQUENCY</u>	<u>OPERATIONAL CONDITION</u>	<u>FREQUENCY OF TESTING</u>
OP	Power operation	At least once per 92 days
CS	Cold shutdown	See (2) below
RR	Refueling	Not less than once every two years
SP	See appropriate relief request	See appropriate relief request
5Y	No operational condition limitations	Every five years (see Article I WV-3511). Applies to CT-SP test.
2Y	No operational condition limitations	Every two years (see Article I WV-3300). Applies to PIT test.

(1) Operational conditions are defined in DAEC Technical Specifications, page 1.0-3.

(2) Inservice valve testing will commence within 48 hours of reaching the cold shutdown condition as defined in the DAEC Technical Specifications. Testing not completed before startup may be completed during subsequent cold shutdowns. Valve testing need not be performed more often than once every three months. In the case of extended cold shutdowns, the testing need not be started within the 48-hour limitation. However, in these instances, all valve testing must be completed prior to startup.

NOTE: It is expected that the required testing will normally be completed within 96 hours following cold shutdown. However, completion of all valve testing during cold shutdowns is not required if plant operating conditions do not permit testing of specific valves.

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SECTION 3.2

RELIEF REQUESTS FOR INSERVICE VALVE TESTING PROGRAM

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RELIEF REQUEST NO. VR-1

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RELIEF REQUEST NO. VR-2

SYSTEMS:

Various

COMPONENTS:

All solenoid and air-pilot operators without individual position indication.

CATEGORY:

A & B

FUNCTION:

Solenoid and air-pilot operators are used to control actuators on many valves.

TEST REQUIREMENT:

Stroke time evaluation per IWV-3413 (b).

BASIS FOR RELIEF:

Solenoid and air-pilot valves which control the air supply to a main valve usually do not have indicator lights. However, the operation of the main valve within its stroke time limit implies that the solenoid and/or air-pilot valve is performing satisfactorily.

ALTERNATE TESTING:

For solenoid-operated and air pilot-operated valves which control the air supply to air-operated valves and have no individual position indication, verification that the main valve has stroked to the correct position within its respective time limits will provide adequate evidence that the solenoid or air pilot-operated valve has stroked to its proper position within the required time. When the letters "NA" appear in the stroke time column of the Inservice Testing Program Listing, the valve's stroke time is verified indirectly by the stroke time measurement of its associated main valve.

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RELIEF REQUEST NO. VR-3

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RELIEF REQUEST NO. VR-4

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RELIEF REQUEST NO. VR-5

-VOID-

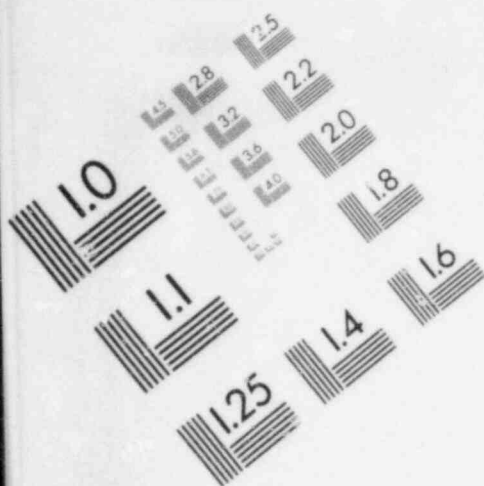
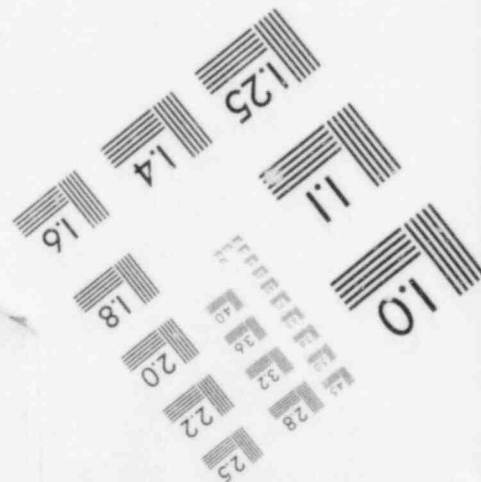
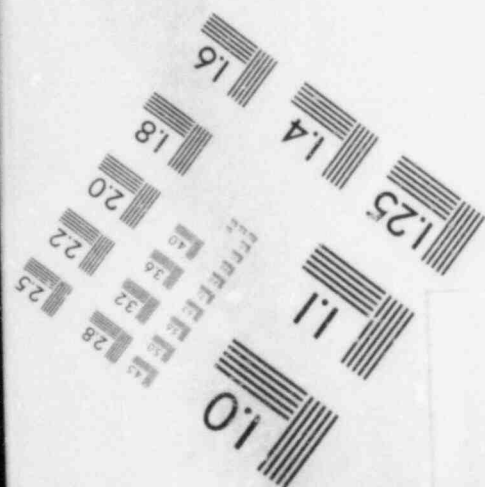
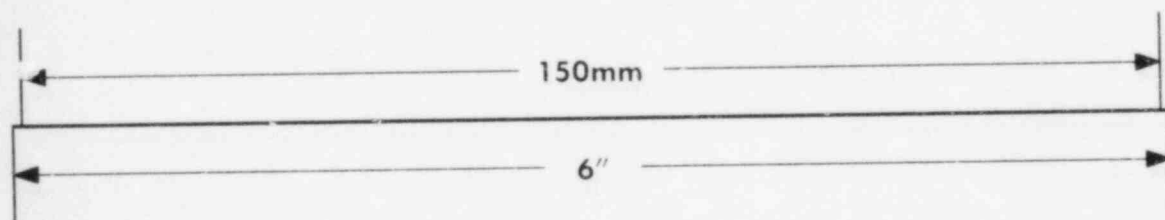
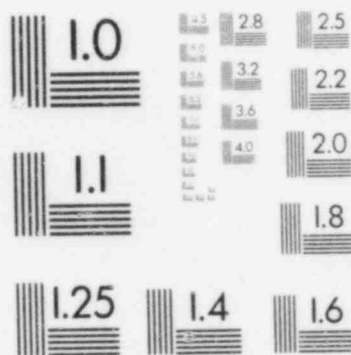
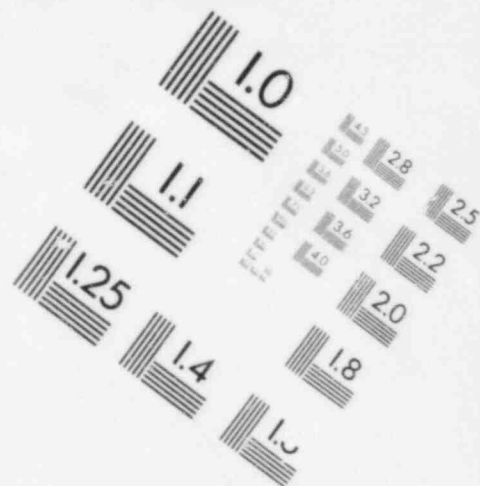


IMAGE EVALUATION TEST TARGET (MT-3)



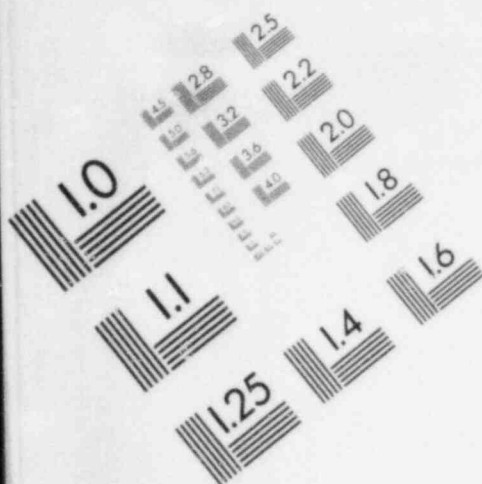
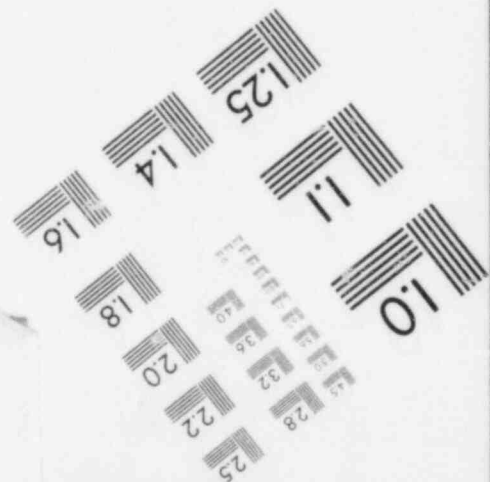
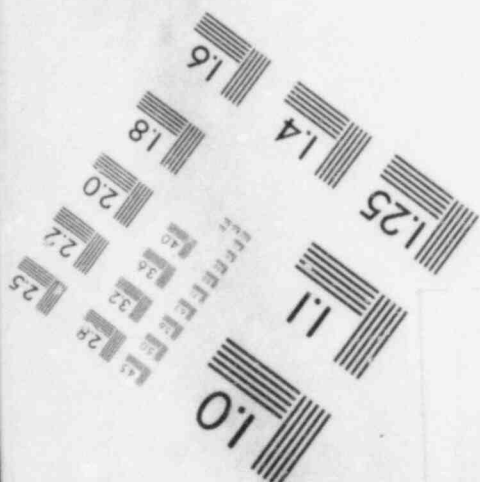
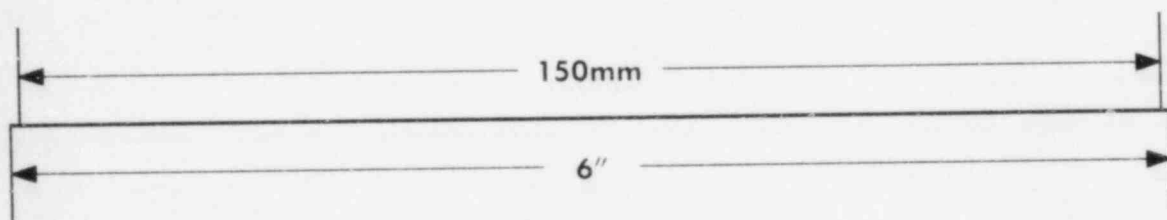
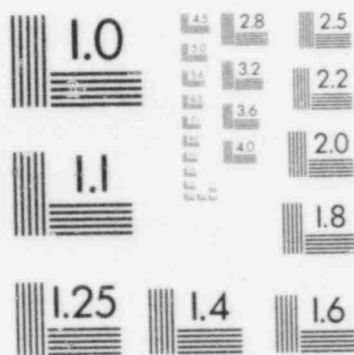
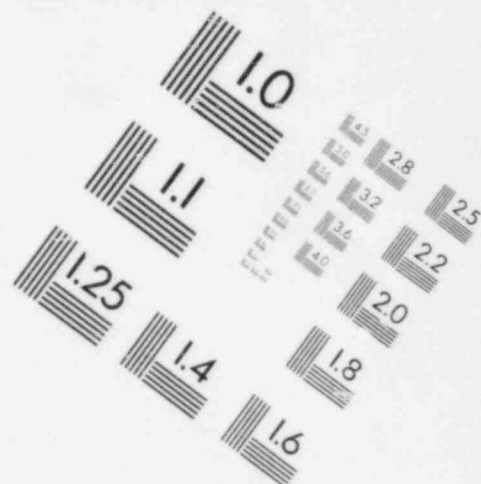


IMAGE EVALUATION TEST TARGET (MT-3)



RELIEF REQUEST NO. VR-6

SYSTEM:

NUCLEAR BOILER

COMPONENTS:Reactor Relief ValvesPIS No.

PSV-4400 *
PSV-4401
PSV-4402 *
PSV-4405 *
PSV-4406 *
PSV-4407

Solenoid ValvesPIS No.

SV-4400
SV-4401
SV-4402
SV-4405
SV-4406
SV-4407

*Automatic Depressurization System (ADS)

CATEGORY:

A/C for the reactor relief valves
B for solenoid valves

FUNCTIONS:

The functions of the relief valves are to: (1) open upon receipt of an ADS signal to blowdown reactor vessel (for the ADS valves only) and (2) act as primary system safety valve actuating on high system pressure or capable manual actuation from the control room.

The function of the solenoid valves is to energize upon receipt of a manual or ADS relief valve actuation signal and, in so doing, vent the poppet valve assembly causing the associated main valves to open.

TEST REQUIREMENT:

Exercise and time valves every three months (BTO).

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RELIEF REQUEST NO. VR-6 (continued)

BASIS FOR RELIEF:

Relief is requested from the Section XI required testing frequency of once every three months. Exercising these valves during normal operation would cause primary system pressure spikes and reactor power fluctuations which could lead to a reactor scram. These valves will be exercised once per operating cycle as specified in DAEC Technical Specifications, Section 4.6.D.3.

In addition, relief is requested from the stroke timing requirements of Section XI. It is impractical to measure stroke times for relief and solenoid valves since the stroke times are on the order of 100 milliseconds. An abrupt change in the turbine bypass valve position will verify that the solenoid and relief valves have performed their function.

NOTE: Stroke timing requirements for the solenoid valves are discussed in Relief Request No. VR-2.

ALTERNATE TESTING:

These valves will be exercised at least once per operating cycle. The response of these valves will be verified by observing an abrupt change in the turbine bypass valve position. No stroke times will be measured.

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RELIEF REQUEST NO. VR-7

SYSTEM:

NUCLEAR BOILER

COMPONENTS:

PSV-4439A	PSV-4439D
PSV-4439B	PSV-4439E
PSV-4439C	PSV-4439F

CATEGORY:

C

FUNCTION:

During a relief valve discharge, these valves must be closed to prevent steam release into the drywell. After a relief valve discharge, steam remaining in the relief valve discharge piping will condense and draw a vacuum in the discharge line. These relief valves (vacuum breakers) open to admit air to the discharge line thus relieving the vacuum condition.

