SUMMARY - IST PROGRAM CHANGES (CONTINUED)

8. The following items are changed on PASS system valves, SV-4594 A&B, SV-4595 A&B, and SV-8772 A&B:

   SV-4594B is renamed valve SV-4595A.

   SV-4594B and SV-4595B are added to the program.

   The maximum stroke time tests (BTC) are established at 5 sec.

   Position indication tests are added.

   Relief Request VR-32 is changed to VR-34.

9. CV-1859B and CV-1867B BTC maximum stroke times are changed from 30 sec. to 7 sec.

10. MO-1908 normal position is changed from open to closed.

11. CV-2002 actuator type is changed from SAT to SA.

12. V-22-26 test is from CT-CC to CT-CO.

13. Reference to Relief requests VR-49 and VR-50 are added to the valve listing.

14. CV-4304 and CV-4305 BTO maximum stroke times are changed from 42 sec. to 5 sec.

15. V-46-26 and V-46-30 P&ID coordinates are changed from D-7 to B-7.

16. CV-5703 A & B are changed to manual valves V-57-75 and V-57-76 and CV-5719 A & B are changed to manual valves V-57-77 and V-57-78.

17. Note 7 is deleted.

DUANE ARNOLD ENERGY CENTER

INSERVICE TESTING PROGRAM

APPROVED BY: Kenneth E. Howard — 12-19-85
PLANT PERFORMANCE SUPERVISOR — DATE

APPROVED BY: [signature] — 12-23-85
PLANT SUPERINTENDENT - NUCLEAR — DATE

REVIEWED BY: [signature] — 12-19-85
OPERATIONS COMMITTEE CHAIRMAN — DATE

REVIEWED BY: [signature] — 12-26-85
ALARA COORDINATOR — DATE

Effective Date:_____

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List of Effective Pages

TITLE: Duane Arnold Energy Center
Inservice Testing Program

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1	7	11-01-85

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

REVISION	DATE
Original	March 1, 1978
Rev. 1	October, 1978
Rev. 2	May 1, 1980
Rev. 3	November 1, 1980
Rev. 4	January 1, 1983
Rev. 5	December 23, 1983
Rev. 6	August 1, 1984
Rev. 7	November 1, 1985

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1.0 INTRODUCTION

Revision 7 of the Duane Arnold Energy Center (Unit 1) ASME Inservice Testing Program for Pumps and Valves will be in effect through February 1, 1995, the end of the second 120-month (10-year) inspection interval, unless changed for other reasons. The program will be updated prior to the start of the third 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 1981 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 1981 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
- Updated Final Safety Analysis Report, Duane Arnold Energy Center
- Technical Specifications, Duane Arnold Energy Center
- Safety Evaluation via D. B. Vassallo's letter to L. Liu dated September 26, 1983.

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).

2.0 TESTING PROGRAM FOR PUMPS

2.1 General Information

2.1.1 Applicable Code

This Inservice Testing Program for pumps meets the requirements of Subsection IWP of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition through the Winter of 1981 Addenda. Where these requirements are determined to be impractical, specific requests for relief are included in Section 2.2.

2.1.2 Pump Program Tables

Appendix A lists the pumps included in the Duane Arnold Energy Center IST Program. Data contained in these tables identifies those pumps subject to inservice testing with the respective inservice test quantities, testing intervals, and any applicable remarks. The column headings are 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-XX. 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.

2.1.3 Measurement of Test Quantities

- SPEED: Per Subarticle 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 Subarticle IWP-3100.

- INLET PRESSURE: For pumps taking suction from a tank or the residual heat removal (RHR) service water complex basin, inlet pressure may be calculated (using appropriate correction factors) from a measured tank or basin level. (See Relief Request No. PR-4) 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 measured directly from differential pressure instrumentation.

- FLOWRATE: Pump flowrate will be measured by direct reading based on inline flow instrumentation or will be calculated from tank level change over an elapsed time interval.

- VIBRATION: Pump vibration will be measured when accessibility allows.

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 and PR-13. In some cases, the performance of a pump may be adequate to fulfill its safety function even though there is some parameter variation outside of the allowable ranges as set forth in Table IWP-3100-2. Should a measured test quantity fall outside the allowable range, an expanded allowable range may be determined, on a case basis, in accordance with ASME Code interpretation XI-1-79-19.

2.1.5 Bearing Lubricant

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

2.1.6 Instrument Accuracy

Instrument accuracies for the DAEC IST Program will generally conform to those given in Table IWP-4110-1. In some cases, relief has been requested from the requirements of Table IWP-4110-1. (See Relief Requests Nos. PR-7, PR-11 and PR-12).

SECTION 2.2

RELIEF REQUESTS FOR PUMP TESTING PROGRAM

RELIEF REQUEST NO. PR-1

PUMP NUMBER:

DIESEL FUEL OIL TRANSFER 1P-44A, B

SECTION XI REQUIREMENT:

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

BASIS FOR RELIEF:

The diesel fuel oil pumps and motors are submerged inside the diesel fuel oil tank (IT-35) and thus are inaccessible for the purpose of taking such measurements.

ALTERNATE TESTING:

No alternate testing is proposed.

RELIEF REQUEST NO. PR-2

PUMP NUMBER:

EMERGENCY SERVICE WATER (ESW) 1P-99A, B

SECTION XI REQUIREMENT:

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 motor bearings.

ALTERNATE TESTING:

No alternate testing is proposed.

RELIEF REQUEST NO. PR-3

PUMP NUMBER:

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

SECTION XI REQUIREMENT:

Measure pump vibration amplitude quarterly. (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 previously occurred (Ref. RO 78-02), the man probably could not exit in time to prevent serious injury. Thus, measurement of HPCI and RCIC pump vibration represents a significant safety hazard.

ALTERNATE TESTING:

Facilities for portable remote reading of vibration are being installed and are expected to be operational in February, 1986. At that time vibration measurements will be taken in accordance with Subarticle IWP-3100.

RELIEF REQUEST NO. PR-4

PUMP NUMBER:

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

SECTION XI REQUIREMENT:

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

BASIS FOR RELIEF:

The above listed pumps, except for 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, 1P-230 A & B, 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 for pumps other than 1P-230 A & B.

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, D
CORE SPRAY PUMPS 1P-211A, B
HPCI PUMP 1P-216
RCIC PUMP 1P-226
LOW PRESSURE COOLANT INJECTION PUMPS 1P-229A, B, C, 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 two alternate means of measuring pump performance.

Alternate 1:

Reference values for flowrate (Qr) and differential pressure (dPr) will be established during the reference value tests. In lieu of duplicating Qr during subsequent inservice performance tests, a flowrate (Q1), lower than Qr, will be obtained and recorded along with the corresponding differential pressure (dP1). Next, a flowrate (Qh), higher than Qr, will be obtained and recorded along with its corresponding differential pressure (dPh). These two points, (Q1, dP1) and (Qh, dPh), define a small portion of the pump curve which includes the point Qr (See Figure Pr-5.1). Using linear interpolation between the two points, a differential pressure (dP) will be computed from Qr. This computed value for dP will be recorded and compared to the reference differential pressure (dPr) per Table IWP-3100-2.

The alternate testing procedure described above assumes that the pump curve is nearly linear between Q1 and Qh. Procedural limits for Q1 and Qh have been established and individual pump curves have been analyzed to ensure near linearity between Q1 and Qh.

Alternate 2:

During pump reference tests, a reference pump curve will be established or the manufacturer's pump curve will be confirmed. In lieu of duplicating a specific flowrate (Qr) during subsequent inservice performance tests, a flowrate (Qa) will be obtained and recorded along with the corresponding differential pressure (dPa). The differential pressure measurement (dPa) will be compared to the theoretical differential pressure (dP+) corresponded to the measured flowrate (Qa) on the pump curve and evaluated per the requirements of Table IWP-3100-2.

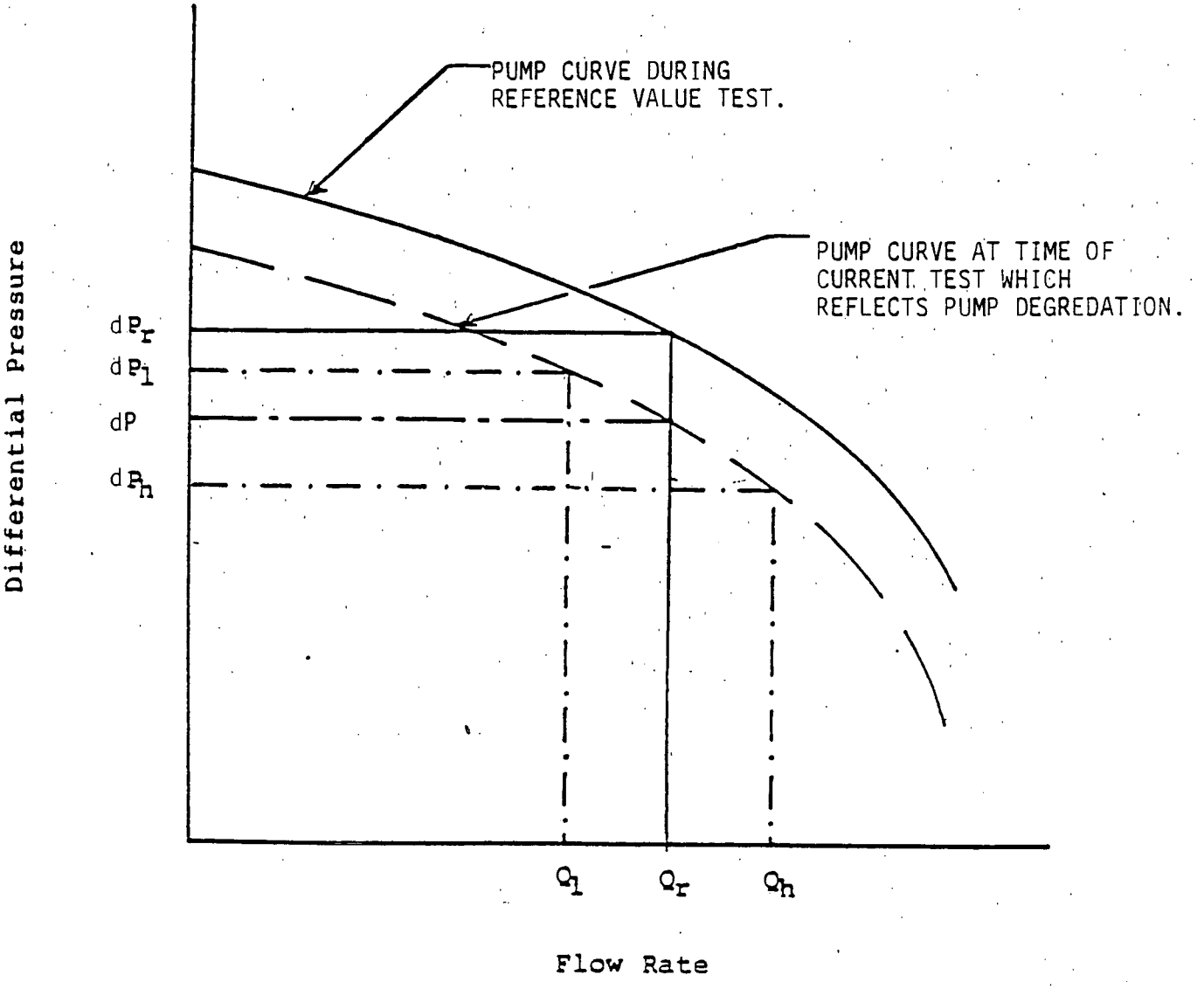

Figure PR-5.1 Alternate Testing Approach for Determination of Hydraulic Change

RELIEF REQUEST NO. PR-6

PUMP NUMBER:

DIESEL FUEL OIL TRANSFER 1P-44A, B

SECTION XI REQUIREMENT:

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, to which the pumps discharge, are too small to provide sufficient volume for both five minutes of operation and flow measurement by monitoring tank level. 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 a diesel fuel oil transfer pump reaches stable operation at the reference conditions, as indicated by a steady reading of the discharge pressure gauge, test data will be recorded.