TEST REQUIREMENT:

Exercise in the open and close directions every three months (CT-CC, CT-CO).

BASIS FOR RELIEF:

These valves have no external means of actuation for exercising. The only practical method for exercising these valves is by manually pushing the disk from its seat. This requires access to the valves, which are located in the drywell.

ALTERNATE TESTING:

These valves will be exercised during each refueling outage concurrently with the setpoint verification tests (CT-SP).

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RELIEF REQUEST NO. VR-8

SYSTEMS:

NUCLEAR BOILER, REACTOR RECIRCULATION, REACTOR CORE ISOLATION COOLING, CORE SPRAY, HIGH PRESSURE COOLANT INJECTION, and REACTOR VESSEL INSTRUMENTATION

COMPONENTS:

Excess flow check valves

CATEGORY:

A/C

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FUNCTIONS:

Excess flow check valves limit leakage from the reactor coolant system in the event of instrumentation piping failures outside containment by closing at 10 psid and perform a containment isolation function if an instrument line were to fail inside containment concurrent with a similar failure outside containment.

TEST REQUIREMENTS:

Exercise in the closed direction every three months (CT-CC).
Conduct valve seat leakage tests once every two (2) years. (AT-1)

BASIS FOR RELIEF:

Exercising of these valves is impractical during normal operation since it requires isolating instrumentation downstream of the excess flow check valves. Additionally, this testing involves a total of 94 valves which would require excessive cold shutdown time solely to accomplish this testing and would greatly increase total personnel radiation exposure.

The excess flow check valves, designated FLO-FUSE by the manufacturer (Marietta Valve Corp, Boonton, New Jersey), have no provision for leaktesting nor are there such provisions in the upstream side of the lead-in tubing from the root valves. Thus, there is no practical method of conducting leaktests of these valves.

It should be noted that these valves see little or no flow and essentially function only during the exercise testing described below. Also, the significant internal components are fabricated from corrosion-resistant materials that are not expected to degrade during the plant lifetime. For these reasons, general seat degradation is highly unlikely. Gross failure of the seat, if present, will be identified during exercise testing.

ALTERNATE TESTING:

These valves will be exercised during each reactor refueling in accordance with DAEC Technical Specifications, Section 4.7.D.

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RELIEF REQUEST VR-9

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RELIEF REQUEST VR-10

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RELIEF REQUEST NO. VR-11

SYSTEM:

CONTAINMENT ATMOSPHERE CONTROL

COMPONENTS:

CV-4327A	CV-4327F
CV-4327B	CV-4327G
CV-4327C	CV-4327H
CV-4327D	

CATEGORY:

A/C

FUNCTION:

These are the pressure suppression chamber to drywell vacuum breaker valves which equalize the pressure between the two volumes when the suppression chamber pressure exceeds that in the drywell.

TEST REQUIREMENT:

Measure valve seat leakage and compare the measured leakage to a specific maximum leakage for each valve (IWV-3426).

BASIS FOR RELIEF:

A specific maximum leakage per valve is not applicable to the vacuum breaker valve testing. As part of the containment integrity (Type A) test a pressure decay test is performed on the pressure suppression chamber atmosphere in accordance with DAEC Technical Specifications Section 4.7.A.4.d. This pressure decay test demonstrates the aggregate leak tightness of the vacuum breaker valves.

ALTERNATE TESTING:

The leak tightness of the pressure suppression chamber to drywell vacuum breakers will be demonstrated during the containment integrity (Type A) test. This test consists of establishing a drywell to suppression chamber pressure differential of 1.1 psi and then measuring the suppression chamber pressure increase over a ten (10) minute period. If this pressure increase is less than 0.009 psi/min the vacuum breakers have demonstrated adequate leak tightness.

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RELIEF REQUEST NO. VR-12

SYSTEM:

CONTROL ROD DRIVE HYDRAULIC

COMPONENTS:

V-17-83

V-17-96

CATEGORY:

A/C

FUNCTIONS:

Prevent backflow through the reactor recirculation pumps seal purge line. They also function as primary containment isolation valves.

TEST REQUIREMENT:

Exercise every three (3) months (CT-CC).

BASIS FOR RELIEF:

These simple check valves cannot be remotely operated. They are located inside primary containment and are not accessible for testing during reactor operation. Additionally, the primary containment is inerted with nitrogen during plant operation. De-inerting and then re-inerting the containment atmosphere each cold shutdown solely for the purpose of conducting valve testing would represent an excessive operational burden. These valves cannot be exercised by utilizing outside drywell test lines because the reactor recirculation pumps would require venting, necessitating containment entry. These valves can be exercised closed during leakrate testing performed during refueling outages.

ALTERNATE TESTING:

Exercise valve for operability during each refueling outage (RR). Normal system operation implies that the valves are open. By verifying that the valves close with the leaktest, the valves are indirectly observed to stroke from their open to closed positions.

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RELIEF REQUEST NO. VR-13

SYSTEM:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

CV-1849
CV-1850
SV-1855
SV-1856
V-18-118 thru 206
V-18-919 thru 1007
V-18-1453 thru 1541

CATEGORY:

CV-1849, CV-1850, SV-1855 and SV-1856 -- Category B V-18-118 thru 206, V-18-919 thru 1007, and V-18-1453 thru 1541-- Category C

FUNCTIONS:

- CV-1849 - Opens with SCRAM signal to pressurize lower side of CRD piston from accumulator.
- CV-1850 - Opens with SCRAM signal to vent top of CRD piston to scram discharge header.
- SV-1855 &
SV-1856 - Pilot valves for CV-1849 & CV-1850, respectively. Open on SCRAM signal to vent air operators.
- V-18-118
thru 206 - Prevent bypassing drive water to charging water header (if depressurized); open to charge accumulators following SCRAM.
- V-18-919
thru 1007 - Prevent backflow into cooling water header during SCRAM; allow cooling water circulation during normal operation.
- V-18-1453
thru 1541 - Open to allow flow from top of CRD pistons to the scram discharge header.

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Relief Request No. VR-13 (continued)

TEST REQUIREMENTS:

Exercise and time air-operated and solenoid valves every three months (BTO, BTC).

Exercise check valves every three months (CT-CO, CT-CC).

The corresponding fail-safe test is discussed in VR-17.

BASIS FOR RELIEF:

These valves can only be tested by scrambling each individual control rod. Due to extensive effort and operational constraints associated with scram testing, this is impractical to accomplish on a quarterly basis or even during cold shutdown periods.

Exercising and measuring the individual stroke times of the air-operated scram valves (CV-1849 and CV-1850) is impractical due to design limitations. There is a single position indicating light for both valves that is energized only when both valves are not in the fully-closed position. Thus, in order to accurately measure stroke time, additional individual position indicating circuitry is required. Such a backfit would be costly and could possibly detract from the basic reliability of the present configuration.

Proper operation of the check valves is monitored during plant operation. Failure of any of these manifests itself in abnormal operation of the associated control rod drive which would be noted (and corrected) by the plant staff.

ALTERNATIVE TESTING:

Proper operation of these valves is demonstrated during normal plant operation and scram testing each operating cycle. The testing and acceptance criteria of the DAEC Technical Specifications, Sections 4.3.C and 3.3.C, will be substituted for stroke timing and exercising of individual valves.

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RELIEF REQUEST NO. VR-14

SYSTEM:

CONTROL ROD DRIVE HYDRAULIC

COMPONENTS:

SV-1851
SV-1852
SV-1853
SV-1854

CATEGORY:

B

FUNCTIONS:

There are 89 sets of these valves--one for each control rod drive. Normal insertion and withdrawal of the CRD's is accomplished by opening and closing a particular set of valves (only one CRD can be moved at a time). These valves are not required to change position during a scram, but must be maintained in their normally-closed position.

TEST REQUIREMENT:

Exercise and time valves in the closed direction every three months (BTC).
Fail-safe test (FST) valves every three months.

BASIS FOR RELIEF:

The proper operation of these valves is demonstrated frequently during normal operation as discussed in DAEC Technical Specifications, Section 4.3.A.2. Malfunctioning valves would be evidenced by unusual rod movement (drift). Therefore, a special exercise and timing test for operability is not required for these valves.

ALTERNATE TESTING:

The control rod drives will be continuously monitored for proper operation as required by the DAEC Technical Specifications. Weekly tests and periodic scram testing will demonstrate that the subject valves are in the closed position and operating properly. Stroke times will not be measured for the subject valves.

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RELIEF REQUEST VR-15

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RELEIF REQUEST VR-16

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RELIEF REQUEST NO. VR-17

SYSTEM:

ALL SYSTEMS

COMPONENTS:

All valves equipped to fail open or closed.

CATEGORY:

A and B

FUNCTION:

Upon loss of electrical power, the valve must stroke to its fail-safe position.

TEST REQUIREMENT:

Solenoid valves which control the air supply to air-operated valves and direct solenoid-operated valves must stroke to their fail-safe position upon interruption of their electrical supply. (FST).

BASIS FOR RELIEF:

De-energizing the solenoid valve has the same effect as loss of electrical power. Therefore, stroking the valve from the control room (BTO, BTC) to its fail-safe position constitutes an FST.

ALTERNATE TESTING:

Normal stroking (BTO, BTC), to the fail-safe position of valves equipped to fail open or closed constitutes an FST. No additional testing is necessary.

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RELIEF REQUEST NO. VR-18

SYSTEM:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENT:

SV-2219

CATEGORY:

B

FUNCTION:

This valve functions as the HPCI turbine drain pot level control valve and is a Class 2 isolation valve.

TEST REQUIREMENT:

Exercise and time valve every three months (BTC).

BASIS FOR RELIEF:

This valve has no individual handswitch, but is operated automatically by a local controller. Also, it has no position indication lights. As such, the valve cannot be operated to verify operability. However, during HPCI turbine operation, indirect verification of its operability can be made by observing that the HPCI turbine drain pot high level alarm actuates and then resets. This would mean that the valve is actually opening and closing as required to maintain proper drain pot level. Stroke timing, however, cannot be done.

ALTERNATE TESTING:

No alternate testing is proposed. Valve operability will be verified in the manner described above.

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RELIEF REQUEST NO. VR-19

SYSTEM:

NUCLEAR BOILER

COMPONENTS:

V-14-9	V-14-32	V-14-112
V-14-14	V-14-100	V-14-116
V-14-15	V-14-104	V-14-120
V-14-16	V-14-108	V-14-124

CATEGORY:

C

FUNCTION:

These valves must close upon loss of normal air or nitrogen supply to the automatic depressurization system (ADS) relief valve accumulators and the main steam isolation valve accumulators.

TEST REQUIREMENT:

Exercise valves in the closed direction every three months (CT-CC).

BASIS FOR RELIEF:

The position of these valves cannot be verified during normal operation since they are simple check valves and have no position indicators. In addition, access to these valves is limited since they are located either inside the drywell or the steam tunnel.

ALTERNATE TESTING:

These valves will be exercised during refueling. More frequent testing is not practical because a leaktest must be performed to verify that they are closed.

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RELIEF REQUEST NO. VR-20

SYSTEM:

STANDBY LIQUID CONTROL (SLCS)

COMPONENTS:

V-26-08

V-26-09

CATEGORY:

A/C

FUNCTIONS:

The safety functions of these check valves are to open during system injection and close for containment isolation.

TEST REQUIREMENT:

Exercise valve in the open and closed directions every three months (CT-CO, CT-CC).

BASIS FOR RELIEF:

These check valves are normally closed. They can only be stroked closed during seat leakage tests performed during reactor refueling. To stroke these valves open, the SLCS pumps must discharge directly into the reactor vessel through the explosively-actuated isolation valves. This cannot be done during normal operation or cold shutdown since the SLCS system must be drained and flushed to prevent contamination of the reactor coolant with sodium pentaborate. In addition, extensive testing is required to replace the explosive charges of the isolation valves.

ALTERNATE TESTING:

These valves will be exercised open and closed during each reactor refueling.

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RELIEF REQUEST NO. VR-21

SYSTEM:

HIGH PRESSURE COOLANT INJECTION (HPCI)
REACTOR CORE ISOLATION COOLING (RCIC)

COMPONENTS:

V-23-01
V-25-01

CATEGORY:

C

FUNCTIONS:

These valves are designed to prevent backflow into the suppression pool in the event of pump suction shift from the contaminated condensate storage tank (CCST) to the suppression pool. The safety-related function of these valves is to open to provide suction flow to the HPCI and RCIC pumps.

TEST REQUIREMENT:

Exercise every three months (CT-CO).

BASIS FOR RELIEF:

There is no convenient method for verifying the ability of these valves to swing to the full-open position. The system test circuits utilize the CCST for pump suction rather than the suppression pool. Taking suction from the suppression pool during testing is undesirable because, in so doing, torus water would be transferred to the condensate storage tank. Since torus water is not demineralized, the entire condensate storage tank inventory would require processing following each test.

ALTERNATE TESTING:

In lieu of the Code-required full-stroke test, valve operability will be demonstrated by disassembling the valves during each refueling outage and verifying that the valve disk swings freely to the open position. Since these valves have no function during normal operation, no internal wear-induced degradation is expected.

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RELIEF REQUEST VR-22

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RELIEF REQUEST VR-23

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RELIEF REQUEST NO. VR-24

SYSTEM:

CONTAINMENT ATMOSPHERE CONTROL

COMPONENTS:

V-43-82
V-43-84
V-43-86
V-43-88

CATEGORY:

C

FUNCTION:

The function of these check valves is to prevent backflow from the containment into the containment atmosphere dilution (CAD) system.

TEST REQUIREMENT:

Exercise valve every three (3) months (CT-CO).

BASIS FOR RELIEF:

These valves are verified open during the CAD system functional test and verified closed during the Type C leak tests on the downstream containment isolation valves. Both of these tests are performed during reactor refueling.

ALTERNATE TESTING:

Valves will be exercised during each refueling outage (RR).

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RELIEF REQUEST NO. VR-25

SYSTEM:

CONTAINMENT ATMOSPHERE CONTROL

COMPONENT:

V-43-214

CATEGORY:

A/C

FUNCTIONS:

This valve prevents backflow from the containment into the nitrogen inerting supply line and also functions as a primary containment isolation valve.

TEST REQUIREMENT:

Exercise valve every three (3) months (CT-CC).

BASIS FOR RELIEF:

This simple check valve cannot be remotely operated. It is located inside primary containment and is not accessible for testing during reactor operation. Additionally, the primary containment is inerted with nitrogen during plant operation. De-inerting and then re-inerting the containment atmosphere each cold shutdown solely for the purpose of conducting valve testing would represent an excessive operational burden. This valve can be exercised closed during leakrate testing performed during refueling outages.

ALTERNATE TESTING:

This valve will be exercised during each refueling outage (RR).

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RELIEF REQUEST VR-28

-VOID-

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RELIEF REQUEST NO. VR-29

SYSTEMS:

NUCLEAR BOILER, RESIDUAL HEAT REMOVAL, CORE SPRAY, HIGH PRESSURE COOLANT INJECTION, REACTOR CORE ISOLATION COOLING, RADWASTE SUMP, CONDENSATE & DEMINERALIZED WATER

COMPONENTS:

CV-2211	MO-1900	V-09-111
CV-2410	MO-1908	
CV-3704	MO-2117	
CV-3728	MO-2137	
	MO-2238	
	MO-2400	
	MO-4423	

CATEGORY:

A

FUNCTIONS:

These valves are subject to 10 CFR 50, Appendix J, Type C leak testing.

TEST REQUIREMENT:

Valve seat leakage tests shall be made with the pressure differential in the same direction as when the valve is performing its function. These valves are gate valves and are not exempt from the above requirement (IWV-3423).

BASIS FOR RELIEF:

Wedge disk gate valves have the same sealing characteristics in either direction. Therefore, testing these valves in the opposite direction to that in which they perform their containment isolation function is equivalent to testing in the accident direction.

ALTERNATE TESTING:

The piping between the two isolation valves will be pressurized and the low-pressure side of each valve will be vented. The combined leakage from the two containment isolation valves in series will be conservatively attributed to the penetration being tested.

DUANE ARNOLD ENERGY CENTER	Page 61 of 66
TITLE: INSERVICE TESTING PROGRAM	Date 12-23-03 Rev. 5

RELIEF REQUEST NO. VR-30

SYSTEM:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

V-17-52

V-17-53

CATEGORY:

A/C

FUNCTION:

These valves provide containment isolation for the control rod drive hydraulic system.

TEST REQUIREMENT:

Check valves will be exercised from the full-open to the full-closed positions every three months (CT-CC).

BASIS FOR RELIEF:

These valves are in the CRD return line to the reactor vessel. In accordance with NUREG-0619, this system is no longer used. Therefore, these check valves are now passive valves and verifying that they stroke from the open to closed positions is not necessary.

ALTERNATE TESTING:

The closed position is verified during leaktests performed once each cycle.

DUANE ARNOLD ENERGY CENTER	Page 62 of 66
TITLE: INSERVICE TESTING PROGRAM	Date 12-23-83 Rev. 5

RELIEF REQUEST NO. VR-31

SYSTEM:

NEUTRON MONITORING

COMPONENT:

TIP-CK

CATEGORY:

A/C

FUNCTION:

This valve provides containment isolation for the nitrogen purge portion of the TIP system.

TEST REQUIREMENT:

Check valves will be exercised from the full-open to the full-closed positions every three months (CT-CC).

BASIS FOR RELIEF:

This valve is a simple check valve and thus the only practical method to verify closure is by performing a leaktest. Conducting such tests every three months is excessively time consuming and difficult.

ALTERNATE TESTING:

This valve will be full stroke exercised to the closed position during each refueling outage (RR).

FOR INFORMATION
ONLY

DUANE ARNOLD ENERGY CENTER	Page 63 of 66
TITLE: INSERVICE TESTING PROGRAM	Date 12-23-83 Rev. 5

RELIEF REQUEST NO. VR-32

SYSTEM:

CONTAINMENT ATMOSPHERE MONITORING SYSTEM
POST ACCIDENT SAMPLING SYSTEM

COMPONENTS:

SV-8101A	SV-8106A	SV-4594A
SV-8101B	SV-8106B	SV-4594B
SV-8102A	SV-8107A	SV-8772A
SV-8102B	SV-8107B	SV-8772B
SV-8103A	SV-8108A	
SV-8103B	SV-8108B	
SV-8104A	SV-8109A	
SV-8104B	SV-8109B	
SV-8105A	SV-8110A	
SV-8105B	SV-8110B	

CATEGORY:

A

FUNCTION:

These valves provide containment isolation for the containment atmosphere monitoring and post accident sampling systems.

TEST REQUIREMENT:

Exercise valves in the closed direction every three months (BTC). The stroke time of all power-operated valves shall be measured. (IWV-3413)

BASIS FOR RELIEF:

These valves are not provided with individual position indicators and thus the only reasonable means of verifying the close position is by performing leaktests--tests that are impractical to perform during normal operation. Also, meaningful stroke time measurements cannot be taken.

ALTERNATE TESTING:

These valves will be exercised every three months. Verification of the close position will be performed during each reactor refueling. Stroke times will not be measured.

DUANE ARNOLD ENERGY CENTER	Page 64 of 66
TITLE: INSERVICE TESTING PROGRAM	Date 12-23-83 Rev. 5

RELIEF REQUEST NO. VR-33

SYSTEM:

CORE SPRAY

COMPONENTS:

CV-2118
CV-2138

CATEGORY:

C

FUNCTIONS:

These check valves provide a flowpath for core spray to the reactor vessel and prevent backflow from the reactor vessel to the core spray system.

TEST REQUIREMENT:

Exercise check valves in the open and closed direction every three months (CT-CO, CT-CC).

BASIS FOR RELIEF:

These check valves are normally closed. To open the valves, the core spray pumps are operated at rated flow and discharged directly into the reactor vessel. This cannot be done during normal operation as these valves cannot be opened against normal reactor pressure. The air operators on these valves (used for testing only) have proven to be unreliable and a continuing source of nitrogen inleakage in the drywell. Thus, operating nitrogen is normally cut-off to the operator. Currently, an engineering evaluation is being conducted to determine if these operators should be replaced or removed. In the first case this would allow for testing of these valves during cold shutdown. In the event the operators are removed, these valves can only be tested during refueling.

ALTERNATE TESTING:

These valves will be exercised at each refueling outage by verifying that each division of core spray can deliver rated flow to the reactor vessel.

DUANE ARNOLD ENERGY CENTER	Page 65 of 66
TITLE: INSERVICE TESTING PROGRAM	Date 12-23-83 Rev. 5

RELIEF REQUEST NO. VR-34

SYSTEM:

CONTAINMENT ATMOSPHERE DILUTION

COMPONENTS:

SV-4331A	SV-4333A
SV-4331B	SV-4333B
SV-4332A	SV-4334A
SV-4332B	SV-4334B

CATEGORY:

A/B

FUNCTIONS:

These valves function to provide a flowpath into the containment in the event that containment dilution is required during an accident and serve as containment isolation valves.

TEST REQUIREMENT:

Evaluate stroke times in accordance with IWV-3413 (b).

BASIS FOR RELIEF:

It is impractical to apply the requirements of IWV-3413 (b) to valves with stroke times on the order of 1-2 seconds without installing sophisticated timing devices. Operator reaction times could easily vary by .5 seconds or more thereby invalidating the 50% criteria for increasing the surveillance frequency.

ALTERNATE TESTING:

Stroke times for these valves will be measured; however, the frequency of testing will be increased to once each month if an increase in measured stroke time of 100% or more from the previous test is observed and the stroke time is greater than 2 seconds.

DUANE ARNOLD ENERGY CENTER	Page 66 of 66
TITLE: INSERVICE TESTING PROGRAM	Date 12-23-83 Rev. 5

RELIEF REQUEST NO. VR-35

SYSTEM:

EMERGENCY SERVICE WATER (ESW)

COMPONENTS:

CV-1956 A
CV-1956 B

CATEGORY:

B

FUNCTIONS:

These valves open to provide a return path for ESW cooling water from the control building chillers.

TEST REQUIREMENT:

Stroke time shall be measured during exercise testing. (IWV-3413)

BASIS FOR RELIEF:

These valves are actuated by the starting logic of the associated emergency service water pump, with no individual control handswitch. Also, there are no position indicators for these valves. Thus, stroke time measurements are impractical.

ALTERNATE TESTING:

These valves will be exercised every three months. During this testing, valve operation will be observed. Based on visual observation, any erratic operation or excessively long stroke time will be cause for failure.

FOR INFORMATION
ONLY

APPENDIX A
PUMP TESTING PROGRAM

PREPARED BY : MTECH
PROGRAM : PRESTM

INSERVICE TESTING PROGRAM
1ST CLASS 1, 2, 3 AND HC PUMPS
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PAGE 1
1ST PROGRAM REVISION 905 12/23/83

INSERVICE TEST QUANTITIES												
PUMP NUMBER	PUMP NAME	1ST CLASS	PAID	PAID CODE	SPEED	INLET PRESS	DIFF PRESS	FLOW RATE	VIBRA	BEAR TEMP	TEST INTERVAL	REMARKS
1P-022A	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y	Y	Y	QUARTERLY	
1P-022B	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y	Y	Y	QUARTERLY	
1P-022C	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y	Y	Y	QUARTERLY	
1P-022D	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y	Y	Y	QUARTERLY	
1P-044A	DFU	NC	M-132	A-2	NA	Y:PR-4	Y:PR-6	Y:PR-6	N:PR-1	N:PR-1	QUARTERLY	NOTE-001
1P-044B	DFU	NC	M-132	A-3	NA	Y:PR-4	Y:PR-6	Y:PR-6	N:PR-1	N:PR-1	QUARTERLY	NOTE-001
1P-099A	ESW	3	M-146	B-7	NA	Y:PR-4	Y	Y	Y	N:PR-2	QUARTERLY	
1P-099B	ESW	3	M-146	B-6	NA	Y:PR-4	Y	Y	Y	N:PR-2	QUARTERLY	
1P-112A	SCREEN	NC	M-129	C-7	NA	Y:PR-9	Y:PR-9	Y:PR-9	Y:PR-9	Y:PR-9	QUARTERLY	
1P-112B	SCREEN	NC	M-129	C-3	NA	Y:PR-9	Y:PR-9	Y:PR-9	Y:PR-9	Y:PR-9	QUARTERLY	
1P-117A	RW	NC	M-129	D-7	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	
1P-117B	RW	NC	M-129	D-4	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	
1P-117C	RW	NC	M-129	D-6	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	
1P-117D	RW	NC	M-129	D-3	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	
1P-211A	CS	2	M-121	C-3	NA	Y	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	
1P-211B	CS	2	M-121	C-4	NA	Y	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	
1P-216	HCIC	2	M-123	D-2	Y	Y	Y:PR-5	Y:PR-5	N:PR-3	N:PR-3	QUARTERLY	
1P-216	HCIC	2	M-125	D-4	Y	Y	Y:PR-5	Y:PR-5	N:PR-3	N:PR-3	QUARTERLY	
1P-227A	RHR	2	M-120	D-3	NA	Y	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY	

PREPARED BY : NUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM
IST CLASS 1, 2, 3 AND NC PUMPS
DIANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PAGE 2
IST PROGRAM REVISION 005 12/23/83

PUMP NUMBER	PUMP NAME	IST CLASS	PAID	PAID CODE	INSERVICE TEST QUANTITIES							TEST INTERVAL	REMARKS
					SPEED	INLET PRESS	DIFF PRESS	FLOW RATE	VIBRA	BEAR TEMP			
1P-229B	RHR	2	M-119	B-7	NA	Y	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY		
1P-229C	KHR	2	M-120	B-2	NA	Y	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY		
1P-229D	RHR	2	M-119	B-8	NA	Y	Y:PR-5	Y:PR-5	Y	Y	QUARTERLY		
1P-239A	SLC	2	M-126	D-5	NA	Y	Y	Y	Y	Y	QUARTERLY		
1P-239B	SLC	2	M-126	C-5	NA	Y	Y	Y	Y	Y	QUARTERLY		

PREPARED BY : NUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM
IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

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PUMP IST PROGRAM REMARKS

NOTE 001: Although the diesel fuel oil transfer pumps (1P-44A & B) are included in the program, they do not strictly fall within the jurisdiction of the ASME B & PV Code, Section XI. (Reference ASME response to WPPSS inquiry, File no. BC 77-666/NI 77-371 dated 1/8/79) See Relief Request No. PR-10 for further discussion of this issue.