RELIEF REQUEST NO. PR-7

PUMP NUMBER:

CORE SPRAY 1P-211A & B
HIGH PRESSURE COOLANT INJECTION (HPCI) 1P-216
REACTOR CORE ISOLATION COOLING (RCIC) 1P-226

SECTION XI REQUIREMENT:

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

BASIS FOR RELIEF:

The instrumentation loop accuracies listed below do not meet the requirements of Table IWP-4110-1.

FUNCTION	LOOP ACCURACY (± %)
Core Spray Pump Disc. Press	2.24
HPCI Pump Disc. Press	2.24
HPCI Pump Suction Press.	2.06
RCIC Pump Disc. Press.	2.24
HPCI Pump Turbine Speed	2.26
RCIC Pump Turbine Speed	2.13

Suitable 1E-qualified instrument loop elements needed to replace those existing that contribute to the problem are not commercially available at this time.

ALTERNATE TESTING:

Inservice test measurements of pressure and speed, as discussed above, will be made using instruments with loop accuracies that are less than or equal to ± 2.26 percent of full scale.

RELIEF REQUEST NO. PR-8

PUMP NUMBER:

All pumps (except Diesel Fuel Oil Transfer 1P-44A, B)

SECTION XI REQUIREMENT:

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 displacement is an industry accepted method considered to be more sensitive to small changes that 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.

(1)

TABLE PR-8.1: ALLOWABLE RANGES OF TEST QUANTITIES

QUANTITY	ACCEPTABLE RANGE	ALERT RANGE	REQUIRED ACTION RANGE
$v_r \leq .15$ in/sec	0 to .3 in/sec	.301 in/sec to .45 in/sec	> .45 in/sec
.15 in/sec $< v_r \leq .3$ in/sec	0 to .45 in/sec	.451 in/sec to .75 in/sec	> .75 in/sec
.3 in/sec $< v_r \leq .6$ in/sec	0 to .9 in/sec	.901 in/sec to 1.0 in/sec	> 1.0 in/sec (2)
.6 in/sec $< v_r \leq 1.0$ in/sec	0 to 1.0 in/sec	None	> 1.0 in/sec (2)

Where:

v = velocity in inches/second, peak

v_r = reference velocity

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

(2) Upper limit is 1.0 in/sec per ISO 2372 Mechanical Vibration of Machines With Operating Speed from 10 to 20 rev/s - Basis for Specifying Evaluation Standards.

RELIEF REQUEST NO. PR-9

PUMP NUMBER:

SCREEN WASH 1P-112A, B

SECTION XI REQUIREMENT:

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 appropriate permanent instrumentation installed or convenient provisions for the installation of temporary instrumentation. An engineering evaluation is underway to identify instrumentation requirements and initiate necessary modifications. Modifications will be accomplished in 1985 or relief will be requested.

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.

RELIEF REQUEST NO. PR-10

PUMP NUMBER:

DIESEL FUEL OIL TRANSFER 1P-44A, B

SECTION XI REQUIREMENT:

Pump test results shall be analyzed per Subarticle 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 test 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 Subarticle IWP-3200 or Relief Request PR-13. In those cases where the test results are obviously erratic or misleading, alternate acceptance criteria will be applied.

RELIEF REQUEST NO. PR-11

PUMP NUMBER:

Various

SECTION XI REQUIREMENT:

The full-scale range of each instrument shall be three times the reference value or less. (IWP-4120)

BASIS FOR RELIEF:

The commercially available instruments used for measuring pump vibration do not provide range selections that guarantee adherence to the range limitations per Subsubarticle IWP-4120. Specifically, for the instrument used at DAEC, the scale ranges are 0 - 0.3, 0 - 1.0, 0 - 3.0, 0 - 10, and 0 - 30 mils or in/sec. Vibration measurements will be made with the instrument range selection at the lowest possible scale that includes the measured parameter.

ALTERNATE TESTING:

No alternate method for vibration monitoring is proposed.

RELIEF REQUEST NO. PR-12

PUMP NUMBER:

CORE SPRAY 1P-211A, B
RESIDUAL HEAT REMOVAL SERVICE WATER 1P-22A, B, C, D
HIGH PRESSURE COOLANT INJECTION 1P-216
REACTOR CORE ISOLATION COOLING 1P-226

SECTION XI REQUIREMENT:

The full-scale range of each instrument shall be three times the reference value or less. (IWP-4120)

BASIS FOR RELIEF:

In several instances the accuracy of installed flowrate instrumentation is unacceptable with respect to the requirements of Subsubarticle IWV-4110 and from the practical aspect of test result repeatability. In these instances, temporary instrumentation is used to replace inaccurate panel meters. However, the available electronic instruments suitable for this service generally do not meet the range limitations imposed by Subsubarticle IWP-4120 in that the instrument ranges exceed the respective reference values by greater than a factor of 3. Since the accuracies of the instruments in question are based on the actual indicated reading and not on the full-scale range of the instruments, this is considered to be acceptable. The specific systems affected are listed below:

SYSTEM	REF. VALUE	INST. RANGE (1)	ACCURACY (1)
Core Spray	30ma	0-200ma	+ 0.325 ma
RHR Service Water	25ma	0-200ma	+ 0.288 ma
H. P. Coolant Inj.	50mv	0-200mv	± 0.15 mv
Rx. Core Iso. Cooling	50mv	0-200mv	± 0.15 mv

(1) Based on FLUKE Model 8024B Digital Multimeter

ALTERNATE TESTING:

No alternate method of measurement is proposed.

RELIEF REQUEST NO. PR-13

PUMP NUMBER:

All pumps

SECTION XI REQUIREMENT:

The allowable ranges of inservice test quantities in relation to the reference values are tabulated in Table IWP-3100-2. This table limits the acceptable performance of each pump dependent variable (flowrate or differential pressure) to a maximum of 103 percent of the respective reference value. If the test parameter should exceed this limit, it shall be declared inoperative and removed from service. (IWP-3200)

BASIS FOR RELIEF:

The requirement to declare a pump inoperative when a test parameter exceeds the reference value by 3 percent is not technically justified, sound engineering judgement, nor acceptable plant operating practice for the following reasons:

* Indiscriminately declaring safety system pumps inoperative results in excessive and unneeded testing of other plant safeguard systems and components. Such testing could ultimately detract from the overall reliability of the plant safety systems. In addition, unwarranted testing unnecessarily adds to the burden of the operations force and dilutes efforts focused on the performance of their primary duties. Also, operators are subjected to additional, and unnecessary radiation exposure.

* The case where a test parameter exceeds the reference value is not necessarily indicative of pump degradation. It may merely signify that the reference value is probably at the lower side of the statistical scatter of the test data and the specific test in question is on the upper side. Note that the reference values are subject to the same elements of statistical error associated with any other individual test.

* The 3-percent limitation is overly restrictive when compared to the accuracy of the instrumentation used to gather the test data. Analysis has shown that, in order to consistantly remain below the 3-percent limit, instrument loop accuracies in the range 0.5 to 0.75 percent would be required. This represents a significantly more restrictive requirement than that established by Paragraph IWP-4110 ($\pm$ 2 percent).

* Power plant operating systems are not configured in a manner that provides the laboratory-type conditions demanded to meet the repeatability implied by the 3-percent restriction. Several of the tests require throttling with large gate or butterfly valves using remote manual control. Thus, non-quantifiable system flow conditions are created that are certain to affect measured test quantities.

RELIEF REQUEST NO. PR-13 (CONT)

* To ensure that reference values do not reflect operations at the lower end of the performance spectrum and, thus, ultimately be reflected in frequently exceeding the upper performance limits as a result of instrument drift, all related instrumentation is calibrated on a frequent basis.

* This requirement provides no additional measure of reliability to the equipment.

* When the upper limits are exceeded, the only reasonable way of correcting the inoperative condition is to conduct an analysis to ensure that the pump is indeed operable and capable of meeting its intended function. When this is done, in accordance with Subsubarticle IWP-3230 (c), a new reference value must be established. Due to the test conditions and methods of testing at DAEC, any change in the reference point eliminates the correlation of future test results with past pump performance. Because, the usefulness of any past data in determining a trend for pump performance is essentially eliminated a primary goal and basis for the inservice testing program could be jeopardized.

ALTERNATE TESTING:

Pumps will be tested in accordance with Subsection IWP with the following exceptions:

a) The Required-action range (HIGH) will be eliminated for test quantities flowrate and differential pressure; and

b) The Alert-range (HIGH) will be above a value equal to 105 percent of the reference value for test quantities of flowrate and differential pressure.

RELIEF REQUEST NO. PR-14

PUMP NUMBER:

Various

SECTION XI REQUIREMENT:

The temperature of all centrifugal pump bearings outside the main flow path shall be measured at points selected to be responsive to changes in the temperature of the bearings. (IWP-4310)

BASIS FOR RELIEF:

* Bearings of the selected pumps addressed in the DAEC IST Program are water cooled -- cooling water supplied from the flowstream or the Emergency Service Water System. Thus, bearing temperature measurements are highly dependent on the temperature of the cooling medium.

* The data associated with bearing temperatures taken at one-year intervals provides little statistical basis for determining the incremental degradation of a bearing or any meaningful trending information or correlation.

* Vibration measurements are a significantly more reliable indication of pump bearing degradation than are temperature measurements. All pumps addressed by this relief request are subjected to vibration measurements on a quarterly basis in accordance with Subarticle IWP-4500.

* Although excessive bearing temperature is an indication of an imminent or existing bearing failure, it is highly unlikely that such a condition would go unnoticed during routine monthly and quarterly surveillance testing since it would manifest itself in other obvious indications such as audible noise, reduced pump hydraulic performance, unusual vibration, increased motor current, etc.

* The gain from taking bearing measurements, which in most cases would be done locally using portable instruments, cannot offset the cost in terms of dilution of operator effort, distraction of operators from other primary duties, excessive operating periods for pumps, and personnel radiation exposure.

ALTERNATE TESTING:

None

3.0 INSERVICE TESTING PROGRAM FOR VALVES

3.1 General Information

This testing program for valves meets the requirements of Subsection IWV of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition through the Winter 1981 Addenda. Where these requirements are determined to be impractical, specific requests for relief are included in Section 3.2.