APPENDIX B
VALVE TESTING PROGRAM

PREPARED BY : MUTECH
PROGRAM : FRISIA

IN-SERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
SHANE AFHOLD ENERGY CENTER

LOWA ELECTRIC LIGHT
AND POWER

PALD C53-1-7 REVISION 00
SYSTEM : NEUTRON MONITORING

1ST PROGRAM REVISION : 005 , 12/23/83

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VALVE NUMBER	PALD CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
TIP-BAL A	---	NC	A	-	BAL	SO	C	AT-1 BTC PIT	KR OP 2Y	005	NA	VR-2	
TIP-BAL B	---	NC	A	-	BAL	SO	C	AT-1 BTC PIT	KR OP 2Y	005	NA	VR-2	
TIP-BAL C	---	NC	A	-	BAL	SO	C	AT-1 BTC PIT	KR OP 2Y	005	NA	VR-2	
TIP-CK	---	NC	A/C	-	CK	SA	C	AT-1 CT-CC REN	KR OP REN		NA	VR-31	
TIP-CHA	---	NC	D	-	SH	EXP	O	DT	KR				
TIP-CHB	---	NC	D	-	SH	EXP	O	DT	KR				
TIP-CHC	---	NC	D	-	SH	EXP	d	DT	KR				

PREPARED BY : NUTECH
 PROGRAM : TRISTM
 INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER
 1000 ELECTRIC LIGHT
 AND POWER

PAID M-109 REVISION 21
 SYSTEM : CONDENSATE & DEMINERALIZED WATER
 1ST PROGRAM REVISION : 005 , 12/23/83
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VALVE NUMBER	PAID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
M-09-065	G-2	NC	A	1	GA	M	C/LC	AT-1	RR		NA		
M-09-111	G-2	NC	A	1	GA	M	C/LC	AT-1	RR		NA		VR-29

PREPARED BY : NUTECH
PROGRAM : PRISM

IN-SERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

100A ELECTRIC LIGHT
AND POWER

P&ID M-112 REVISION 12
SYSTEM : REACTOR BUILDING COOLING WATER

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1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	P&ID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
MD-4041A	E-5	NC	A	4	GA	MO	0	AT-1 BIC PIT	RR CS 2Y	0.20	NA		
MD-4041B	F-5	NC	A	4	GA	MO	0	AT-1 BIC PIT	RR CS 2Y	0.20	NA		

PREPARED BY : MUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PATD SYSTEM : RHR & EMERGENCY SERVICE WATER 1ST PROGRAM REVISION : 005 , 12/23/83 PAGE : 4

REVISION 17

VALVE NUMBER	PATD CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-1956A	H-3	3	B	4	GA	AO	C/F0	BTD FST	0P 0P	005		VR-35 VR-17	
CV-1956B	H-2	3	B	4	GA	AO	C/F0	BTD FST	0P 0P	005		VR-35 VR-17	
CV-2080	G-5	3	B	6	GL	AO	C/F0	BTD FST PFI	0P 0P 2Y	005		VR-17	
CV-2081	G-5	3	B	6	GL	AO	C/F0	BTD FST PFI	0P 0P 2Y	005		VR-17	
MO-1943A	G-B	3	B	12	GA	MO	C/KL	BTC PFI	0P 2Y	072			
MO-1943B	G-B	3	B	12	GA	MO	C/KL	BTC PFI	0P 2Y	072			
MO-2059A	H-4	3	B	4	GA	MO	0	BTC PFI	0P 2Y	081			
MO-2059B	H-5	3	B	4	GA	MO	0	BTC PFI	0P 2Y	081			
MO-2077	H-3	3	B	4	GA	MO	0	BTC PFI	0P 2Y	081			
MO-2078	H-2	3	B	4	GA	MO	0	BTC PFI	0P 2Y	081			
ESV-1988	E-7	3	B/C	.75	RV	SA	C	C1-SF	5Y				
ESV-2068	E-6	3	B/C	.75	RV	SA	C	C1-SF	5Y				

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PREPARED BY : NUTECH
PROGRAM : PRISM

1ST PROGRAM REVISION : 005 , 12/23/83

PAID SYSTEM : H-113 REVISION 17
RHR & EMERGENCY SERVICE WATER

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VALVE NUMBER	PAID CHDR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-1956A	H-3	NC	B	-	3WY	SO	NE	BID	OP	NA		VR-2	
SV-1956B	H-2	NC	B	-	3WY	SO	NE	BID	OP	NA		VR-2	
SV-2000	G-5	NC	B	-	3WY	SO	NE	BID	OP	NA		VR-2	
SV-2001	G-5	NC	B	-	3WY	SO	NE	BID	OP	NA		VR-2	

PREPARED BY : NUTECH
 PROGRAM : FRISH
 INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER
 IOWA ELECTRIC LIGHT
 AND POWER

PAID M-114 REVISION 15
 SYSTEM : NUCLEAR BOILER
 1ST PROGRAM REVISION 005, 12/23/83
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VALVE NUMBER	PAID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
AP-4412A	G-3	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4412B	G-3	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4413A	G-1	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4413B	G-1	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4415A	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4415B	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4416A	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4416B	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4418A	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4418B	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4419A	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	
AP-4419B	-	NC	B	-	4WY	AP	NE	BTB FST	OP	NA		VR-2 VR-17	

INTEGRITY TESTING PROGRAM

PREPARED BY : NUTECH
PROGRAM : PRISM

IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

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IST PROGRAM REVISION : 005, 12/23/83

PAID : M-114 REVISION 15
SYSTEM : NUCLEAR BOILER

VALVE NUMBER	PAID CUR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4420A	---	NC	B	-	4WY	AP	NE	BTB FST	OP OP	NA	NA	VR-2 VR-17	
AP-4420B	---	NC	B	-	4WY	AP	NE	BTB FST	OP OP	NA	NA	VR-2 VR-17	
CV-4421A	---	NC	B	-	4WY	AP	NE	BTB FST	OP OP	NA	NA	VR-2 VR-17	
AP-4421B	---	NC	B	-	4WY	AP	NE	BTB FST	OP OP	NA	NA	VR-2 VR-17	
CV-4432	C-7	1	A	20	GL	A0	O/F/C	AT-1 BTB FST FST	KR OP OP 2Y	005	NA	VR-17	
CV-4433	E-2	1	A	20	GL	A0	O/F/C	AT-1 BTB FST FST	KR OP OP 2Y	005	NA	VR-17	
CV-4435	C-7	1	A	20	GL	A0	O/F/C	AT-1 BTB FST FST	KR OP OP 2Y	005	NA	VR-17	
CV-4436	C-8	1	A	20	GL	A0	O/F/C	AT-1 BTB FST FST	KR OP OP 2Y	005	NA	VR-17	
CV-4438	C-3	1	A	20	GL	A0	O/F/C	AT-1 BTB FST FST	KR OP OP 2Y	005	NA	VR-17	

PREPARED BY : MUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM

TEST CLASS 1, 2, 3, AND NC VALVES
PLANE ARNOLD ENERGY CENTER

TOWA ELECTRIC LIGHT
AND POWER

P&ID SYSTEM : M-114
REVISION 15
NUCLEAR BOILER

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TEST PROGRAM REVISION : 005, 12/23/83

VALVE NUMBER	P&ID CODE	TEST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4419	C-2	1	A	20	GL	A0	O/FC	AT-1 BIC FST FIT	RR OF 2Y	005	NA	VR-17	
CV-4420	E-7	1	A	20	GL	A0	O/FC	AT-1 BIC FST FIT	RR OF 2Y	005	NA	VR-17	
CV-4421	E-8	1	A	20	GL	A0	O/FC	AT-1 BIC FST FIT	RR OF 2Y	005	NA	VR-17	
CV-4428	H-6	1	B	.5	GL	A0	C	BIC FIT	CS 2Y	060			
CV-4429	H-7	1	B	.5	GL	A0	C	BIC FIT	CS 2Y	060			
MO-4423	H-3	1	A	3	GA	M0	C	AT-1 BIC FIT	RR OF 2Y	015	NA	VR-29	
MO-4424	H-5	1	A	3	GA	M0	C	AT-1 BIC FIT	RR OF 2Y	015	NA		
MO-4441	H-5	1	A/C	16	STE	SAH	O/KL	AT-1 BIC C1-CC FIT	RR CS 2Y	053	NA		
MO-4442	H-7	1	A/C	16	STE	SAH	O/KL	AT-1 BIC C1-CC FIT	RR CS 2Y	053	NA		

PREPARED BY: NUTECH
PROGRAM: PRISM

IN-SERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-114 REVISION 15
SYSTEM: NUCLEAR BOILER

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1ST PROGRAM REVISION: 005, 12/23/83

VALVE NUMBER	P&ID CHOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
FSV-4400	E-5	1	B/C	6	RV	SAP	C	BTO CT-SP	SP SP	NA		VR-6	
FSV-4401	E-4	1	B/C	6	RV	SAP	C	BTO CT-SP	SP SP	NA		VR-6	
FSV-4402	C-6	1	B/C	6	RV	SAP	C	BTO CT-SP	SP SP	NA		VR-6	
FSV-4403	C-6	1	B/C	6	SV	SA	C	CT-SP	SP				
FSV-4404	C-5	1	B/C	6	SV	SA	C	CT-SP	SP				
FSV-4405	C-4	1	B/C	6	RV	SAP	C	BTO CT-SP	SP SP	NA		VR-6	
FSV-4406	E-6	1	B/C	6	RV	SAP	C	BTO CT-SP	SP SP	NA		VR-6	
FSV-4407	E-6	1	B/C	6	RV	SAP	C	BTO CT-SP	SP SP	NA		VR-6	
FSV-4439A	B-4	3	B/C	6	RV	SA	C	CT-CC CT-CC CT-SP	SY SY SY			VR-7 VR-7 VR-7	
FSV-4439B	B-4	3	B/C	6	RV	SA	C	CT-CC CT-CC CT-SP	SY SY SY			VR-7 VR-7 VR-7	
FSV-4439C	B-5	3	B/C	6	RV	SA	C	CT-CC CT-CC CT-SP	SY SY SY			VR-7 VR-7 VR-7	
FSV-4439D	B-4	3	B/C	6	RV	SA	C	CT-CC CT-CC CT-SP	SY SY SY			VR-7 VR-7 VR-7	

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 INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 OMAH ARMOLED ENERGY CENTER
 OMAH ELECTRIC LIGHT
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VALVE NUMBER	PAID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
FSV-4439E	A-5	3	B/C	6	KV	SA	C	CT-CC	5Y			VR-7	
								CT-CD	5Y			VR-7	
								CT-SF	5Y			VR-7	
FSV-4439F	A-4	3	B/C	6	KV	SA	C	CT-CC	5Y			VR-7	
								CT-CD	5Y			VR-7	
								CT-SF	5Y			VR-7	
SV-4400	E-5	NC	B	-	30Y	SD	ND	BTE	SF	NA		VR-6	
SV-4401	E-4	NC	B	-	30Y	SD	ND	BTE	SF	NA		VR-6	
SV-4402	C-6	NC	B	-	30Y	SD	ND	BTE	SF	NA		VR-6	
SV-4405	C-4	NC	B	-	30Y	SD	ND	BTE	SF	NA		VR-6	
SV-4406	E-6	NC	B	-	30Y	SD	ND	BTE	SF	NA		VR-6	
SV-4407	E-6	NC	B	-	30Y	SD	ND	BTE	SF	NA		VR-6	
SV-4412A	G-8	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4412B	G-8	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4415A	F-2	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4415B	F-2	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4415C	G-8	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4415D	G-8	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4416A	G-8	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	
SV-4416B	G-8	NC	B	-	30Y	SD	NE	BTD	OF	NA		VR-2	

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
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VALVE NUMBER	F&ID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-4418A	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4418B	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4419A	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4419B	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4420A	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4420B	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4421A	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4421B	G-B	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4422B	H-6	NC	B	-	3WY	SO	ND	BTD	CS	NA			
SV-4429	H-7	NC	B	-	3WY	SO	ND	BTD	CS	NA			
SV-44-001	B-6	1	A/C	16	CK	SA	0	AT-1 CT-CC CT-CD	RR RR RR		NA		
SV-44-003	B-4	1	A/C	16	CK	SA	0	AT-1 CT-CC CT-CD	RR RR RR		NA		
SV-44-009	F-6	NC	C	2	CK	SA	C	CT-CC	RR			VR-19	
SV-44-014	O-6	NC	C	2	CK	SA	C	CT-CC	RR			VR-19	
SV-44-015	G-5	NC	C	2	CK	SA	C	CT-CC	RR			VR-19	
SV-44-016	O-5	NC	C	2	CK	SA	C	CT-CC	RR			VR-19	

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INSERVICE TESTING PROGRAM

IOWA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

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VALVE NUMBER	PAID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-14-032	F-1	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-100	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-104	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-108	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-112	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-116	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-120	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
V-14-124	G-B	NC	C	.75	CK	SA	0	CT-CC	KK			VR-19	
XFV-44530	E-3	1	A/C	1	XFC	SA	0	A1-2 CT-CC F11	KK RR 2Y			VR-B	
XFV-44530	D-3	1	A/C	1	XFC	SA	0	A1-2 CT-CC F11	KK RR 2Y			VR-B	
XFV-44540	E-3	1	A/C	1	XFC	SA	0	A1-2 CT-CC F11	KK RR 2Y			VR-B	
XFV-44540	D-3	1	A/C	1	XFC	SA	0	A1-2 CT-CC F11	KK RR 2Y			VR-B	
XFV-44550	E-3	1	A/C	1	XFC	SA	0	A1-2 CT-CC F11	KK RR 2Y			VR-B	
XFV-44550	D-3	1	A/C	1	XFC	SA	0	A1-2 CT-CC F11	KK RR 2Y			VR-B	

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
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VALVE NUMBER	F&ID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST POSITION	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
TFV-4455B	C-3	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4456A	C-3	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4456B	C-3	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4457A	E-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4457B	D-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4458A	E-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4458B	D-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4459A	C-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
TFV-4459B	C-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	

INSERVICE TESTING PROGRAM
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 AND POWER
 1ST CLASS 1, 2, 3, AND NC VALVES
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VALVE NUMBER	PART CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
1V-4460A	C-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
1V-4460B	C-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	

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1ST CLASS 1, 2, 3, AND NC VALVES
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VALVE NUMBER	F&ID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
4V-4594A	D-3	2	A	1	BAL	SD	C	AT-1 BIC FST	RR OP OP	005		VR-32 VR-17	
4V-4594B	D-3	2	A	1	BAL	SD	C	AT-1 BIC FST	RR OP OP	005		VR-32 VR-17	
4V-4501A	E-3	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
4V-4501B	E-3	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
4V-4503	E-3	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
4V-4504	E-6	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
4V-4505	C-3	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
4V-4506	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
4V-4507	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	

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1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

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VALVE NUMBER	FAID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST POSITION	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
XFV-450B	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4510A	E-6	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4510B	E-7	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4511	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4512	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4513	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4514	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4515	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4516	B-3	1	A	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	

IOWA ELECTRIC LIGHT AND POWER

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1ST CLASS 1, 2, 3, AND MC VALVES
DUANE ARNOLD ENERGY CENTER

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MAXIMUM
STROKE
TIME

VALVE NUMBER	PAID DOOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	RELIEF REQUEST	REMARKS
XFV-4518	D-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4519	D-3	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4528	D-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4562	E-3	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4578	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4579	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4580	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4581	E-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	
XFV-4582	E-6	1	A	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-B	

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 1ST CLASS 1, 2, 3, AND NC VALVES
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MAXIMUM													
VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
45B3	E-6	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45B4	D-6	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45B5	D-6	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45B6	F-3	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45B7	F-3	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45B8	F-3	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45B9	E-3	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45C0	D-3	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
45C1	D-3	1	A	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	

INSERVICE TESTING PROGRAM

IOWA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

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VALVE NUMBER	P&ID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4639	F-6	1	A	.75	GL	AO	C	AT-1 BIC PIT	RR OF 2Y	005	NA		
CV-4640	F-6	1	A	.75	GL	AO	C	AT-1 BIC PIT	RR OF 2Y	005	NA		
MO-4627	C-2	1	B	22	GA	MO	0	BIC PIT	CS 2Y	036			
MO-4628	C-8	1	B	22	GA	MO	0	BIC PIT	CS 2Y	036			
MO-4639	C-3	1	B	4	GA	MO	C	BIC PIT	CS 2Y	036			
MO-4630	C-8	1	B	4	GA	MO	C	BIC PIT	CS 2Y	036			
SV-4639	F-6	NC	B	-	3MY	SO	ND	BID	OF	NA		VR-2	
SV-4640	F-6	NC	B	-	3MY	SO	ND	BID	OF	NA		VR-2	
SV-4637	A-5	1	A/C	1	XFC	SA	0	AT-2 CI-CC PIT	RR RR 2Y			VR-B	
TV-4608	A-5	1	A/C	1	XFC	SA	0	AT-2 CI-CC PIT	RR RR 2Y			VR-B	
TV-4611	A-5	1	A/C	1	XFC	SA	0	AT-2 CI-CC PIT	RR RR 2Y			VR-B	

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INTERVICE TESTING PROGRAM

OWA ELECTRIC LIGHT
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1ST CLASS 1, 2, 3, AND NC VALVES
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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
XFV-4612	A-5	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4637	E-6	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4638	E-6	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4641A	H-7	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4641B	H-3	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4642A	G-7	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4642B	G-3	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4643A	G-7	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	
XFV-4643B	G-3	1	A/C	1	XFC	SA	0	AT-2 CI-CC PII	RR RR 2Y			VR-B	

PREPARED BY : NUTECH
PROGRAM : PRISM

IN-SERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND MC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
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VALVE NUMBER	P&ID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
4V-4644A	G-7	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4644B	G-3	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4663	F-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4664	F-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4665	F-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4666	F-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4667	E-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4668	E-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	
4V-4669	E-4	1	A/C	1	XFC	SA	0	AI-2 CI-CC PII	RR RR 2Y			VR-B	

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PROGRAM : PRISM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
XFV-4670	E-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4671	E-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4672	E-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4673	E-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4674	E-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4675	D-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4676	D-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4677	D-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	
XFV-4678	D-4	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	

PREPARED BY : MUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PAID M-116 REVISION 12 PAGE : 23
SYSTEM : REACTOR RECIRCULATION 1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	PAID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST TIME	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
XFV-4679	A-1	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4680	A-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4681	A-3	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	
XFV-4682	A-3	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-B	

INMVA ELECTRIC LIGHT AND POWER

INSERVICE TESTING PROGRAM

PREPARED BY : NUTECH
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1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

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PAID H-117 REVISION 17
SYSTEM : CONTROL ROD DRIVE HYDRAULIC

VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-1004A	A-5	1	A	1	GL	A0	0	AT-1 BTC PIT	RR OP 2Y	005	NA		
CV-1004B	A-5	1	A	1	GL	A0	0	AT-1 BTC PIT	RR OP 2Y	005	NA		
CV-1004A	A-5	NC	B	-	3WY	S0	NE	BTD	OP	NA		VR-2	
CV-1004B	A-5	NC	B	-	3WY	S0	NE	BTD	OP	NA		VR-2	
V-17-052	E-3	1	A/C	3	CK	SA	C	AT-1 CI-CC	RR RR		NA	VR-30	
V-17-053	E-2	1	A/C	3	CK	SA	C	AT-1 CI-CC	RR RR		NA	VR-30	
V-17-083	A-6	1	A/C	1	CK	SA	0	AT-1 CI-CC	RR RR		NA	VR-12	
V-17-096	A-4	1	A/C	1	CK	SA	0	AT-1 CI-CC	RR RR		NA	VR-12	

INSERVICE TESTING PROGRAM

10MA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

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P&ID M-118 REVISION 08
SYSTEM : CONTROL ROD DRIVE HYDRAULIC

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1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-1849	D-7	1	B	.75	GA	A0	C/F0	BTC FST	SP SP	NA		VR-13 VR-17	NOTE-001
CV-1850	D-6	1	B	.75	GA	A0	C/F0	BTC FST	SP SP	NA		VR-13 VR-17	NOTE-001
CV-1859	G-4	1	B	1	GL	AG	O/F0	BTC FST FIT	CS CS 2Y	030		VR-17	
CV-1859A	G-4	1	B	1	GL	A0	O/F0	BTC FST FIT	CS CS 2Y	030		VR-17	
CV-1859B	G-4	1	B	1	GL	A0	O/F0	BTC FST FIT	CS CS 2Y	030		VR-17	
CV-1867	D-5	1	B	2	GL	A0	O/F0	BTC FST FIT	CS CS 2Y	032		VR-17	
CV-1867A	D-5	1	B	2	GL	A0	O/F0	BTC FST FIT	CS CS 2Y	032		VR-17	
CV-1867B	D-5	1	B	2	GL	A0	O/F0	BTC FST FIT	CS CS 2Y	032		VR-17	
SV-1851	C-7	1	B	.5	GA	S0	C/F0	BTC FST	SP SP	NA		VR-14 VR-17	NOTE-001
SV-1852	C-7	1	B	.75	GA	S0	C/F0	BTC FST	SP SP	NA		VR-14 VR-17	NOTE-001

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

FAID M-11B REVISION 08
SYSTEM : CONTROL ROD DRIVE HYDRAULIC

1ST PROGRAM REVISION : 005 , 12/23/83

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VALVE NUMBER	FAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-1853	C-7	1	B	.5	GA	SO	C/FC	BTC FST	SP	NA		VR-14 VR-17	NOTE-001
SV-1854	C-7	1	B	.75	LA	SO	C/FC	BTC FST	SP	NA		VR-14 VR-17	NOTE-001
SV-1855	E-6	NC	B	-	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1856	E-6	NC	B	-	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1868	D-4	NC	B	.25	3WY	SO	NE	BTD	SP	NA		VR-2	
SV-1869	D-4	NC	B	.25	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-18-0118	B-B	1	C	.5	CK	SA	C	CT-CC	SP	NA		VR-13	NOTE-002
SV-18-0919	E-7	1	C	.5	CK	SA	0	CT-CC	SP	NA		VR-13	NOTE-003
SV-18-1453	B-B	1	C	.5	CK	SA	C	CT-CD	SP	NA		VR-13	NOTE-004

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INSERVICE TESTING PROGRAM

IONA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PAID M-119 REVISION 16
SYSTEM : RESIDUAL HEAT REMOVAL

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VALVE NUMBER	PAID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-1906	E-7	1	A/C	20	CK	SAT	C	AT-5 CT-CC CT-CD PIT	RR CS CS 2Y				
MD-1900	H-B	1	A	4	GA	MO	C	AT-1 AT-5 BIC PIT	RR RR CS 2Y	028	NA	VR-29	
MD-1901	H-7	1	A	4	GL	MO	C	AT-1 AT-5 BIC PIT	RR RR CS 2Y	016	NA		
MD-1902	G-7	2	B	10	GA	MO	C	BIC PIT	OF 2Y	014			
MD-1903	G-6	2	B	10	GL	MO	C/RI	BIC PIT	OF 2Y	014			
MD-1904	E-6	2	B	20	ANG	MO	O	BIO PIT	OF 2Y	037			
MD-1905A	E-6	1	A/B	20	GA	MO	C	AT-5 BIC BIO PIT	RR OF OF 2Y	037 037			
MD-1908	E-B	1	A	10	GA	MO	O	AT-1 AT-5 BIC PIT	RR RR CS 2Y	022	NA	VR-29	
MD-1909	E-B	1	A	10	GA	MO	C	AT-1 AT-5 BIC PIT	RR RR CS 2Y	022	NA		

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND MC VALVES
DIANE ARNOLD ENERGY CENTER

TOWA ELECTRIC LIGHT
AND POWER

PAID M-119 REVISION 16
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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
MO-1912	C-7	2	B	18	GA	MO	C	BTC PIT	OP 2Y	084			
MO-1913	C-7	2	B	18	GA	MO	O/KL	BTC BIO PIT	OP OP 2Y	084 084			
MO-1920	C-8	2	B	18	GA	MO	C	BTC PIT	OP 2Y	084			
MO-1921	C-7	2	B	18	GA	MO	O/KL	BTC BIO PIT	OP OP 2Y	084 084			
MO-1932	F-5	2	B	12	GA	MO	C/KL	BTC BIO PIT	OP OP 2Y	083 083			
MO-1933	F-5	2	B	4	GL	MO	C	BTC PIT	OP 2Y	009			
MO-1934	F-5	2	B	12	GL	MO	C	BTC BIO PIT	OP OP 2Y	041 041			
MO-1935	C-5	2	B	3	GA	MO	O	BTC BIO PIT	OP OP 2Y	019 019			
MO-1936	D-6	2	B	4	GL	MO	C	BTC PIT	OP 2Y	006			
MO-1937	Q-6	2	B	4	GA	MO	C	BTC PIT	OP 2Y	019			
MO-1938	D-4	2	B	12	GA	MO	O/KL	BTC BIO PIT	OP OP 2Y	080 080			

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DIANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-119 REVISION 16
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VALVE NUMBER	P&ID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-19-016	B-5	2	C	3	CK	SA	C	CT-CC CT-CD	OP OP				
V-19-020	B-6	2	B/C	1	SCK	MSA	0	CT-CC	OP				
V-19-023	B-6	2	B/C	1	SCK	MSA	0	CT-CC	OP				
V-19-128	B-6	2	B/C	1	SCK	MSA	0	CT-CC	OP				

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND MC VALVES
DUANE ARNOLD ENERGY CENTER

LOWA ELECTRIC LIGHT
AND POWER

PAID M-120 REVISION 14
SYSTEM : RESIDUAL HEAT REMOVAL

1ST PROGRAM REVISION : 005 , 12/23/83

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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-2002	F-3	1	A/C	20	CK	SAT	C	AT-5 CT-CC CT-CD PIT	RR CS CS 2Y				
MO-2000	G-2	2	B	10	GA	MO	C	BTC PIT	OF 2Y	014			
MO-2001	G-4	2	B	10	GL	MO	C/RL	BTC PIT	OF 2Y	014			
MO-2003	F-4	1	A/B	20	GA	MO	C	AT-5 BIC BIO PIT	RR OF OF 2Y	037 037			
MO-2004	F-4	2	B	20	ANL	MO	O	BTO PIT	OF 2Y	037			
MO-2005	G-4	2	B	12	GA	MO	C/RL	BTC BIO PIT	OF OF 2Y	083 083			
MO-2006	F-4	2	B	4	GL	MO	C	BIC PIT	OF 2Y	009			
MO-2007	F-5	2	B	12	GL	MO	C	BTC BIO PIT	OF OF 2Y	041 041			
MO-2009	C-4	2	B	3	GA	MO	O	BTC BIO PIT	OF OF 2Y	019 019			
MO-2011	C-3	2	B	14	GA	MO	C	BTC PIT	OF 2Y	084			

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
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PAID N-120 REVISION 14
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VALVE NUMBER	PAID COUR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
MO-2012	C-3	2	B	14	GA	MO	O/KL	BTC B10 PIT	OF OF 2Y	0B4 0B4			
MO-2015	C-3	2	B	14	GA	MO	O/KL	BTC B10 PIT	OF OF 2Y	0B4 0B4			
MO-2016	C-2	2	B	14	GA	MO	C	BTC PIT	OF 2Y	0B4			
MO-2029	D-5	2	B	12	GA	MO	O	BTC B10 PIT	OF OF 2Y	0B0 0B0			
MO-2030	E-5	2	B	18	GL	MO	O	BTC B10 PIT	OF OF 2Y	060 060			
MO-2031	E-7	2	B	12	GA	MO	O	BTC B10 PIT	OF OF 2Y	0B0 0B0			
MO-2036	E-8	2	B	4	GA	MO	C	BTC B10 PIT	OF OF 2Y	030 030			
MO-2038	E-7	2	B	4	GA	MO	C	BTC PIT	OF 2Y	017			
MO-2044A	D-6	2	B	1	GL	MO	C	BTC PIT	OF 2Y	01B			
MO-2044B	D-6	2	B	1	GL	MO	C	BTC PIT	OF 2Y	01B			

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PID M-120 REVISION 14
SYSTEM : RESIDUAL HEAT REMOVAL

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VALVE NUMBER	PAID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
00-2069	D-3	2	B	24	GA	MD	0/KL	BTC BTD PIT	OP OP 2Y	140 140			
FSV-2043	D-6	2	B/C	4	RV	SA	C	CI-SP	5Y				
V-20-001	B-3	2	C	12	CK	SA	C	CI-CC CI-CD	OP OP				
V-20-003	A-5	2	C	12	CK	SA	C	CI-CC CI-CD	OP OP				
V-20-006	B-4	2	C	3	CK	SA	C	CI-CC CI-CD	OP OP				
V-20-008	H-2	2	C	3	CK	SA	C	CI-CC CI-CD	OP OP				