Appendix B lists all ISI Class 1, 2, 3, and NC valves included in the DAEC IST Program. The following information is included for each valve:

- VALVE NUMBER: The valve identification number.
- P&ID COORDINATE: The valve location coordinates on the P&ID.
- CLASS: The ISI classification of the valve.
- VALVE CATEGORY: The category(s) assigned to the valve based on the definitions per Subarticle 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 of 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

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

O	Normally Open
C	Normally 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/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 required 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 leakrate acceptance criteria for valves are set forth in the plant records.

- 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

TEST	TEST NAME	TEST DESCRIPTION
AT-1	Type C leaktest	Containment isolation valves will be leak tested in accordance with DAEC Technical Specifications, Section 4.7.A.2.c and 10CFR50 Appendix J.
AT-2	Excess flow check valve test	Excess flow check valves will be tested in accordance with DAEC Technical Specifications, Section 4.7.D.1.d.
AT-3	DELETED	
AT-4	Vacuum breaker leaktest	The suppression chamber-drywell vacuum breakers will be leak tested in accordance with DAEC Technical Specifications, Section 4.7.A.4.
AT-5	Pressure isolation valve leaktest	Those valves so designated will be leak tested in accordance with Subsubarticle IWV-3420 per the NRC SER.
AT-6	Accumulator check valve test	Leaktesting of accumulator check valves.
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 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 closed direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction is based on the direction the valve disk must travel to fulfill a safety function.

TABLE 3.1-1: INSERVICE VALVE TESTS (continued)

TEST	TEST NAME	TEST DESCRIPTION
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.
BTE	Full-stroke exercise test to energized position	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-3522)	Check valves will be exercised from the fully closed to the open positions. Verification of safety basis system flow through a check valve shall be an adequate demonstration that the valve is 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-3522)	Check valves will be exercised from the open to the closed positions. The stroke direction tested (closed) is based on the direction the valve disk must travel to fulfill a safety function.
CT-SP	Safety/relief valve set point verification test (IWV-3510)	Relief and safety valve set points 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)	Valves with fail-safe actuators will be tested to verify proper fail-safe operation upon loss of actuator power.
PIT	Position indication checks (IWV-3300)	Valves with position indicators will be checked to verify that remote valve indicators accurately reflect valve position.

TABLE 3.1-2: TEST FREQUENCY

(1)

TEST FREQUENCY	OPERATIONAL CONDITION	FREQUENCY OF TESTING
OP	Power operation	At least once per 92 days
CS	Cold shutdown	See (2) below
RR	Refueling	Nominally every two years-during reactor refueling
SP	See appropriate relief request	See appropriate relief request
5Y	No operational condition limitations	Every five years (see Paragraph IWV-3511). Applies to CT-SP test.
2Y	No operational condition limitations	Every two years (see Subarticle IWV-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 valves must be tested 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.

SECTION 3.2

RELIEF REQUESTS FOR INSERVICE VALVE TESTING PROGRAM

RELIEF REQUEST NO. VR-1

-VOID-

RELIEF REQUEST NO. VR-2

SYSTEMS:

Various

COMPONENTS:

All solenoid and air-pilot operator valves 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 Subparagraph 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.

RELIEF REQUEST NO. VR-3

-VOID-

RELIEF REQUEST NO. VR-4

SYSTEM:

NUCLEAR BOILER

COMPONENTS:

V-14-1

CATEGORY:

A/C

FUNCTION:

This valve is the reactor feedwater supply inboard isolation valve. It opens for feedwater flow and RCIC injection into the vessel and acts as a containment isolation valve.

TEST REQUIREMENT:

Check valves shall be exercised at least every 3 months. (IWV-3521)

BASIS FOR RELIEF:

It is impractical to exercise this valve during normal plant operation and during cold shutdown as it is required to remain open for continued operation of the reactor water cleanup system.

ALTERNATE TESTING:

This valve will be exercised closed during each refueling outage and verified open during normal plant operation.

RELIEF REQUEST NO. VR-5

-VOID-

RELIEF REQUEST NO. VR-6

SYSTEM:

NUCLEAR BOILER

COMPONENTS:

Reactor Relief Valves PIS No.	Solenoid Valves PIS No.
PSV-4400 *	SV-4400
PSV-4401	SV-4401
PSV-4402 *	SV-4402
PSV-4405 *	SV-4405
PSV-4406 *	SV-4406
PSV-4407	SV-4407

*Automatic Depressurization System (ADS)

CATEGORY:

B/C for the 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 the reactor vessel (for the ADS valves only) and (2) act as primary system safety valves 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 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).

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 satisfactorily 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. Stroke times will not be measured.

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 drawing 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.

RELIEF REQUEST NO. VR-8

SYSTEM:

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

FUNCTION:

Excess flow check valves limit leakage from the reactor coolant system in the event of an instrumentation piping failure outside containment. They also perform a containment isolation function if an instrument line were to fail inside and outside of the containment vessel.

TEST REQUIREMENT:

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 vales.

It should be noted that these valves see little or no flow and function essentially 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 in accordance with DAEC Technical Specifications, Section 4.7.D.

RELIEF REQUEST VR-9

-VOID-

RELIEF REQUEST VR-10

-VOID-

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 should the suppression chamber pressure exceed 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 testing, a pressure decay test is performed on the pressure suppression chamber in accordance with DAEC Technical Specifications Section 4.7.A.4.d. This 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 containment integrity testing. This test consists of establishing a drywell to suppression chamber pressure differential of 1.1 psi and 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.

RELIEF REQUEST NO. VR-12

SYSTEM:

CONTROL ROD DRIVE HYDRAULIC

COMPONENTS:

V-17-83
V-17-96

CATEGORY:

A/C

FUNCTION:

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 outage.

ALTERNATE TESTING:

These valves will be exercised during leaktesting conducted in accordance with DAEC Technical Specification 4.7.A.2.c. 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 position.

RELIEF REQUEST NO. VR-13

SYSTEM:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

SV-1840 A & B
CV-1849
CV-1850
SV-1855
SV-1856
V-18-118 thru 206
V-18-919 thru 1007
V-18-1453 thru 1541

CATEGORY:

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

FUNCTION:

SV-1840 A & B - Backup Scram valves; bleed off scram air header upon receiving a SCRAM signal from the reactor protection system.

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 circulating during normal operation.

V-18-1453 thru 1541 - Open to allow flow from top of CRD pistons to the scram discharge header.

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:

Individual testing of the backup scram valves requires modifying the electrical configuration of the reactor protection system by jumpers, etc and inserting a scram signal to each valve - a complex test.

Except for the backup scram valves, these valves can only be tested by scramming each individual control rod. Due to the 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.

Except for V-18-118 thru V-18-206, proper operation of the check valves is monitored during plant operation. Failure of any of these valves 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 or scram testing once each operating cycle. V-18-118 thru V-18-206 are also tested once 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. Testing of the backup scram valves meets the requirements of NUREG-0979, "Safety Evaluation Report Related to the Fuel Design Approval of the GESSAR II, BWR/6 Nuclear Island Design."

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 at 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

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 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.

RELIEF REQUEST VR-15

-VOID-

RELEIF REQUEST VR-16

-VOID-

RELIEF REQUEST NO. VR-17

SYSTEM:

ALL SYSTEMS

COMPONENTS:

All valves equipped to fail open or closed.

CATEGORY:

A and B

FUNCTIONS:

Upon loss of actuator power (electrical or pneumatic), the valve must stroke to its fail-safe position.

TEST REQUIREMENT:

When practical, valves with fail-safe actuators shall be tested by observing the operation of the valves upon loss of actuator power. (IWV-3415)

BASIS FOR RELIEF:

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 electric power supply. (FST)

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

The additional procedural requirements to perform fail-safe stroke testing of main steam isolation valves, MSIVs, of each cold shutdown represents an excessive operational burden. Confirmation of the capability of these valves to function with only their accumulator air supply once per reactor refueling is adequate.

ALTERNATE TESTING:

With the exception of the MSIV's 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.

MSIV's will be stroke tested with only the air supply stored in accumulators at each refueling outage.

RELIEF REQUEST NO. VR-18

-VOID-

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:

A/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 close.

RELIEF REQUEST NO. VR-20

SYSTEM:

STANDBY LIQUID CONTROL (SBLC)

COMPONENTS:

V-26-08
V-26-09

CATEGORY:

A/C

FUNCTIONS:

The functions of these check valves are to open during SBLC 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 SBLC pumps must discharge directly into the reactor vessel through explosively-actuated isolation valves. This cannot be done during normal operation or cold shutdown since the SBLC 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 operational tests and leak testing performed each cycle in accordance with DAEC Technical Specifications 4.4.A.2.b and 4.7.A.2.c., respectively.

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 condensate storage tank (CST) to the suppression pool. The safety-related function of these valves is to open to provide flow from the suppression pool 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 piping circuits utilize the CST 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. Torus water is not demineralized, thus the entire condensate storage tank inventory would require processing following each test. Since these valves have no function during normal operation, no internal wear-induced degradation is expected.

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.

RELIEF REQUEST VR-22

-VOID-

RELIEF REQUEST VR-23

-VOID-

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 open to provide a flowpath for nitrogen into the primary containment from the primary containment atmosphere dilution (CAD) system.

TEST REQUIREMENT:

Check valves shall be exercised at least once every three months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

These valves are verified to open during the CAD system functional test performed during each reactor refueling.

ALTERNATE TESTING:

Valves will be exercised during functional tests performed once each cycle in accordance with DAEC Technical Specifications 4.7.A.6.a.

RELIEF REQUEST NO. VR-25

SYSTEM:

CONTAINMENT ATMOSPHERE CONTROL

COMPONENTS:

V-43-214

CATEGORY:

A/C

FUNCTIONS:

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

TEST REQUIREMENT:

Check valve shall be exercised at least once every three months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

This 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 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 outage.

ALTERNATE TESTING:

This valve will be checked in the closed position during leaktesting conducted in accordance with DAEC Technical Specification 4.7.A.2.c.

RELIEF REQUEST VR-26

-VOID-

RELIEF REQUEST VR-27

-VOID-

RELIEF REQUEST VR-28

-VOID-

RELIEF REQUEST NO. VR-29

-VOID-

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 shall be exercised at least once every three months, except as provided by IWV-3522. (IWV-3521)

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 in accordance with DAEC Technical Specification 4.7.A.2.c.

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 shall be exercised at least once every three months, except as provided by IWV-3522. (IWV-3521)

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 checked in the closed position during leaktesting conducted once each cycle in accordance with DAEC Technical Specification 4.7.A.2.c.

RELIEF REQUEST NO. VR-32

SYSTEM:

CONTAINMENT ATMOSPHERE MONITORING SYSTEM

COMPONENTS:

SV-8101A	SV-8106A
SV-8101B	SV-8106B
SV-8102A	SV-8107A
SV-8102B	SV-8107B
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 system.

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 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 closed position will be performed during leaktesting conducted once each cycle in accordance with DAEC Technical Specification 4.7.A.2.c. Stroke times will not be measured.