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

P&ID N-121 REVISION 13
SYSTEM : CORE SPRAY

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VALVE NUMBER	P&ID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-2118	F-6	1	A/C	8	CK	SAT	C	AT-5 CT-CC CT-CD PIT	RR RR RR 2Y			VR-33 VR-33	
CV-2138	E-6	1	A/C	8	CK	SAT	C	AT-5 CT-CC CT-CD PIT	RR RR RR 2Y			VR-33 VR-33	
HO-2100	H-5	2	B	12	GA	M0	O/KL	RTD PIT	OP 2Y	078			
HO-2104	D-3	2	B	2	GA	M0	0	BTC PIT	OP 2Y	013			
HO-2112	F-5	2	B	8	GL	M0	C	BTC PIT	OP 2Y	033			
HO-2115	G-5	2	A	8	GA	M0	0	AT-1 BIC RTD PIT	RR OP OP 2Y		NA		
HO-2117	G-6	1	A	8	GA	M0	C	AT-1 AT-5 BIC RTD PIT	RR RR OP OP 2Y		NA	VR-29	
HO-2120	C-5	2	B	12	GA	M0	O/KL	RTD PIT	OP 2Y	078			
HO-2124	D-4	2	B	2	GA	M0	0	BTC PIT	OP 2Y	013			

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PROGRAM : PRISM

INSERVICE TESTING PROGRAM

IOWA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PAD M-124 REVISION 13
SYSTEM : CORE SPRAY

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1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	PAD CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
M0-2132	E-5	2	B	B	GL	M0	C	BTC PIT	OP 2Y	033			
M0-2135	E-5	2	A	B	GA	M0	0	AT-1 BTC BIO PIT	RR OP OP 2Y	00B 00B	NA		
M0-2137	E-6	1	A	B	GA	M0	C	AT-1 AT-5 BTC BIO PIT	RR RR OP OP 2Y	00B 00B	NA	VR-29	
M0-2146	C-5	2	B	12	GA	M0	O/KL	BTC BIO PIT	OP OP 2Y	07B 07B			
M0-2147	B-5	2	B	12	GA	M0	O/KL	BTC BIO PIT	OP OP 2Y	07B 07B			
F5V-2109	G-4	2	B/C	2	KV	SA	C	CT-SF	5Y				
F5V-2129	E-4	2	B/C	2	KV	SA	C	CT-SF	5Y				
V-21-007	D-3	2	C	10	CR	SA	C	CT-CO	OP				
V-21-009	D-3	2	C	2	CR	SA	C	CT-CO	OP				
V-21-010	D-4	2	C	10	CR	SA	C	CT-CO	OP				
V-21-012	D-4	2	C	2	CR	SA	C	CT-CO	OP				
XEV-2119	G-7	1	A/C	1	RFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-B	

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

FAID H-124 REVISION 13
SYSTEM : CORE SPRAY

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VALVE NUMBER	FAID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
XFV 2139	G-7	1	A/C	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y		VR-8	

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

LOWA ELECTRIC LIGHT
AND POWER

P&ID M-122 REVISION 14
SYSTEM : HFCI - STEAM SIDE

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VALVE NUMBER	P&ID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FST PIT	TEST FREQ 2Y	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-2206	D-2	2	B	1	GA	AO	C/FC	BIC FST PIT	OF OF 2Y	005		VR-17	
CV-2211	C-2	2	A	1	GA	AO	O/FC	AT-1 BIC FST PIT	RR OF OF 2Y	005		VR-29 VR-17	
CV-2212	C-2	2	A	1	GA	AO	O/FC	AT-1 BIC FST PIT	RR OF OF 2Y	005		VR-17	
CV-2235	C-5	2	B	1	GA	AO	C/FC	BIC FST PIT	OF OF 2Y	005		VR-17	
HV-2201	E-3	2	B	10	GL	HO	C	BIO PIT	OF 2Y	030			
MO-2202	E-3	2	B	10	GA	MO	C	BIO PIT	OF 2Y	021			
MO-2238	G-6	1	A	10	GA	MO	O	AT-1 BIC BIO PIT	RR OF OF 2Y	013 013	NA	VR-29	
MO-2239	G-5	1	A	10	GA	MO	O	AT-1 BIC BIO PIT	RR OF OF 2Y	013 013	NA		
MO-2247	P-5	2	B	2	GL	MO	C	BIO PIT	OF 2Y	011			

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PROGRAM : FRISIM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
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PAID M-122 REVISION 14
SYSTEM : HPCI - STEAM SIDE

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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
MO-2290A	B-B	2	A	2	GA	MO	0	AT-1 BTC BTD PIT	RR OP OP 2Y	010 010	NA		
MO-2290B	B-B	2	A	2	GA	MO	0	AT-1 BTC BTD PIT	RR OP OP 2Y	010 010	NA		
SV-2223	C-3	2	B/C	1.25	KV	SA	C	CT-SP	5Y				
SV-2224	C-4	2	B/C	1	KV	SA	C	CT-SP	5Y				
SV-2206	D-2	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-2211	C-2	NC	B	-	3WY	SO	NE	BTD	OP			VR-2	
SV-2212	C-2	NC	B	-	3WY	SO	NE	BTD	OP			VR-2	
SV-2219	C-4	2	B	1	GL	SO	C	BTC	OP	NA		VR-18	
SV-2255	C-5	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-22-016	B-7	2	A/C	16	CK	SA	C	AT-1 CT-CC CT-CD	RR CS OP		NA		
SV-22-017	B-7	2	C	16	SLK	SA	C/LD	CT-CD	OP				
SV-22-021	B-7	2	A/C	2	CK	SA	C	AT-1 CT-CC CT-CD	RR CS OP		NA		
SV-22-022	B-7	2	C	2	SLK	MSA	C/LD	CT-CD	OP				

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PROGRAM : FRISIM

INSERVICE TESTING PROGRAM

IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IDMA ELECTRIC LIGHT
AND POWER

P&ID M-122 REVISION 14
SYSTEM : HPCI - STEAM SIDE

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VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-22-026	B-3	2	C	2	CK	SA	C	CT-CC	OP				
V-22-028	B-4	2	C	2	CK	SA	C	CT-CC	OP				
V-22-029	B-5	2	C	2	CK	SA	C	CT-CC	OP				
V-22-063	B-8	2	C	3	CK	SA	C	CT-CC	CS				
								CT-CC	OP				
V-22-064	B-8	2	C	3	CK	SA	C	CT-CC	CS				
								CT-CC	OP				
XIV-2246A	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC FIT	RR RR 2Y			VR-B	
XIV-2246B	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC FIT	RR RR 2Y			VR-B	
XIV-2246C	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC FIT	RR RR 2Y			VR-B	
XIV-2246D	F-6	1	A	1	XFC	SA	0	AT-2 CT-CC FIT	RR RR 2Y			VR-B	

PREPARED BY : BUTECH
 PROGRAM : PRISM
 INSERVICE TESTING PROGRAM
 IOWA ELECTRIC LIGHT
 AND POWER
 IST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER

PAID N-123 REVISION 10
 SYSTEM : HPCI - WATER SIDE
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VALVE NUMBER	PAID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	KELIEF REQUEST	REMARKS
CV-2313	C-7	1	C	12	CK	SAT	C	CT-CC C1-CD PIT	CS CS 2Y				
MO-2300	F-4	2	B	14	GA	MO	0	BIC PIT	OP 2Y	077			
MO-2311	C-6	2	B	12	GA	MO	0	BIO PIT	OP 2Y	018			
MO-2312	C-7	1	A	12	GA	MO	C	AT-1 EIC BIO PIT	RR OP OP 2Y	020 020	NA		
MO-2316	E-6	2	B	8	GA	MO	C	BIC PIT	OP 2Y	024			
MO-2318	C-5	2	B	4	GL	MO	C	BIC BIO PIT	OP OP 2Y	018 018			
MO-2321	A-7	2	B	14	GA	MO	C	BIC BIO PIT	OP OP 2Y	077 077			
MO-2322	F-4	2	B	14	GA	MO	C	BIO PIT	OP 2Y	077			
FSV-2301	F-3	2	B/C	1.5	RV	SA	C	C1-SF	5Y				
V-23-001	A-6	2	C	14	CK	SA	C	C1-CD	RR			VR-2Y	
V-23-014	C-4	2	C	4	CK	SA	C	C1-CD	OP				

PREPARED BY : NUTECH
 PROGRAM : PRISM
 INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER
 IOWA ELECTRIC LIGHT
 AND POWER

P&ID M-124 REVISION 12
 SYSTEM : RCIC - STEAM SIDE

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 1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-2409	E-2	2	B	1	GA	AD	C/FC	BIC FST PIT	OP OP 2Y	005		VR-17	
CV-2410	D-3	2	A	1	GA	AD	O/FC	AT-1 BIC FST PIT	RR OP OP 2Y	005	NA	VR-29 VR-17	
CV-2411	D-3	2	A	1	GA	AD	O/FC	AT-1 BIC FST PIT	RR OP OP 2Y	005	NA	VR-17	
CV-2436	B-5	2	B	1	GA	AD	O/FC	BIC FST PIT	OP OP 2Y	005		VR-17	
CV-2400	G-6	1	A	4	GA	MD	O	AT-1 BIC BID PIT	RR OP OP 2Y	020 020	NA	VR-29	
CV-2401	G-5	1	A	4	GA	MD	O	AT-1 BIC BID PIT	RR OP OP 2Y	020 020	NA		
CV-2404	G-3	2	B	4	GL	MD	C	BID PIT	OP 2Y	016			
CV-2405	F-3	2	B	3	GL	MD	C	BID PIT	OP 2Y	015			
CV-2426	D-6	2	B	1	GL	MD	C	BID PIT	OP 2Y	014			

100A ELECTRIC LIGHT AND POWER

INSERVICE TESTING PROGRAM

IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARMOUR ENERGY CENTER

PREPARED BY : MUTECH
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PAID M-124 REVISION 12
SYSTEM : RCIC - STEAM SIDE

VALVE NUMBER	PAID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
PSV-2474	C-3	2	B/C	1.25	KV	SA	C	CT-SP	SY				
SV-2409	E-2	NC	B	-	3WY	SO	ND	BTB	OP	NA		VR-2	
SV-2410	D-3	NC	B	-	3WY	SO	NE	BTB	OP			VR-2	
SV-2411	D-3	NC	B	-	3WY	SO	NE	BTB	OP			VR-2	
SV-2436	B-5	NC	B	-	3WY	SO	NE	BTB	OP	NA		VR-2	
SV-24-00B	D-7	2	C	10	SCR	MSA	C/LD	CT-CD	OP				NOTE-005
SV-24-012	C-6	2	C	2	CK	SA	C	CT-CD	OP				NOTE-005
SV-24-023	D-7	2	A/C	10	CK	SA	C	AT-1 CT-CC CT-CD	RR CS OP	NA			
SV-24-046	D-7	2	C	3	CK	SA	C	CT-CC CT-CD	CS OP				
SV-24-047	D-7	2	C	3	CK	SA	C	CT-CC CT-CD	CS OP				
SV-24-050	F-6	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-8	
SV-24-050	F-6	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-8	
SV-24-050	F-6	1	A/C	1	XFC	SA	0	AT-2 CT-CC PII	RR RR 2Y			VR-8	

PREPARED BY : MITECH
PROGRAM : FRISM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

LOMA ELECTRIC LIGHT
AND POWER

P&ID N-124 REVISION 12
SYSTEM : KCIC - STEAM SIDE
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VALVE NUMBER	P&ID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
xV-243D	F-6	1	A/C	1	XFC	SA	0	AT-2 CT-CC PI	RR RR 2Y		VR-8	

IOWA ELECTRIC LIGHT
 AND POWER
 INTERVICE TESTING PROGRAM
 IST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER

PREPARED BY : NUTECH
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 PAID M-125 REVISION 12
 SYSTEM : RCTC - WATER SIDE
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 IST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	PAID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-2513	D-6	1	C	4	CK	SAT	C	CT-CC CT-CO PIT	CS CS 2Y				
NO-2500	F-4	2	B	6	GA	MO	0	BIC PIT	OP 2Y	040			
NO-2510	C-4	2	B	2	GL	MO	C	BIC BIO PIT	OP OP 2Y	013 013			
NO-2511	D-5	2	B	4	GA	MO	0	BIO PIT	OP 2Y	015			
NO-2512	D-6	1	A	4	GA	MO	C	AT-1 BIC BIO PIT	RR OP OP 2Y	015 015	NA		
NO-2516	A-5	2	B	6	GA	MO	C	BIC BIO PIT	OP OP 2Y	040 040			
NO-2517	F-4	2	B	6	LA	MO	C	BIO PIT	OP 2Y	040			
CV-2501	E-4	2	B/C	1	RV	SA	C	CT-SP	5Y				
CV-25001	A-5	2	C	6	CK	SA	C	CT-CO	RR				VR-21
CV-25005	F-4	2	C	6	CK	SA	C	CT-CC	OP				
CV-25006	C-4	2	C	2	CK	SA	C	CT-CO	OP				

INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DIANE ARNOLD ENERGY CENTER
 TOWA ELECTRIC LIGHT
 AND POWER

PREPARED BY : NUTECH
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FAID M-126 REVISION 09
 SYSTEM STANDBY LIQUID CONTROL
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VALVE NUMBER	FAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
FSV-2607	E-5	2	B/C	1	RV	SA	C	CT-SP	5Y			
FSV-2609	H-5	2	B/C	1	RV	SA	C	CT-SP	5Y			
V-26-004	D-5	2	C	1.5	CK	SA	C	CT-CC CT-CO	OP OP			
V-26-006	C-5	2	C	1.5	CK	SA	C	CT-CC CT-CO	OP OP			
V-26-008	F-7	1	A/C	1.5	CK	SA	C	AT-1 CT-CC CT-CO	RR RR RR	NA	VR-20 VR-20	
V-26-009	D-8	1	A/C	1.5	CK	SA	C	AT-1 CT-CC CT-CO	RR RR RR	NA	VR-20 VR-20	
XS-2618A	F-6	2	D	1.5	GA	EXP	C	DT	RR			
XS-2618B	D-6	2	D	1.5	GA	EXP	C	DT	RR			