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:

Check valves shall be exercised at least once every three months, except as provided in IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

These check valves are normally closed. To open the valves, the core spray pumps are operated at rated flow discharging 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. Core spray injection during cold shutdown with the reactor head in place is impractical due to the difficulty of controlling reactor vessel water level.

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.

RELIEF REQUEST NO. VR-34

SYSTEM:

CONTAINMENT ATMOSPHERE DILUTION (CAD)
NEUTRON MONITORING
POST-ACCIDENT SAMPLING SYSTEM (PASS)

COMPONENTS:

SV-4331A	SV-4333A	TIP-BAL A	SV-4594A
SV-4331B	SV-4333B	TIP-BAL B	SV-4594B
SV-4332A	SV-4334A	TIP-BAL C	SV-4595A
SV-4332B	SV-4334B		SV-4595B
			SV-8772A
			SV-8772B

CATEGORY:

A

FUNCTIONS:

The PASS system valves provide a flow path for post-accident sampling of the reactor recirculation system and return of the sample flow stream to the torus.

The CAD System 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.

The TIP System valves function as containment isolation for the TIP tube penetrations.

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 less than 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.

There have been several instances when the internal position indicating switches of the CAD system valves malfunction and corrective maintenance during plant operation is impractical. If this should occur, then accurate stroke time measurements are not possible.

RELIEF REQUEST NO. VR-34

(CONTINUED)

ALTERNATE TESTING:

Stroke times for these valves will be measured. 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. Valves exceeding the maximum allowable stroke time will be declared inoperable.

When CAD system SV valves position indication is inoperable, stroke time will be estimated by a flow test through the valve. The results of this test will be evaluated with respect to the maximum allowable stroke time but will not be compared to previous tests per the criteria set forth above or in IWV-3413(b).

RELIEF REQUEST NO. VR-35

SYSTEM:

EMERGENCY SERVICE WATER (ESW)

COMPONENTS:

CV-1956 A	CV-2080
CV-1956 B	CV-2081

CATEGORY:

B

FUNCTION:

CV-1956 A & B open to provide a return path for ESW cooling water from the control building chillers.

CV-2080 and CV-2081 are ESW supply valves to the emergency diesel generators.

TEST REQUIREMENT:

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

BASIS FOR RELIEF:

CV-1956 A & B 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. For these reasons precise stroke time measurements are impractical.

CV-2080 and CV-2081 do not have position indication, 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 or investigation.

RELIEF REQUEST NO. VR-36

SYSTEM:

DEMINERALIZED WATER
COMPRESSED AIR

COMPONENTS:

V-09-065
V-09-111
V-30-287

CATEGORY:

A

FUNCTIONS:

Containment isolation valves for demineralized water and compressed air systems.

TEST REQUIREMENT:

Category A and B valves shall be exercised at least once every three months, except as provided by IWV-3412 (a), IWV-3415, and IWV-3416. (IWV-3410)

BASIS FOR RELIEF:

These valves are all manually-operated and normally closed during plant operation. During each reactor refueling outage each is leak tested (AT-1), thus proving proper closure. In this case, stroke testing is not appropriate to manual valves.

ALTERNATE TESTING:

Proper valve closure will be verified in conjunction with leakrate tests conducted in accordance with DAEC Technical Specification 4.7.A.2.c.

RELIEF REQUEST NO. VR-37

SYSTEM:

VARIOUS

COMPONENTS:

PENETRATIONS	VALVES			
X9A	MO-4441	MO-2312		
X9B	MO-4442	MO-2512	MO-2740	
X23A	CV-5718A	V-57-77		
X23B	CV-5718B	V-57-78		
X24A	V-57-75	CV-5704A		
X24B	V-57-76	CV-5704B		
X25	CV-4302	CV-4303		
X26	CV-4306	CV-4307	CV-4308	
X41	CV-4639	CV-4640		
N205	CV-4300	CV-4301		
N212	V-24-8	V-24-23		
N214	V-22-16	V-22-17		
N222	V-22-21	V-22-22		
N231	CV-4305	CV-4304	V-43-168	V-43-169

CATEGORY:

A & C

FUNCTIONS:

Containment isolation valves

TEST REQUIREMENT:

Category A valves shall be seat leak tested to a specific maximum amount for each valve in the closed position for fulfillment of their safety function at least once every 2 years. (IWV-3420, 3421, 3422, 3426)

BASIS FOR RELIEF:

The configuration of the piping systems is such that individual testing of these valves is not possible.

ALTERNATE TESTING:

The valves will be tested in multiple arrangements with a maximum leakage rate established for each combination of valves, as appropriate.

RELIEF REQUEST NO. VR-38

-VOID-

RELIEF REQUEST NO. VR-39

SYSTEMS:

EMERGENCY SERVICE WATER (ESW)

COMPONENTS:

V-46-18
V-46-21

CATEGORY:

C

FUNCTION:

These are the ESW pump discharge check valves that provide a flow path to the ESW piping system and prevent backflow through an idle pump.

TEST REQUIREMENTS:

Check valves shall be exercised at least once every three months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

There is no sure method of ensuring that these valves stroke to their fully-closed positions.

ALTERNATE TESTING:

The valves will be exercised to the open position during operational testing of the ESW pumps. Once every two years, each valve will be disassembled and inspected to ensure proper operation.

RELIEF REQUEST NO. VR-40

SYSTEMS:

NUCLEAR BOILER, REACTOR FEEDWATER

COMPONENTS:

MO-4441
MO-4442

CATEGORY:

A/C

FUNCTION:

Provide primary containment outboard isolation for the reactor feedwater supply piping.

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

BASIS FOR RELIEF:

These valves are lift-type stop check valves and have no mechanism for opening other than that induced by feedwater flow to the reactor vessel. If maintenance (e.g., disassembly, lapping, or component replacement) is performed which could potentially affect their capability to close, post-maintenance testing would require plant startup and operation at full-power to fully open the valve, followed by plant shutdown to close the valve. Testing in this manner would be contrary to the requirements of IWV-3200 which prohibit plant operation prior to testing. Since the disk does not possess position indication, a leakage test would be required subsequent to plant shutdown to demonstrate that the valve had stroked to its fully-closed position. Cycling the plant in this manner, in order to perform a test, is considered undesirable and impractical.

RELIEF REQUEST NO. VR-40

BASIS FOR RELIEF: (CONTINUED)

Maintenance activities associated with these valves fall under the cognizance of the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Gross errors would be detected during leak rate testing that would follow reassembly.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, a leak rate test will be performed to ensure that the valve has been properly reassembled.

RELIEF REQUEST NO. VR-41

SYSTEMS:

NUCLEAR BOILER, REACTOR FEEDWATER

COMPONENTS:

V-14-1
V-14-3

CATEGORY:

A/C

FUNCTION:

These valves have a dual function capability as they perform safety-related functions in both the open and closed positions. Specifically, they provide primary containment inboard isolation for the reactor feedwater supply piping. V-14-1 and V-14-3 provide injection paths to the reactor vessel for RCIC and HPCI, respectively.

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

Valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated. (IWV-3522[b]) (CT-CO)

RELIEF REQUEST NO. VR-41

BASIS FOR RELIEF:

These check valves have no mechanism for opening other than that induced by feedwater (or HPCI or RCIC) flow to the reactor vessel. If maintenance (e.g., disassembly, lapping, or component replacement) is performed which could potentially affect their capability to close, post-maintenance testing would require plant startup and operation at full-power to fully open the valve, followed by plant shutdown to close the valve. Testing in this manner would be contrary to the requirements of IWV-3200 which prohibit plant operation prior to testing. Cycling the plant in this manner in order to perform a test, is considered undesirable and impractical. Maintenance activities associated with these valves fall under the cognizance of the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Gross errors would be detected during leak rate testing that would follow reassembly. Proper stroking of these valves to the open position is verified by satisfactory operation of the reactor feedwater system during power operation of the plant.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, a leak rate test will be performed to ensure that the valve has been properly reassembled.

RELIEF REQUEST NO. VR-42

SYSTEMS:

CONTROL ROD DRIVE (CRD)

COMPONENTS:

V-17-52
V-17-53

CATEGORY:

A/C

FUNCTION:

Provide primary containment isolation for the CRD return line piping.

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

BASIS FOR RELIEF:

These check valves open by CRD return line water flow to the reactor vessel. If maintenance (e.g. disassembly, lapping, or component replacement, etc.) is performed on either of these valves that could potentially affect their capability to close, post-maintenance testing would require reversal of a spectacle flange in the CRD piping and injection of water into the reactor vessel. However, as required by NUREG-0619, the CRD line is no longer used. Since the disk does not possess position indication, a leakage test would be required subsequent to injection to demonstrate that the valve had stroke to its fully-closed position.

RELIEF REQUEST NO. VR-42

BASIS FOR RELIEF: (CONTINUED)

Maintenance activities associated with these valves fall under the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Gross errors would be detected during leak rate testing that would follow assembly. The effort of reversing the CRD spectacle flange and injecting CRD water into the reactor vessel is undesirable and could result in unnecessary personnel exposure, potential contamination hazards, unnecessary plant downtime and is also contrary to the guidance of NUREG-0619.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, a leak rate test will be performed to ensure that the valve has been properly reassembled.

RELIEF REQUEST NO. VR-43

SYSTEMS:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

V-18-919 through V-18-1007
V-18-1453 through V-18-1541

CATEGORY:

C

FUNCTION:

V-19-919 through V-18-1007

Prevent backflow into the cooling water header during a SCRAM; allow cooling water circulation during normal operation.

V-19-1453 through V-18-1541

Open to allow flow from the top of the CRD pistons to the SCRAM discharge header.

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

Valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated. (IWV-3522[b]) (CT-CO)

RELIEF REQUEST NO. VR-43

(CONTINUED)

BASIS FOR RELIEF:

These valves open with CRD process system flow. If maintenance (e.g. disassembly, lapping, or component replacement, etc.) is performed on any of these valves that could potentially affect their capability to open or close, post-maintenance testing would require operation of the CRD system and the affected control rod to determine proper valve operation.

Maintenance activities associated with these valves fall under the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. As required by the DAEC Technical Specifications, proper operation of these valves is verified by satisfactory operation of the reactor CRD system and individual control rods during startup and power operation of the plant.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, control rod operation and response will be monitored during the normal course of plant startup and operation following completion of maintenance activities.

RELIEF REQUEST NO. VR-44

SYSTEMS:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-22-16
V-22-17
V-22-21
V-22-22

CATEGORY:

A/C

FUNCTION:

Provide primary containment (torus) isolation for the HPCI steam exhaust (V-22-16 and V-22-17) and HPCI condensate return (V-22-21 and V-22-22) piping.

V-22-16 and V-22-17 provide an exhaust path to the suppression pool for the HPCI turbine.

V-22-21 and V-22-22 provide a path for condensate from the HPCI exhaust drain pot to the suppression chamber.

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

Valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated. (IWV-3522[b]) (CT-CO)

RELIEF REQUEST NO. VR-44

(CONTINUED)

BASIS FOR RELIEF:

These valves are check valves and have no mechanism for opening other than that induced by steam exhaust or condensate flow to the suppression pool. If maintenance (e.g., disassembly, lapping, or component replacement, etc.) is performed on any of these valves that could potentially affect its capability to open or close, post-maintenance testing would require plant startup and HPCI system operation to open the valve(s), then shutting down the HPCI system to close the valve. Following shutdown of the HPCI system, a leaktest would be required to prove that the valve(s) stroked from the open to the closed positions. Plant startup cannot be initiated with any of these valves in an inoperable status as this would be contrary to the requirements of IWV-3200. Since conducting a leaktest of these valves would render the HPCI system inoperable during the test, it would be imprudent to conduct such a test with the plant in any condition other than cold shutdown. Cycling the plant in such a manner would be undesirable and impractical.

Maintenance activities associated with these valves fall under the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Gross errors would be detected during leak rate testing that would follow reassembly. Proper stroking of these valves to the open position is verified by satisfactory operation of the HPCI turbine during surveillance testing as required by the Technical Specifications.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, a leak rate test will be performed to ensure that the valve has been properly reassembled. Following plant startup, HPCI system operational tests will be conducted to confirm valves operate properly to the opened position.

RELIEF REQUEST NO. VR-45

SYSTEMS:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-22-26
V-22-28
V-22-29

CATEGORY:

C

FUNCTION:

V-22-26 HPCI condensate pump discharge
V-22-28 HPCI condensate return to the HPCI pumps suction
V-22-29 HPCI condensate to the HPCI turbine lube oil cooler

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

BASIS FOR RELIEF:

These check valves have no mechanism for opening other than that induced by condensate flow from the HPCI condensate pump. If maintenance (e.g., disassembly, lapping, or component replacement, etc.) is performed on either of these valves that could potentially affect its capability to open, post-maintenance testing would require plant startup and HPCI system operation to operate the condensate pump and thus open the valve(s). Plant startup cannot be initiated with either of these valves in an inoperable status, as this would be contrary to the requirements of IWV-3200.

RELIEF REQUEST NO. VR-45

BASIS FOR RELIEF: (CONTINUED)

Maintenance activities associated with these valves fall under the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Proper stroking of these valves to the open position is verified by satisfactory operation of the HPCI turbine during surveillance testing as required by the Technical Specifications.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, operability to the open position will be demonstrated during HPCI system testing following plant startup.

RELIEF REQUEST NO. VR-46

SYSTEMS:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-23-14

CATEGORY:

C

FUNCTION:

V-23-14 HPCI minimum flow check valve

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

BASIS FOR RELIEF:

These check valves have no mechanism for opening other than that induced by flow from the HPCI pump. If maintenance (e.g., disassembly, lapping, or component replacement, etc.) is performed on this valve that could potentially affect its capability to open, post-maintenance testing would require plant startup and HPCI system operation to open the valve. Plant startup cannot be initiated with either of these valves in an inoperable condition, as this would be contrary to the requirements of IWV-3200.

RELIEF REQUEST NO. VR-46

BASIS FOR RELIEF: (CONTINUED)

Maintenance activities associated with these valves fall under the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Proper stroking of these valves to the open position is verified by satisfactory operation of the HPCI turbine during surveillance testing as required by the Technical Specifications.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, operability to the open position will be performed during HPCI system test following plant startup.

RELIEF REQUEST NO. VR-47

SYSTEMS:

REACTOR CORE ISOLATION COOLING (RCIC)

COMPONENTS:

V-24-8
V-24-23

CATEGORY:

A/C

FUNCTION:

Provide primary containment (torus) isolation for the RCIC steam exhaust.

Provide an exhaust path to the suppression pool for the RCIC turbine.

TEST REQUIREMENTS:

When a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits. (IWV-3200)

Valves that are normally open during plant operation and whose function is to prevent reverse flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observing of appropriate pressure indications in the system, or by other positive means. (IWV-3522[a]) (CT-CC)

Valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated. (IWV-3522[b]) (CT-CO)

RELIEF REQUEST NO. VR-47

(CONTINUED)

BASIS FOR RELIEF:

Valves V-24-8 and V-24-23 are stop and swing check valves, respectively, and have no mechanism for opening other than that induced by steam exhaust flow to the suppression pool. If maintenance (e.g., disassembly, lapping, or component replacement, etc.) is performed on any of these valves that could potentially affect its capability to open or close, post-maintenance testing would require plant startup and RCIC system operation to open the valve(s), then shutting down the RCIC system to close the valve. Following shutdown of the RCIC system, a leaktest would be required to prove that the valve(s) stroke from the open to the closed position. Plant startup cannot be initiated with any of these valves in an inoperable status, as this would be contrary to the requirements of IWV-3200. Since conducting a leaktest of these valves would render the RCIC system inoperable during the test, it would be inprudent to conduct such a test with the plant in any condition other than cold shutdown. Cycling the plant in this manner in order to perform a test, is undesirable and impractical.

Maintenance activities associated with these valves fall under the DAEC Operational Quality Assurance Program. Thus, reassembly errors, the most probable source of failure, are unlikely. Gross errors would be detected during leak rate testing that would follow reassembly. Proper stroking of these valves to the open position is verified by satisfactory operation of the HPCI turbine during surveillance testing as required by the Technical Specifications.

ALTERNATE TESTING:

When these valves are subjected to repair or maintenance that could affect their performance, a leak rate test will be performed to ensure that the valve has been properly reassembled. Following plant startup, RCIC system operational tests will be conducted to confirm valves operate to the opened position.

RELIEF REQUEST NO. VR-48

SYSTEMS:

VARIOUS

COMPONENTS:

Valves that cannot be exercised during plant operation.

CATEGORY:

A and B

FUNCTION:

Various

TEST REQUIREMENTS:

If, for power operated valves, an increase in stroke time of 25% or more from the previous test for valves with full-stroke times greater than 10 sec or 50% or more for valves with full-stroke times less than or equal to 10 sec is observed, test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed. [IWV-3417(a)]

BASIS FOR RELIEF:

Strict adhearance to this requirement as stated would require a plant shutdown or operation under unusual conditions each month for testing until it is determined that the valve is operating satisfactory and has not undergone significant degradation or some corrective maintenance action is performed to correct the condition.

Since valve stroke time would be less than the maximum allowable, it would continue to be considered operable and thus corrective maintenance, along with the accompanying time and personnel exposure costs, may not be warranted or justified.

ALTERNATE TESTING:

If valve testing should result in valve stroke increases as stated in Article IWV-3417(a) requiring increased frequency of testing, the subject valves will be full-stroke tested only during cold shutdowns on a frequency determined by the intervals between shutdowns as follows:

* for intervals of 1 month (30 days) or longer, tests will be performed during each shutdown;

* for intervals of less than 1 month (30 days), full-stroke exercise will not be performed unless 1 month (30 days) has passed since the last shutdown exercise test.

RELIEF REQUEST NO. VR-49

SYSTEMS:

CONTAINMENT ATMOSPHERE CONTROL

COMPONENTS:

CV-4300	CV-4301
CV-4302	CV-4303
CV-4306	CV-4307
CV-4308	

FUNCTION:

Provide ventilation and purging for the drywell and torus.

TEST REQUIREMENTS:

The limiting value of full-stroke time of each power-operated valve shall be specified by the Owner. Full-stroke time is that time interval from initiation of the actuating signal to the end of the actuating cycle.

The stroke time of all power-operated valves shall be measured to the nearest second, for stroke times 10 seconds or less, or 10% of the specified limiting stroke times longer than 10 seconds whenever such a valve is full stroke tested.

BASIS FOR RELIEF:

These valves are blocked to limit opening stroke to approximately 30% per Generic Issue B-24 and implementation of Item B.4 of Branch Technical Position (BTP) CSB 6-4. Exercising these valves to full-stroke is thus impractical.

ALTERNATE TESTING:

These valves will be part-stroke exercised.

RELIEF REQUEST NO. VR-50

SYSTEMS:

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 open to equalize the pressure between the two volumes should the suppression chamber pressure exceed that of the drywell.

TEST REQUIREMENTS:

Check valves shall be exercised at least once every three months, except as provided by IWV-3522. (IWV-3521)

Valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated, or when a mechanical opening force is applied to the disk. If the test is made without flow through the valve, a mechanical exerciser shall be used to move the disk. The force or torque delivered must be limited to less than 10% of the equivalent force . . . ., except that for vacuum breaker valves, the exerciser force or torque delivered to the disk may be equivalent to the desired functional pressure differential force. This implies that force or torque measurements are required.

BASIS FOR RELIEF:

These valves are located inside the torus and, as such, are not readily accessible for obtaining the required measurements during reactor operation or when the containment is inerted.

ALTERNATE TESTING:

The valves will be full stroked quarterly during plant operation using installed air operators without any quantitative set point measurements. Additionally, each will be tested to open with the mechanical exerciser obtaining set point measurements at least once each refueling cycle.

APPENDIX A

PUMP LISTING

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

IST PROGRAM REVISION 007 11/01/85

PUMP NUMBER	PUMP NAME	IST CLASS	P&ID	P&ID COOR	INSERVICE TEST QUANTITIES: SPEED	INLET PRESS	DIFF(1) PRESS	FLOW(1) RATE	(2) VIBRA	BEAR TEMP	TEST INTERVAL	REMARKS
1P-022A	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y PR-12	Y	N:PR-14	QUARTERLY	
1P-022B	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y PR-12	Y	N:PR-14	QUARTERLY	
1P-022C	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y PR-12	Y	N:PR-14	QUARTERLY	
1P-022D	RHRSW	3	M-146	B-8	NA	Y:PR-4	Y	Y PR-12	Y	N:PR-14	QUARTERLY	
1P-044A	DFO	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	DFO	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	N:PR-14	QUARTERLY	
1P-112B	SCREEN	NC	M-129	C-3	NA	Y PR-9	Y PR-9	Y PR-9	Y PR-9	N:PR-14	QUARTERLY	
1P-117A	RW	3	M-129	D-7	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-117B	RW	3	M-129	D-4	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-117C	RW	3	M-129	D-6	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-117D	RW	3	M-129	D-3	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-211A	CS	2	M-121	C-3	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	NOTE-003
1P-211B	CS	2	M-121	C-4	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	NOTE-003
1P-216	HPCI	2	M-123	D-2	Y	Y	Y:PR-5	Y:PR-5	N:PR-3	N:PR-14	QUARTERLY	NOTE-003
1P-226	RCIC	2	M-125	D-4	Y	Y	Y:PR-5	Y:PR-5	N:PR-3	N:PR-14	QUARTERLY	NOTE-003
1P-229A	RHR	2	M-120	B-3	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	NOTE-002

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

ISI CLASS 1, 2, 3 AND NC PUMPS
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

IST PROGRAM REVISION 007 11/01/85

PUMP NUMBER	PUMP NAME	IST CLASS	P&ID	P&ID COOR	INSERVICE TEST QUANTITIES: SPEED	INLET PRESS	DIFF PRESS	FLOW RATE	VIBRA	BEAR TEMP	TEST INTERVAL	REMARKS
1P-229B	RHR	2	M-119	B-7	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	NOTE-002
1P-229C	RHR	2	M-120	B-2	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	NOTE-002
1P-229D	RHR	2	M-119	B-8	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	NOTE-002
1P-230A	SBLC	NC	M-126	D-5	NA	Y PR-4	Y	Y	Y	Y	QUARTERLY	
1P-230B	SBLC	NC	M-126	C-5	NA	Y PR-4	Y	Y	Y	Y	QUARTERLY	

FOOTNOTES FOR PUMP LISTING

(1) SEE PR-13

(2) SEE PR-8 AND PR-11

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 PROGRAM, 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.