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PAID M-127 REVISION 15
SYSTEM : REACTOR WATER CLEANUP

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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
00-2700	F-B	1	A	4	GA	M0	0	AT-1 BTC PIT	RR OF 2Y	020	NA		
00-2701	F-7	1	A	4	GA	M0	0	AT-1 BTC PIT	RR OF 2Y	020	NA		
00-2740	G-4	1	A	4	GL	M3	0	AT-1 BTC PIT	RR OF 2Y	010	NA		

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INSERVICE TESTING PROGRAM

IOWA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PAID M-130 REVISION 16
SYSTEM : COMPRESSED AIR

1ST PROGRAM REVISION : 005 , 12/23/83

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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-30-207	B-B	NC	A	1	GA	M	C/LC	AT-1	RR	NA		

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1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-132 REVISION 16
SYSTEM : DIESEL GENERATOR SYSTEMS

IST PROGRAM REVISION : 005 , 12/23/83

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VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-32-005	B-3	2	NC	1.5	CK	SA	C	CT-CC CT-CO	OP OP			
V-32-010	B-2	2	NC	1.5	CK	SA	C	CT-CC CT-CO	OP OP			

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1ST CLASS 1, 2, 3, AND MC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PAID M-137 REVISION 12
SYSTEM : RADWASTE SUMP

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VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-3704	H-7	3	A	3	GA	A0	0/FC	AT-1 BTC FST FIT	RR OF OF 2Y	004	NA	VR-29 VR-17	
CV-3705	H-7	3	A	3	GA	A0	0/FC	AT-1 BTC FST FIT	RR OF OF 2Y	004	NA	VR-17	
CV-3728	D-6	3	A	3	GA	A0	0/FC	AT-1 BTC FST FIT	RR OF OF 2Y	004	NA	VR-29 VR-17	
CV-3729	D-6	3	A	3	GA	A0	0/FC	AT-1 BTC FST FIT	RR OF OF 2Y	004	NA	VR-17	
CV-3734	G-7	MC	B	-	3MY	S0	NE	BTB	OF	NA		VR-2	
CV-3705	G-7	MC	B	-	3MY	S0	NE	BTB	OF	NA		VR-2	
CV-3728	C-6	MC	B	-	3MY	S0	NE	BTB	OF	NA		VR-2	
CV-3729	C-6	MC	B	-	3MY	S0	NE	BTB	OF	NA		VR-2	

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INSERVICE TESTING PROGRAM
IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

P&ID : M-143 REVISION 2B
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VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4300	C-7	NC	A	18	BTf	AO	C/FC	AT-1 BTC FST PIT	RR OP OP 2Y	005	NA	VR-17	
CV-4301	C-8	NC	A	18	BTf	AO	C/FC	AT-1 BTC FST PIT	RR OP OP 2Y	005	NA	VR-17	
CV-4302	D-7	NC	A	18	BTf	AO	C/FC	AT-1 BTC FST PIT	RR OP OP 2Y	005	NA	VR-17	
CV-4303	D-7	NC	A	18	BTf	AO	C/FC	AT-1 BTC FST PIT	RR OP OP 2Y	005	NA	VR-17	
CV-4304	B-7	NC	A	20	BTf	AO	C/F0	AT-1 BTC BT0 FST PIT	RR OP OP OP 2Y	005 042	NA	VR-17	
CV-4305	B-7	NC	A	20	BTf	AO	C/F0	AT-1 BTC BT0 FST PIT	RR OP OP OP 2Y	005 042	NA	VR-17	
CV-4306	E-1	NC	A	18	BTf	AO	C/FC	AT-1 BTC FST PIT	RR OP OP 2Y	005	NA	VR-17	

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IN-SERVICE TESTING PROGRAM

IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD EMERLY CENTER

IOWA ELECTRIC LIGHT
AND POWER

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VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4307	E-3	NC	A	1B	RTF	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4308	E-3	NC	A	1B	RTF	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4309	D-7	NC	A	2	GA	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4310	D-7	NC	A	2	GA	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4311	F-3	NC	A	6	GA	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4312	F-3	NC	A	6	GA	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4313	F-3	NC	A	6	GA	AD	C/FC	AI-1 BIC FST PTI	RR OP 2Y	005	NA	VR-17	
CV-4314	C-7	NC	A/C	1B	CK	SGT	C	AI-4 CI-CC CI-CD PTI	RR OP 2Y		NA	VR-11	

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INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DIANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
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VALVE NUMBER	P&ID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4327D	C-7	NC	A/C	1B	CK	SAT	C	AT-4 CT-CC CT-CD PTT 2Y	RR OF OF 2Y	NA	VR-11	
CV-4327C	C-7	NC	A/C	1B	CK	SAT	C	AT-4 CT-CC CT-CD PTT 2Y	RR OF OF 2Y	NA	VR-11	
CV-4327B	C-7	NC	A/C	1B	CK	SAT	C	AT-4 CT-CC CT-CD PTT 2Y	RR OF OF 2Y	NA	VR-11	
CV-4327F	C-7	NC	A/C	1B	CK	SAT	C	AT-4 CT-CC CT-CD PTT 2Y	RR OF OF 2Y	NA	VR-11	
CV-4327G	C-7	NC	A/C	1B	CK	SAT	C	AT-4 CT-CC CT-CD PTT 2Y	RR OF OF 2Y	NA	VR-11	
CV-4327H	C-7	NC	A/C	1B	CK	SAT	C	AT-4 CT-CC CT-CD PTT 2Y	RR OF OF 2Y	NA	VR-11	
CV-4327A	E-5	NC	A	2	GA	AD	D/F/C	AT-1 BIC FST PTT 2Y	RR OF OF 2Y	NA	VR-17	
CV-4327C	E-5	NC	A	2	GA	AD	D/F/C	AT-1 BIC FST PTT 2Y	RR OF OF 2Y	NA	VR-17	

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IOWA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND HC VALVES
DUANE ARNOLD ENERGY CENTER

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VALVE NUMBER	FAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4.378A	E-5	NC	A	2	GA	AD	O/FC	AT-1 BIC FST PIT	RR OP OP 2Y	025	NA	VR-17	
CV-4.378B	E-5	NC	A	2	GA	AD	O/FC	AT-1 BIC FST PIT	RR OP OP 2Y	025	NA	VR-17	
CV-4.379A	C-3	2	B	2	GA	MO	C	BIC BID FST	OP OP 2Y	012 012			
CV-4.379B	C-4	2	B	2	GA	MO	C	BIC BID PIT	OP OP 2Y	012 012			
CV-4.373A	B-3	2	B	2	GL	MO	C	BID PIT	OP 2Y	040			
CV-4.373B	B-4	2	B	2	GL	MO	C	BID PIT	OP 2Y	040			
CV-4.390	C-7	MC	B	-	3WY	SO	ND	BID	OP	NA		VR-2	
CV-4.391	C-8	MC	B	-	3WY	SO	ND	BID	OP	NA		VR-2	
CV-4.392	D-7	MC	B	-	3WY	SO	ND	BID	OP	NA		VR-2	
CV-4.393	D-7	MC	B	-	3WY	SO	ND	BID	OP	NA		VR-2	
CV-4.394	B-7	MC	B	.75	3WY	SO	NE	BID BIE	OP OP	NA NA		VR-2 VR-2	
CV-4.395	B-7	MC	B	.75	3WY	SO	NE	BID BIE	OP OP	NA NA		VR-2 VR-2	

PREPARED BY : NUTECH
 PROGRAM : PRISM
 INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER
 IOWA ELECTRIC LIGHT
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PAID M-143 REVISION 2B SYSTEM : CONTAINMENT ATMOSPHERE CONTROL										1ST PROGRAM REVISION : 00, 12/23/83 PAGE : 55			
VALVE NUMBER	PAID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST POSITION	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-4306	E-1	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4307	E-3	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4308	E-3	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4309	D-7	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4310	D-7	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4311	F-3	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4312	F-3	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4313	F-3	NC	B	-	3WY	SO	ND	BTD	OF	NA		VR-2	
SV-4331A	C-2	NC	A	2	GA	SO	C/KC	A1-1 B1C B1D FST FTI	KK OF OF OF 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-4331B	C-2	NC	A	2	GA	SO	C/KC	A1-1 B1C B1D FST FTI	KK OF OF OF 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-4332A	C-2	NC	A	2	GA	SO	C/KC	A1-1 B1C B1D FST FTI	KK OF OF OF 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-4332B	C-2	NC	A	2	GA	SO	C/KC	A1-1 B1C B1D FST FTI	KK OF OF OF 2Y	005 005	NA	VR-34 VR-34 VR-17	

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PROGRAM : PRISM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DIANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

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VALVE NUMBER	P&ID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-433A	C-2	NC	A	2	GA	SO	C/KC	AT-1 BIC BID FST PTI	KR OP OP OP 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-433B	C-2	NC	A	2	GA	SO	C/KC	AT-1 BIC BID FST PTI	KR OP OP OP 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-433A	B-2	NC	A	2	GA	SO	C/KC	AT-1 BIC BID FST PTI	KR OP OP OP 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-433B	B-2	NC	A	2	GA	SO	C/KC	AT-1 BIC BID FST PTI	KR OP OP OP 2Y	005 005	NA	VR-34 VR-34 VR-17	
SV-437A	E-5	NC	B	-	3MY	SO	NE	BID	OP	NA	NA	VR-2	
SV-437B	F-5	NC	B	-	3MY	SO	NE	BID	OP	NA	NA	VR-2	
SV-437B	E-5	NC	B	-	3MY	SO	NE	BID	OP	NA	NA	VR-2	
SV-437B	E-5	NC	B	-	3MY	SO	NE	BID	OP	NA	NA	VR-2	
SV-437B	B-6	NC	C	.75	CK	SA	C	CI-CC	CS				
SV-437B	B-8	NC	C	.75	CK	SA	C	CI-CC	CS				

IOWA ELECTRIC LIGHT
 AND POWER
 INTERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER

PREPARED BY : MUTECH
 PROGRAM : PRISM

PAID M-143 REVISION 28 PAGE 57
 SYSTEM : CONTAINMENT ATMOSPHERE CONTROL 1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	PAID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-43-0B2	C-3	2	C	2	CK	SA	C	CT-CO	KR		VR-24	
V-43-0B4	C-3	2	C	2	CK	SA	C	CT-CO	KR		VR-24	
V-43-0B6	C-3	2	C	2	CK	SA	C	CT-CO	KR		VR-24	
V-43-0BB	B-3	2	C	2	CK	SA	C	CT-CO	KR		VR-24	
V-43-16B	A-7	NC	A/C	20	CK	SA	C	AT-1 CT-CC CT-CO PIT	KR OP OP 2Y	NA		
V-43-169	A-7	NC	A/C	20	CK	SA	C	AT-1 CT-CC CT-CO PIT	KR OP OP 2Y	NA		
V-43-214	F-4	NC	A/C	2	CK	SA	C	AT-1 CT-CC	KR KR	NA	VR-25	

PREPARED BY : MUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM

IOWA ELECTRIC LIGHT
AND POWER

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PAID M-146 REVISION 15
SYSTEM : SERVICE WATER PUMP HOUSE

PAGE : 58
1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
V-46-011	B-5	3	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-46-013	B-5	3	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-46-018	C-6	3	C	8	CK	SA	C	CT-CC CT-CO	RR RR				
V-46-021	C-6	3	C	8	CK	SA	C	CT-CC CT-CO	RR RR				
V-46-026	D-7	3	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-46-030	D-7	3	C	12	CK	SA	C	CT-CC CT-CO	OP OP				

PREPARED BY : NUTECH
PROGRAM : FRISTM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DIANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-157 REVISION 08
SYSTEM : DRYWELL COOLING WATER

PAGE : 59
1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	P&ID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST PIT	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-5703A	G-7	3	A	3	GL	M	C	AT-1 PIT	RR 2Y		NA		
CV-5703B	F-7	3	A	3	GL	M	C	AT-1 PIT	RR 2Y		NA		
CV-5704A	H-6	3	A	4	GL	AD	O/F/O	AT-1 BIC BIO FST PIT	RR OP OP OP 2Y	005 005	NA	VR-17	
CV-5704B	H-6	3	A	4	GL	AD	O/F/O	AT-1 BIC BIO FST PIT	RR OP OP OP 2Y	005 005	NA	VR-17	
CV-5710A	B-8	3	A	4	GL	AD	O/F/O	AT-1 BIC BIO FST PIT	RR OP OP OP 2Y	005 005	NA	VR-17	
CV-5710B	A-8	3	A	4	GL	AD	O/F/O	AT-1 BIC BIO FST PIT	RR OP OP OP 2Y	005 005	NA	VR-17	
CV-5719A	B-7	3	A	3	GL	M	C	AT-1 PIT	RR 2Y		NA		
CV-5719B	A-7	3	A	3	GL	M	C	AT-1 PIT	RR 2Y		NA		

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PREPARED BY : NUTECH
PROGRAM : PRISM

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1ST PROGRAM REVISION : 005 , 12/23/83

PAID M-157 REVISION OR
SYSTEM : DRYWELL COOLING WATER

VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-5704A	H-6	NC	B	-	3WY	SO	ND	BTD BTE	OP OP	NA NA		VR-2 VR-2	
SV-5704B	H-6	NC	B	-	3WY	SO	ND	BTD BTE	OP OP	NA NA		VR-2 VR-2	
SV-5718A	B-B	NC	B	-	3WY	SO	ND	BTD BTE	OP OP	NA NA		VR-2 VR-2	
SV-5718B	A-B	NC	B	-	3WY	SO	ND	BTD BTE	OP OP	NA NA		VR-2 VR-2	