NOTE 002: SEE RELIEF REQUEST PR-12.

NOTE 003: SEE RELIEF REQUEST PR-7 AND PR-12.

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID C51-1-7 REVISION 00
SYSTEM : NEUTRON MONITORING

IST PROGRAM REVISION : 007 , 11/01/85

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
TIP-BALA	---	NC	A	.375	BAL	SO	C	AT-1 BTC PIT	RR OP 2Y	005	NA	VR-34	
TIP-BALB	---	NC	A	.375	BAL	SO	C	AT-1 BTC PIT	RR OP 2Y	005	NA	VR-34	
TIP-BALC	---	NC	A	.375	BAL	SO	C	AT-1 BTC PIT	RR OP 2Y	005	NA	VR-34	
TIP-CK	---	NC	A/C	.375	CK	SA	C	AT-1 CT-CC	RR RR		NA	VR-31	
TIP-SHA	---	NC	D	-	SH	EXP	O	DT	RR				
TIP-SHB	---	NC	D	-	SH	EXP	O	DT	RR				
TIP-SHC	---	NC	D	-	SH	EXP	O	DT	RR				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-109 REVISION 21
SYSTEM : CONDENSATE & DEMINERALIZED WATER

IST PROGRAM REVISION : 007 , 11/01/85

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-09-065	G-2	NC	A	1	GA	M	C	AT-1	RR		NA	VR-36	
V-09-111	G-2	NC	A	1	GA	M	C	AT-1	RR		NA	VR-36	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 007 , 11/01/85

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
MO-4841A	E-3	NC	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	CS	020			
								PIT	2Y				
MO-4841B	F-3	NC	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	CS	020			
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-113 REVISION 17
SYSTEM : RHR & EMERGENCY SERVICE WATER

IST PROGRAM REVISION : 007 , 11/01/85

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-1956A	H-3	3	B	4	GA	AO	C/FO	BTO FST	OP OP	005		VR-35 VR-17	
CV-1956B	H-2	3	B	4	GA	AO	C/FO	BTO FST	OP OP	005		VR-35 VR-17	
CV-2080	G-5	3	B	6	GL	AO	C/FO	BTO FST	OP OP	NA		VR-35 VR-17	
CV-2081	G-5	3	B	6	GL	AO	C/FO	BTO FST	OP OP	NA		VR-35 VR-17	
MO-1943A	G-8	3	B	12	GA	MO	C/KL	BTC PIT	OP 2Y	072			
MO-1943B	G-8	3	B	12	GA	MO	C/KL	BTC PIT	OP 2Y	072			
MO-2039A	H-4	NC	B	4	GA	MO	O	BTC PIT	OP 2Y	070			
MO-2039B	H-3	NC	B	4	GA	MO	O	BTC PIT	OP 2Y	070			
MO-2077	H-3	3	B	4	GA	MO	O	BTC PIT	OP 2Y	070			
MO-2078	H-2	3	B	4	GA	MO	O	BTC PIT	OP 2Y	070			
PSV-1988	E-7	3	C	.75	RV	SA	C	CT-SP	5Y				
PSV-2068	E-6	3	C	.75	RV	SA	C	CT-SP	5Y				
SV-1956A	H-3	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	

P&ID M-113 REVISION 17
SYSTEM : RHR & EMERGENCY SERVICE WATER

IST PROGRAM REVISION : 007 , 11/01/85

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
SV-1956B	H-2	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-2080	G-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-2081	G-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	

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
AP-4412A	G-3	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4412B	G-3	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4413A	G-1	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4413B	G-1	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4415A	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4415B	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4416A	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4416B	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4418A	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4418B	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4419A	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4419B	---	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	

PREPARED BY : JELF
PROGRAM : PRISM

INSERVICE TESTING PROGRAM
IST CLASS 1, 2, 3, AND MC VALVES
PUGET ARNOLD ENERGY CENTER

1996 ELECTRIC LIGHT AND POWER

P&ID M-114 REVISION 13
SYSTEM : NUCLEAR BOILER

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IST PROGRAM REVISION 047 : 11/01/95

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
AP-4420A	----	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4420B	----	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4421A	----	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
AP-4421B	----	NC	B	-	4WY	AP	NE	BTD FST	OP OP	NA		VR-2 VR-17	
CV-4412	E-3	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4413	E-2	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4415	C-7	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4416	C-8	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4418	C-3	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	

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-4419	C-2	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4420	E-7	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4421	E-8	1	A	20	GL	AO	O/FC	AT-1 BTC FST PIT	RR OP RR 2Y	005	NA	VR-17	
CV-4428	H-6	1	B	.5	GL	AO	C	BTC PIT	CS 2Y	060			
CV-4429	H-7	1	B	.5	GL	AO	C	BTC PIT	CS 2Y	060			
MO-4423	B-3	1	A	3	GA	MO	C	AT-1 BTC PIT	RR OP 2Y	015	NA		
MO-4424	B-3	1	A	3	GA	MO	C	AT-1 BTC PIT	RR OP 2Y	015	NA		
MO-4441	B-3	1	A/C	16	SCR	SAM	O/KL	AT-1 BTC CT-CC PIT	RR CS CS 2Y	053	NA	VR-37	
MO-4442	B-7	1	A/C	16	SCR	SAM	O/KL	AT-1 BTC CT-CC PIT	RR CS CS 2Y	053	NA	VR-37	

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
PSV-4400	E-5	1	B/C	6	RV	SAP	C	BTO CT-SP	SP 5Y	NA		VR-6	
PSV-4401	E-4	1	B/C	6	RV	SAP	C	BTO CT-SP	SP 5Y	NA		VR-6	
PSV-4402	C-6	1	B/C	6	RV	SAP	C	BTO CT-SP	SP 5Y	NA		VR-6	
PSV-4403	C-6	1	C	6	SV	SA	C	CT-SP	5Y				
PSV-4404	C-5	1	C	6	SV	SA	C	CT-SP	5Y				
PSV-4405	C-4	1	B/C	6	RV	SAP	C	BTO CT-SP	SP 5Y	NA		VR-6	
PSV-4406	E-6	1	B/C	6	RV	SAP	C	BTO CT-SP	SP 5Y	NA		VR-6	
PSV-4407	E-6	1	B/C	6	RV	SAP	C	BTO CT-SP	SP 5Y	NA		VR-6	
PSV-4439A	B-4	3	C	6	RV	SA	C	CT-CC CT-CO CT-SP	RR RR 5Y			VR-7 VR-7	
PSV-4439B	B-4	3	C	6	RV	SA	C	CT-CC CT-CO CT-SP	RR RR 5Y			VR-7 VR-7	
PSV-4439C	A-5	3	C	6	RV	SA	C	CT-CC CT-CO CT-SP	RR RR 5Y			VR-7 VR-7	
PSV-4439D	B-4	3	C	6	RV	SA	C	CT-CC CT-CO CT-SP	RR RR 5Y			VR-7 VR-7	

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
FSV-4439E	A-5	3	C	6	RV	SA	C	CT-CC CT-CO CT-SP	RR RR 5Y			VR-7 VR-7	
FSV-4439F	A-4	3	C	6	RV	SA	C	CT-CC CT-CO CT-SP	RR RR 5Y			VR-7 VR-7	
SV-4400	E-5	NC	B	-	3WY	SO	ND	BTE	SP	NA		VR-6	
SV-4401	E-4	NC	B	-	3WY	SO	ND	BTE	SP	NA		VR-6	
SV-4402	C-6	NC	B	-	3WY	SO	ND	BTE	SP	NA		VR-6	
SV-4405	C-4	NC	B	-	3WY	SO	ND	BTE	SP	NA		VR-6	
SV-4406	E-6	NC	B	-	3WY	SO	ND	BTE	SP	NA		VR-6	
SV-4407	E-6	NC	B	-	3WY	SO	ND	BTE	SP	NA		VR-6	
SV-4412A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4412B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4413A	F-2	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4413B	F-2	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4415A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4415B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4416A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4416B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	

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
SV-4418A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4418B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4419A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4419B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4420A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4420B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4421A	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4421B	G-8	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4428	H-6	NC	B	-	3WY	SO	ND	BTD	CS	NA		VR-2	
SV-4429	H-7	NC	B	-	3WY	SO	ND	BTD	CS	NA		VR-2	
V-14-001	B-6	1	A/C	16	CK	SA	O	AT-1 CT-CC CT-CO PIT	RR RR OP 2Y		NA	VR-4	
V-14-003	B-4	1	A/C	16	CK	SA	O	AT-1 CT-CC CT-CO PIT	RR CS OP 2Y		NA		
V-14-009	F-6	NC	A/C	2	CK	SA	C	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-014	D-6	NC	A/C	2	CK	SA	C	AT-6 CT-CC	RR RR		NA	VR-19	

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-14-015	G-5	NC	A/C	2	CK	SA	C	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-016	D-5	NC	A/C	2	CK	SA	C	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-032	F-1	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-100	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-104	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-108	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-112	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-116	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-120	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
V-14-124	G-8	NC	A/C	.75	CK	SA	O	AT-6 CT-CC	RR RR		NA	VR-19	
XFV-4453A	E-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4453B	D-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4454A	E-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4454B	D-1	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4455A	C-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4455B	C-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4456A	C-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4456B	C-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4457A	E-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4457B	D-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4458A	E-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4458B	D-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4459A	C-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4459B	C-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4460A	C-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4460B	C-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-115 REVISION 0
SYSTEM : REACTOR VESSEL INSTRUMENTATION

IST PROGRAM REVISION : 007 , 11/01/85

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
SV-4594A	D-3	2	A	1	GL	SO	C	AT-1	RR		NA		
								BTC	OP	5		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4594B	D-6	2	A	1	GL	SO	C	AT-1	RR		NA		
								BTC	OP	5		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4595A	D-3	NC	A	1	GL	SO	C	AT-1	RR		NA		
								BTC	OP	5		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4595B	D-6	NC	A	1	GL	SO	C	AT-1	RR		NA		
								BTC	OP	5		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
XFV-4501A	E-3	2	A	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				
XFV-4501B	E-3	2	A	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				
XFV-4503	E-3	2	A	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				
XFV-4504	E-6	2	A	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-115 REVISION 0
SYSTEM : REACTOR VESSEL INSTRUMENTATION

IST PROGRAM REVISION : 007 , 11/01/85

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
XFV-4505	C-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4506	B-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4507	B-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4508	B-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4510A	E-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4510B	E-7	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4511	B-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4512	B-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4513	B-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4514	B-3	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4515	B-3	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4516	B-3	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4518	D-6	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4519	D-3	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4528	D-6	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4562	E-3	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4578	F-6	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4579	F-6	2	A	1	XFC	SA	0	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4580	F-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4581	E-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4582	E-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4583	E-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4584	D-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4585	D-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4586	F-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4587	F-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4588	F-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

P&ID M-115 REVISION 0
SYSTEM : REACTOR VESSEL INSTRUMENTATION

IST PROGRAM REVISION : 007 , 11/01/85

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
XFV-4589	E-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4590	D-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4591	D-3	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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-4639	F-6	2	A	.75	GL	AO	C	AT-1 BTC PIT	RR OP 2Y	005	NA	VR-37	
CV-4640	F-6	NC	A	.75	GL	AO	C	AT-1 BTC PIT	RR OP 2Y	005	NA	VR-37	
MO-4627	C-2	1	B	22	GA	MO	O	BTC PIT	CS 2Y	036			
MO-4628	C-8	1	B	22	GA	MO	O	BTC PIT	CS 2Y	036			
MO-4629	C-3	1	B	4	GA	MO	C	BTC PIT	CS 2Y	036			
MO-4630	C-8	1	B	4	GA	MO	C	BTC PIT	CS 2Y	036			
SV-4639	F-6	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4640	F-6	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
XFV-4607	A-5	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4608	A-5	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4611	A-5	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4612	A-5	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4637	E-6	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4638	E-6	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4641A	H-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4641B	H-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4642A	G-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4642B	G-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4643A	G-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4643B	G-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4644A	G-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4644B	G-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4663	F-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4664	F-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4665	F-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4666	F-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4667	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4668	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4669	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4670	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4671	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4672	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4673	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4674	E-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4675	D-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4676	D-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4677	D-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4678	D-4	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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
XFV-4679	A-1	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4680	A-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4681	A-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-4682	A-3	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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-1804A	A-5	NC	A	1	GL	AO	O	AT-1 BTC PIT	RR OP 2Y	005	NA		
CV-1804B	A-5	NC	A	1	GL	AO	O	AT-1 BTC PIT	RR OP 2Y	005	NA		
SV-1804A	A-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-1804B	A-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-1840A	G-6	NC	B	1	3WY	SO	NE	BTD	RR	NA		VR-13	NOTE-006
SV-1840B	G-6	NC	B	1	3WY	SO	NE	BTD	RR	NA		VR-13	NOTE-006
V-17-052	E-3	1	A/C	3	CK	SA	C	AT-1 CT-CC	RR RR		NA	 VR-30	
V-17-053	E-2	1	A/C	3	CK	SA	C	AT-1 CT-CC	RR RR		NA	 VR-30	
V-17-083	A-6	2	A/C	1	CK	SA	O	AT-1 CT-CC	RR RR		NA	 VR-12	
V-17-096	A-4	2	A/C	1	CK	SA	O	AT-1 CT-CC	RR RR		NA	 VR-12	

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	2	B	.75	GA	AO	C/FO	BTO FST	SP SP	NA		VR-13 VR-17	NOTE-001
CV-1850	D-6	2	B	.75	GA	AO	C/FO	BTO FST	SP SP	NA		VR-13 VR-17	NOTE-001
CV-1859A	G-4	NC	B	1	GL	AO	O/FC	BTC FST PIT	CS CS 2Y	030		VR-17	
CV-1859B	G-4	2	B	1	GL	AO	O/FC	BTC FST PIT	CS CS 2Y	007		VR-17	
CV-1867A	D-5	NC	B	2	GL	AO	O/FC	BTC FST PIT	CS CS 2Y	032		VR-17	
CV-1867B	D-5	2	B	2	GL	AO	O/FC	BTC FST PIT	CS CS 2Y	007		VR-17	
SV-1851	C-7	2	B	.5	GA	SO	C/FC	BTC FST	SP SP	NA		VR-14 VR-17	NOTE-001
SV-1852	C-7	2	B	.75	GA	SO	C/FC	BTC FST	SP SP	NA		VR-14 VR-17	NOTE-001
SV-1853	C-7	2	B	.5	GA	SO	C/FC	BTC FST	SP SP	NA		VR-14 VR-17	NOTE-001
SV-1854	C-7	2	B	.75	GA	SO	C/FC	BTC FST	SP SP	NA		VR-14 VR-17	NOTE-001
SV-1855	E-6	NC	B	-	3WY	SO	NE	BTD	SP	NA		VR-13	

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 007 , 11/01/85

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
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	
V-18-0118	B-8	2	C	.5	CK	SA	C	CT-CC	SP	NA		VR-13	NOTE-002
V-18-0919	E-7	2	C	.5	CK	SA	O	CT-CC	SP	NA		VR-13	NOTE-003
V-18-1453	D-6	2	C	.5	CK	SA	C	CT-CO	SP	NA		VR-13	NOTE-004

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-1906	E-7	1	A/C	20	CK	SA	C	AT-5 CT-CC CT-CO PIT	RR CS CS 2Y		NA		
MO-1900	H-8	1	A	4	GA	MO	C	AT-5 BTC PIT	RR CS 2Y	028	NA		
MO-1901	H-7	1	A	4	GL	MO	C	AT-5 BTC PIT	RR CS 2Y	016	NA		
MO-1902	G-7	2	B	10	GA	MO	C	BTC PIT	OP 2Y	014			
MO-1903	G-6	2	B	10	GL	MO	C/KL	BTC PIT	OP 2Y	014			
MO-1904	E-6	2	B	20	ANG	MO	O	BTO PIT	OP 2Y	037			
MO-1905	E-6	1	A	20	GA	MO	C	AT-5 BTC BTO PIT	RR OP OP 2Y	 037 037	NA		
MO-1908	E-8	1	A	18	GA	MO	C	AT-5 BTC PIT	RR CS 2Y	022	NA		
MO-1909	E-8	1	A	18	GA	MO	C	AT-5 BTC PIT	RR CS 2Y	022	NA		
MO-1912	C-7	2	B	18	GA	MO	C	BTC PIT	OP 2Y	084			

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
MO-1913	C-7	2	B	18	GA	MO	O/KL	BTC	OP	084			
								BTO	OP	084			
								PIT	2Y				
MO-1920	C-8	2	B	18	GA	MO	C	BTC	OP	084			
								PIT	2Y				
MO-1921	C-7	2	B	18	GA	MO	O/KL	BTC	OP	084			
								BTO	OP	084			
								PIT	2Y				
MO-1932	F-5	2	B	12	GA	MO	C/KL	BTC	OP	083			
								BTO	OP	083			
								PIT	2Y				
MO-1933	F-5	2	B	4	GL	MO	C	BTC	OP	009			
								PIT	2Y				
MO-1934	F-5	2	B	12	GL	MO	C	BTC	OP	041			
								BTO	OP	041			
								PIT	2Y				
MO-1935	C-5	2	B	3	GA	MO	O	BTC	OP	019			
								BTO	OP	019			
								PIT	2Y				
MO-1936	D-6	NC	B	4	GL	MO	C	BTC	OP	006			
								PIT	2Y				
MO-1937	D-6	2	B	4	GA	MO	C	BTC	OP	019			
								PIT	2Y				
MO-1939	D-4	2	B	12	GA	MO	O/KL	BTC	OP	080			
								BTO	OP	080			
								PIT	2Y				

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
MO-1940	E-4	2	B	18	GL	MO	O	BTC BTO PIT	OP OP 2Y	060 060			
MO-1941	E-3	2	B	18	GA	MO	O/KL	BTC BTO PIT	OP OP 2Y	080 080			
MO-1949A	D-4	NC	B	1	GL	MO	C	BTC PIT	OP 2Y	018			
MO-1949B	D-4	2	B	1	GL	MO	C	BTC PIT	OP 2Y	018			
MO-1967	E-2	NC	B	4	GA	MO	C	BTC BTO PIT	OP OP 2Y	030 030			
MO-1970	E-3	NC	B	4	GA	MO	C	BTC PIT	OP 2Y	017			
MO-1989	D-7	2	B	24	GA	MO	O/KL	BTC BTO PIT	OP OP 2Y	140 140			
PSV-1911	D-8	2	C	1	RV	SA	C	CT-SP	5Y				
PSV-1952	D-4	2	C	4	RV	SA	C	CT-SP	5Y				
V-19-001	A-7	2	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-19-003	A-5	2	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-19-014	A-8	2	C	3	CK	SA	C	CT-CC CT-CO	OP OP				

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-19-016	B-5	2	C	3	CK	SA	C	CT-CC CT-CO	OP OP				
V-19-020	B-6	2	B/C	1	SCK	MSA	O	CT-CC	OP				
V-19-023	B-6	2	B/C	1	SCK	MSA	O	CT-CC	OP				
V-19-128	B-6	2	B/C	1	SCK	MSA	O	CT-CC	OP				

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-2002	F-3	1	A/C	20	CK	SA	C	AT-5 CT-CC CT-CO PIT	RR CS CS 2Y		NA		
MO-2000	G-2	2	B	10	GA	MO	C	BTC PIT	OP 2Y	014			
MO-2001	G-4	2	B	10	GL	MO	C/KL	BTC PIT	OP 2Y	014			
MO-2003	F-4	1	A	20	GA	MO	C	AT-5 BTC BTO PIT	RR OP OP 2Y	 037 037	NA		
MO-2004	F-4	2	B	20	ANG	MO	O	BTO PIT	OP 2Y	037			
MO-2005	G-4	2	B	12	GA	MO	C/KL	BTC BTO PIT	OP OP 2Y	083 083			
MO-2006	F-4	2	B	4	GL	MO	C	BTC PIT	OP 2Y	009			
MO-2007	F-5	2	B	12	GL	MO	C	BTC BTO PIT	OP OP 2Y	041 041			
MO-2009	C-4	2	B	3	GA	MO	O	BTC BTO PIT	OP OP 2Y	019 019			
MO-2011	C-3	2	B	14	GA	MO	C	BTC PIT	OP 2Y	084			

P&ID M-120 REVISION 14
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 007 , 11/01/85

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
MO-2012	C-3	2	B	14	GA	MO	O/KL	BTC	OP	084			
								BTO	OP	084			
								PIT	2Y				
MO-2015	C-3	2	B	14	GA	MO	O/KL	BTC	OP	084			
								BTO	OP	084			
								PIT	2Y				
MO-2016	C-2	2	B	14	GA	MO	C	BTC	OP	084			
								PIT	2Y				
MO-2029	D-5	2	B	12	GA	MO	O	BTC	OP	080			
								BTO	OP	080			
								PIT	2Y				
MO-2030	E-5	2	B	18	GL	MO	O	BTC	OP	060			
								BTO	OP	060			
								PIT	2Y				
MO-2031	E-7	2	B	12	GA	MO	O	BTC	OP	080			
								BTO	OP	080			
								PIT	2Y				
MO-2036	E-8	NC	B	4	GA	MO	C	BTC	OP	030			
								BTO	OP	030			
								PIT	2Y				
MO-2038	E-7	NC	B	4	GA	MO	C	BTC	OP	017			
								PIT	2Y				
MO-2044A	D-6	NC	B	1	GL	MO	C	BTC	OP	018			
								PIT	2Y				
MO-2044B	D-6	2	B	1	GL	MO	C	BTC	OP	018			
								PIT	2Y				

P&ID M-120 REVISION 14
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 007 , 11/01/85