PREPARED BY : RUTECH
 PROGRAM : FRISH
 INSERVICE TESTING PROGRAM
 1ST CLASS 1, 2, 3, AND NC VALVES
 DRANE AKNOLD ENERGY CENTER

10MA ELECTRIC LIGHT
AND POWER

PAGE : 61													
1ST PROGRAM REVISION : 005 , 12/23/83													
MONITORING													
M-181 REVISION 10													
CONTAINMENT ATMOSPHERE													
SYSTEM													
PAID													
SYSTEM													
IST CLASS													
VALVE CAT													
VALVE SIZE													
VALVE TYPE													
ACTUATOR TYPE													
NORMAL POSITION													
TEST													
TEST FREQ													
MAXIMUM STROKE TIME													
MAXIMUM LEAKAGE													
RELIEF REQUEST													
REMARKS													
SV-B101A	F-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B101B	F-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B102A	F-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B102B	F-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B103A	E-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B103B	E-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B104A	F-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B104B	E-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-B105A	E-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	

IOWA ELECTRIC LIGHT
 AND POWER
 INTERVIEW TESTING PROGRAM
 IST CLASS 1, 2, 3, AND NC VALVES
 DUANE ARNOLD ENERGY CENTER

PREPARED BY : MITECH
 PROGRAM : PRISM
 PAGE : 62
 SYSTEM : CONTAINMENT ATMOSPHERE MONITORING
 IST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	P&ID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-8105B	E-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8106F	E-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8105D		NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-810		NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8107B	D-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8108A	D-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8109B	D-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8107A	D-5	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	
SV-8109B	D-4	NC	A	1	GL	SO	O/FC	AT-1 BIC FST	RR OP OF	NA	NA	VR-32 VR-17	

IONA ELECTRIC LIGHT
AND POWER

INSERVICE TESTING PROGRAM

PREPARED BY : NUTECH
PROGRAM : PRISM

IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

PAGE : 63
005, 12/23/83

PAID SYSTEM : M-181 REVISION 10
CONTAINMENT ATMOSPHERE MONITORING

IST PROGRAM REVISION : 005, 12/23/83

VALVE NUMBER	PAID CODE	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-0110A	D-5	NC	A	1	GL	SO	0/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	
SV-0110B	D-4	NC	A	1	GL	SO	0/FC	AT-1 BIC FST	RR OF OF	NA	NA	VR-32 VR-17	

PREPARED BY : MUTECH
PROGRAM : FRISIM

IN-SERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

100% ELECTRIC LIGHT
AND POWER

PAID M-184 REVISION 05
SYSTEM : MSIV LEAKAGE CONTROL

PAGE 64
1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
MD-B401A	F-3	1	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B401B	F-3	1	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B401C	F-3	1	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B401D	F-3	1	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B402A	F-3	2	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B402B	F-3	2	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B402C	F-3	2	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B402D	F-3	2	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			
MD-B403A	F-4	2	B	1	GA	MO	C	BIC BIO FIT	OP OP 2Y	020 020			

PREPARED BY : NUTECH
PROGRAM : PF151M

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DIANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

PAID M-184 REVISION 05
SYSTEM : MSIV LEAKAGE CONTROL

PAGE : 65
1ST PROGRAM REVISION : 05 , 12/23/83

VALVE NUMBER	PAID COOR	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
NO-0403B	F-4	2	B	1	GA	M0	C	BTC BTD PIT	OP OP 2Y	020 020			
NO-0403C	F-4	2	B	1	GA	M0	C	BTC BTD PIT	OP OP 2Y	020 020			
NO-0403D	F-4	2	B	1	GA	M0	C	BTC BTD PIT	OP OP 2Y	020 020			

PREPARED BY : NUTECH
PROGRAM : FRISIM

INSERVICE TESTING PROGRAM

1ST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

LOMA ELECTRIC LIGHT
AND POWER

P&ID H-187 REVISION 0 PAGE : 66
SYSTEM : POST ACCIDENT SAMPLING SYSTEM 1ST PROGRAM REVISION : 005 , 12/23/83

VALVE NUMBER	P&ID CODE	1ST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST FREQ	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
SV-8772A	E-1	1	A	1	HAL	SO	C	AT-1 BIC FST	RR OP OP	005		VR-32 VF-17	
SV-8772B	E-1	1	A	1	HAL	SO	C	AT-1 BIC FST	RR OP OP	005		VR-32 VF-17	

PREPARED BY : NUTECH
PROGRAM : PRISM

INSERVICE TESTING PROGRAM
ISI CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

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IST PROGRAM REVISION : 005 , 12/23/83

VALVE IST PROGRAM REMARKS

- NOTE 001: There are 89 CRD hydraulic control modules and each CRD hydraulic control module contains one of these valves. The valve number listed in the valve IST program is typical of 89.
- NOTE-002: Valve No. V-18-0118 is as typical valve number from a group of 89 valves. The complete set of numbers is V-18-0118 thru and including V-18-0206.
- NOTE-003: Valve No. V-18-0919 is a typical valve number from a group of 89 valves. The complete set of numbers is V-18-0919 thru and including V-18-1007.
- NOTE-004: Valve No. V-18-1453 is a typical valve number from a group of 89 valves. The complete set of numbers is V-18-1453 thru and including V-18-1541.
- NOTE-005: This valve is verified to operate to its safety-related position during periodic testing of the RCIC Pump.

APPENDIX C

ASME LETTER TO WPPSS RE
SECTION XI, DIVISION, IWA-1100
SCOPE OF SECTION XI, DIVISION 1



The American Society of Mechanical Engineers

United Engineering Center / 345 E. 47th St., New York, N.Y. 10017 / 212 644-7815

February 16, 1978

THE BOILER AND
PRESSURE VESSEL
COMMITTEE

Date 1/8/79
Revision 0

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Washington Public Power Supply System
PO Box 968
3000 George Washington Way
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Subject: Section XI, Division 1, IWA-1100
Scope of Section XI, Division 1

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C.E. RAWLINS
W.R. SMITH SR.
W.E. SOMERS

Reference: Your letter of September 19, 1977 (APO 77-59)
ASME File #: BC 77-666
NI 77-371

Dear Mr. Harrold:

Your inquiry and our response are as stated below:

QUESTION:

Is it the intent of Subarticle IWA-1100 that the rules and requirements of Section XI, Division 1 for inservice inspection of Class 1, 2 & 3 pressure retaining components (and their supports) be applied only to water and steam systems in light water cooled nuclear power plants?

REPLY:

Systems containing other than steam or water were not originally considered by the Committee in formulating the rules in Section XI; they may, however, be included for further consideration and for revisions to future editions of Section XI. The requirements shown in Section XI, Article IWA-1000 on Scope and Responsibility, specifically Paragraph IWA-1400, requires the Owner of the nuclear plant to determine the appropriate Code, Class or Classes for each component of the nuclear power plant to be examined according to Section XI rules.

Very truly yours,

Kenneth I. Baron,
Assistant Secretary

/s/

DETAILED SUMMARY OF IST PROGRAM CHANGES

This attachment addresses, in detail, the changes between Revision 4 and Revision 5 of the Duane Arnold Energy Center Inservice Testing (IST) Program for Pumps and Valves.

1. Format/editorial changes - The format of the program is modified to conform to the standard DAEC format for controlled documents. As a result of this transformation, several editorial changes of no technical consequence are added.
2. Effective date - The effective date of the program is extended to the end of the current inspection interval.
3. Relief Request PR-2 - This relief request, which pertains to measurement of bearing temperatures of the Emergency Service Water (ESW) pumps, was expanded as requested.
4. Relief Request PR-3 - This relief request, which pertains to measurements of vibration and bearing temperatures of the HPCI and RCIC pumps, is changed to include a commitment for future compliance.
5. Relief Request PR-4 - This relief request, which pertains to the calculation of suction pressure for various pumps, is changed by the addition of the Standby Liquid Control (SBLC) pumps.
6. Relief Request PR-8 - This new relief request provides for the option of measuring pump vibration in units of velocity as well as displacement.
7. Screen Wash Pumps - The screen wash pumps are a new addition to the program. Relief Request PR-9 is submitted to account for existing system design details that may not conform to Code requirements.
8. Relief Request PR-10 - Based on an ASME Code interpretation, the test acceptance criteria for testing of the diesel fuel oil transfer pump is afforded an optional treatment.
9. Pressure isolation valve testing - In compliance with an NRC request, leaktesting of pressure isolation valves is added to the Program. Table 3.1-1 and Appendix B are revised accordingly.
10. Several relief requests are voided per NRC request.
11. Excess flow check valves - Relief Request VR-8 is rewritten to eliminate the requirement for quantitative leaktesting of the excess flow check valves.
12. Relief Request VR-11 - Typographical correction -- CV-4327E replaced by CV-4327H. The tabulation in Appendix B is corrected accordingly.
13. Relief Request VR-13 - This relief request, which pertains to testing of CRD system valves, is expanded to provide further technical justification for the request.

14. Relief Request VR-29 - This request is corrected as follows:
CV-3729 & CV-4311 are deleted; test is done in correct direction
CV-4301 & CV-4639 are deleted; these are not gate valves
CV-3728 & MOV-2400 are added; inadvertently omitted from Revision 4
15. Relief Request VR-32 - Four (4) recently installed Post-Accident Sampling System (PASS) valves are added (SV-4594 A & B and SV-8772 A & B)
16. Core Spray check valves - Relief request VR-33 is submitted shifting the test frequency of CV-2118 and CV-2138 from quarterly to each refueling.
17. ESW valves CV-1956 A & B - These valves have no remote position indication, thus, position indication testing is deleted. Furthermore, the stroke time measurement is replaced by a qualitative evaluation of valve operation. (See Relief Request VR-35)
18. Excess flow check valves - Position indication tests are added.
19. CRD valves CV-1849 and CV-1850 - These valves have no individual position indicators, thus, position indication testing is deleted.
20. CRD valves CV-1859 and CV-1867 - These valves have been replaced by CV-1859 A & B and CV-1867 A & B as a result of a recent backfit. These additional valves are added to the list. Note: The next revision to the program will eliminate CV-1859 and CV-1867 from the listing.
21. Relief Request VR-32 - Four (4) PASS valves are added to this relief request.
22. Relief Request VR-34 - The evaluation of stroke time test results for quick-acting solenoid valves is revised.
23. ESW check valves - The test requirements for valves V-46-18 and V-46-21 are changed to add a closure test and extend the test frequency to once per operating cycle.
24. Well water valves - Requirements for position indicator tests are added for valves CV-5703 A & B and CV-5729 A & B.

25. Valve categories changed as follows:

PSV 1988	B/C vs C	CV 1906	A/C vs C
PSV 2068	B/C vs C	CV 1905A	A/B vs C
PSV 4400	B/C vs A/C	PSV 1911	B/C vs C
PSV 4401	B/C vs A/C	PSV 1952	B/C vs C
PSV 4402	B/C vs A/C	CV-2002	A/C vs C
PSV 4403	B/C vs A/C	MO 2003	A/B vs B
PSV 4404	B/C vs A/C	PSV 2043	B/C vs C
PSV 4405	B/C vs A/C	CV 2118	A/C vs C
PSV 4406	B/C vs A/C	CV 2138	A/C vs C
PSV 4407	B/C vs A/C	PSV 2109	B/C vs C
PSV 4439 A	B/C vs C	PSV 2129	B/C vs C
PSV 4439 B	B/C vs C	PSV 2223	B/C vs C
PSV 4439 C	B/C vs C	PSV 2228	B/C vs C
PSV 4439 D	B/C vs C	PSV 2301	B/C vs C
PSV 4439 E	B/C vs C	PSV 2474	B/C vs C
PSV 4439 F	B/C vs C	V-24-8	C vs A/C
		V-24-12	C vs A/C
		PSV 2501	B/C vs C
		PSV 2607	B/C vs C
		PSV 2609	B/C vs C

STATUS OF CONTINUING ENGINEERING EVALUATION OF THE IST PROGRAM

During the first year of implementing Revision 4 of the DAEC Inservice Testing (IST) Program with the computer trending system, the DAEC engineering staff has been conducting an ongoing review of the Program. As a result, several items of operational concern have been identified and are being, or have been resolved. A report of the final resolution of all items will be described, in detail, as part of the 180-day response to NRC's Safety Evaluation Report (SER). Each of these concerns are discussed below.

1. Instrument Sensing Lines

ASME Section XI, Paragraph IWP-4210, requires that tubing leading to pressure sensing instruments shall be installed or vented such that the error related to the static head of the water in the tubing does not impact the test data. A detailed evaluation of the routing of various sensing lines for instruments used in the IST Program has recently been completed. The results of this study indicate that several procedures require changes to ensure that all instrument sensing lines are properly filled during pump testing. These changes are currently being implemented.

2. Instrument Ranges

A detailed study is currently underway regarding IST instrumentation compatibility with ASME Section XI, Table IWP-4110-1, and Paragraph IWP-4120. As a result of a preliminary review of this study, it appears that several instruments do not strictly conform to the requirements of the Code. Although Relief Request PR-7 references deviation with respect to accuracy, recent information suggests that, in some cases, instruments do not meet the maximum range criteria.

3. Check Valves

The IST Program requires that the diesel fuel transfer pump check valves be exercised in the open and closed direction every three (3) months. During pump flow tests, the valves are exercised in the open direction; however, there is no definitive written procedure to verify the check valves stroked to the closed position. A procedure has been developed and is being implemented to verify valve closure. Since there have been no spurious alarms associated with the day tank level, it can be deduced that these check valves are operating properly.

4. Technical Specifications

During the development of the Program with the NRC staff and their contractors, there was an agreement made to review the DAEC Technical Specifications according to "NRC Staff Guidelines for Excluding Exercising (Cycling) Tests of Certain Valves During Plant Operation." There is no record indicating that such a review has ever been conducted. This review will be completed as soon as practical.

Iowa Electric recognizes the importance of the DAEC IST Program and will continue to monitor its implementation for both technical adequacy and content. Problems, when identified, will be resolved on a priority basis.