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
MO-2069	D-3	2	B	24	GA	MO	O/KL	BTC BTO PIT	OP OP 2Y	140 140			
PSV-2043	D-6	2	C	4	RV	SA	C	CT-SP	5Y				
V-20-001	B-3	2	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-20-003	A-5	2	C	12	CK	SA	C	CT-CC CT-CO	OP OP				
V-20-006	B-4	2	C	3	CK	SA	C	CT-CC CT-CO	OP OP				
V-20-008	B-2	2	C	3	CK	SA	C	CT-CC CT-CO	OP OP				

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-2118	F-6	1	A/C	8	CK	SA	C	AT-5	RR		NA		
								CT-CC	RR			VR-33	
								CT-CO	RR			VR-33	
								FIT	2Y				
CV-2138	E-6	1	A/C	8	CK	SA	C	AT-5	RR		NA		
								CT-CC	RR			VR-33	
								CT-CO	RR			VR-33	
								FIT	2Y				
MO-2100	B-5	2	B	12	GA	MO	O/KL	BTO	OP	078			
								FIT	2Y				
MO-2104	D-3	2	B	2	GA	MO	O	BTC	OP	013			
								FIT	2Y				
MO-2112	F-5	2	B	8	GL	MO	C	BTC	OP	033			
								FIT	2Y				
MO-2115	G-5	2	A	8	GA	MO	O	AT-1	RR		NA		
								BTC	OP	008			
								BTO	OP	008			
								FIT	2Y				
MO-2117	G-6	1	A	8	GA	MO	C	AT-1	RR		NA		
								AT-5	RR		NA		
								BTC	OP	008			
								BTO	OP	008			
								FIT	2Y				
MO-2120	C-5	2	B	12	GA	MO	O/KL	BTO	OP	078			
								FIT	2Y				
MO-2124	D-4	2	B	2	GA	MO	O	BTC	OP	013			
								FIT	2Y				

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
MO-2132	E-5	2	B	8	GL	MO	C	BTC	OP	033			
								PIT	2Y				
MO-2135	E-5	2	A	8	GA	MO	O	AT-1	RR		NA		
								BTC	OP	008			
								BTO	OP	008			
								PIT	2Y				
MO-2137	E-6	1	A	8	GA	MO	C	AT-1	RR		NA		
								AT-5	RR		NA		
								BTC	OP	008			
								BTO	OP	008			
								PIT	2Y				
MO-2146	C-5	2	B	12	GA	MO	O/KL	BTC	OP	078			
								BTO	OP	078			
								PIT	2Y				
MO-2147	B-5	2	B	12	GA	MO	O/KL	BTC	OP	078			
								BTO	OP	078			
								PIT	2Y				
PSV-2109	G-4	2	C	2	RV	SA	C	CT-SP	5Y				
PSV-2129	E-4	2	C	2	RV	SA	C	CT-SP	5Y				
V-21-007	D-3	2	C	10	CK	SA	C	CT-CO	OP				
V-21-009	D-3	2	C	2	CK	SA	C	CT-CO	OP				
V-21-010	D-4	2	C	10	CK	SA	C	CT-CO	OP				
V-21-012	D-4	2	C	2	CK	SA	C	CT-CO	OP				
XFV-2119	G-7	2	A/C	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 007 , 11/01/85

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
XFV-2139	G-7	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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-2206	D-2	2	B	1	GA	AO	C/FC	BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-2211	C-2	NC	A	1	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-2212	C-2	NC	A	1	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-2235	C-5	NC	B	1	GA	AO	C/FC	BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
HV-2201	E-3	2	B	10	GL	HO	C	BTO	OP	030			
								PIT	2Y				
MO-2202	E-3	2	B	10	GA	MO	C	BTO	OP	021			
								PIT	2Y				
MO-2238	G-6	1	A	10	GA	MO	O	AT-1	RR		NA		
								BTC	OP	013			
								BTO	OP	013			
								PIT	2Y				
MO-2239	G-5	1	A	10	GA	MO	O	AT-1	RR		NA		
								BTC	OP	013			
								BTO	OP	013			
								PIT	2Y				
MO-2247	D-5	2	B	2	GL	MO	C	BTO	OP	011			
								PIT	2Y				

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
MO-2290A	B-8	NC	A	2	GA	MO	O	AT-1	RR		NA		
								BTC	OP	010			
								BTO	OP	010			
								PIT	2Y				
MO-2290B	B-8	NC	A	2	GA	MO	O	AT-1	RR		NA		
								BTC	OP	010			
								BTO	OP	010			
								PIT	2Y				
PSV-2223	C-3	2	C	1.25	RV	SA	C	CT-SP	5Y				
PSV-2228	C-4	2	C	1	RV	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-2235	C-5	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
V-22-016	B-7	2	A/C	16	CK	SA	C	AT-1	RR		NA	VR-37	
								CT-CC	CS				
								CT-CO	OP				
V-22-017	B-7	2	A/C	16	SCK	SA	C	AT-1	RR		NA	VR-37	
								CT-CO	OP				
V-22-021	B-7	NC	A/C	2	CK	SA	C	AT-1	RR		NA	VR-37	
								CT-CC	CS				
								CT-CO	OP				
V-22-022	B-7	NC	A/C	2	SCK	MSA	C	AT-1	RR		NA	VR-37	
								CT-CO	OP				

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-CO	OP				
V-22-028	B-4	2	C	2	CK	SA	C	CT-CO	OP				
V-22-029	B-5	2	C	2	CK	SA	C	CT-CO	OP				
V-22-063	B-8	2	A/C	3	CK	SA	C	AT-1 CT-CC CT-CO	RR CS OP		NA		
V-22-064	B-8	NC	A/C	3	CK	SA	C	AT-1 CT-CC CT-CO	RR CS OP		NA		
XFV-2246A	F-6	2	A	1	XFC	SA	O	AT-2 CT-CC FIT	RR RR 2Y			VR-8	
XFV-2246B	F-6	2	A	1	XFC	SA	O	AT-2 CT-CC FIT	RR RR 2Y			VR-8	
XFV-2246C	F-6	2	A	1	XFC	SA	O	AT-2 CT-CC FIT	RR RR 2Y			VR-8	
XFV-2246D	E-6	2	A	1	XFC	SA	O	AT-2 CT-CC FIT	RR RR 2Y			VR-8	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-123 REVISION 10
SYSTEM : HPCI - WATER SIDE

IST PROGRAM REVISION : 007 , 11/01/85

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-2313	C-7	1	C	12	CK	SAT	C	CT-CC CT-CO FIT	CS CS 2Y				
MO-2300	F-4	2	B	14	GA	MO	O	BTC FIT	OP 2Y	077			
MO-2311	C-6	2	B	12	GA	MO	O	BTO FIT	OP 2Y	018			
MO-2312	C-7	1	A	12	GA	MO	C	AT-1 BTC BTO FIT	RR OP OP 2Y	 020 020	NA	VR-37	
MO-2316	E-6	NC	B	8	GA	MO	C	BTC FIT	OP 2Y	024			
MO-2318	C-5	2	B	4	GL	MO	C	BTC BTO FIT	OP OP 2Y	018 018			
MO-2321	A-7	2	B	14	GA	MO	C	BTC BTO FIT	OP OP 2Y	077 077			
MO-2322	F-4	2	B	14	GA	MO	C	BTO FIT	OP 2Y	077			
PSV-2301	F-3	2	C	1.5	RV	SA	C	CT-SP	5Y				
V-23-001	A-6	2	C	14	CK	SA	C	CT-CO	RR			VR-21	
V-23-014	C-4	2	C	4	CK	SA	C	CT-CO	OP				

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	NC	B	1	GA	AO	C/FC	BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-2410	D-3	NC	A	1	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-2411	D-3	NC	A	1	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-2436	B-5	NC	B	1	GA	AO	O/FC	BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
MO-2400	G-6	1	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-2401	G-5	1	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-2404	G-3	NC	B	4	GL	MO	C	BTO	OP	016			
								PIT	2Y				
MO-2405	F-3	NC	B	3	GL	MO	C	BTO	OP	015			
								PIT	2Y				
MO-2426	D-6	NC	B	2	GL	MO	C	BTO	OP	014			
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM
ISI 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

IST PROGRAM REVISION : 007 , 11/01/85

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
PSV-2474	C-3	NC	B/C	1.25	RV	SA	C	CT-SP	5Y				
SV-2409	E-2	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-2410	D-3	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-2411	D-3	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-2436	B-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
V-24-008	D-7	NC	A/C	10	SCK	MSA	C	AT-1 CT-CO	RR OP		NA	VR-37	NOTE-005
V-24-012	C-6	NC	C	2	CK	SA	C	CT-CO	OP				NOTE-005
V-24-023	D-7	NC	A/C	10	CK	SA	C	AT-1 CT-CC CT-CO	RR CS OP		NA	VR-37	
V-24-046	D-7	NC	A/C	3	CK	SA	C	AT-1 CT-CC CT-CO	RR CS OP		NA		
V-24-047	D-7	NC	A/C	3	CK	SA	C	AT-1 CT-CC CT-CO	RR CS OP		NA		
XFV-2443A	F-6	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-2443B	F-6	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-2443C	F-6	2	A/C	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

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

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
XFV-2443D	F-6	2	A/C	1	XFC	SA	0	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				

P&ID M-125 REVISION 12
SYSTEM : RCIC - WATER SIDE

IST PROGRAM REVISION : 007 , 11/01/85

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-2513	D-6	1	C	4	CK	SA	C	CT-CC	CS				
								CT-CO	CS				
								PIT	2Y				
MO-2500	F-4	NC	B	6	GA	MO	8	BTC	OP	040			
								PIT	2Y				
MO-2510	C-4	NC	B	2	GL	MO	C	BTC	OP	013			
								BTO	OP	013			
								PIT	2Y				
MO-2511	D-5	NC	B	4	GA	MO	O	BTO	OP	015			
								PIT	2Y				
MO-2512	D-6	1	A	4	GA	MO	C	AT-1	RR		NA	VR-37	
								BTC	OP	015			
								BTO	OP	015			
								PIT	2Y				
MO-2516	A-5	NC	B	6	GA	MO	C	BTC	OP	040			
								BTO	OP	040			
								PIT	2Y				
MO-2517	F-4	NC	B	6	GA	MO	C	BTO	OP	040			
								PIT	2Y				
PSV-2501	E-4	NC	C	1	RV	SA	C	CT-SP	5Y				
V-25-001	A-5	NC	C	6	CK	SA	C	CT-CO	RR			VR-21	
V-25-006	C-4	NC	C	2	CK	SA	C	CT-CO	OP				

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
PSV-2607	E-5	NC	C	1	RV	SA	C	CT-SP	5Y				
PSV-2609	B-5	NC	C	1	RV	SA	C	CT-SP	5Y				
V-26-004	D-5	NC	C	1.5	CK	SA	C	CT-CO	OP				
V-26-006	C-5	NC	C	1.5	CK	SA	C	CT-CO	OP				
V-26-008	F-7	1	A/C	1.5	CK	SA	C	AT-1	RR		NA		
								CT-CC	RR			VR-20	
								CT-CO	RR			VR-20	
V-26-009	D-8	1	A/C	1.5	CK	SA	C	AT-1	RR		NA		
								CT-CC	RR			VR-20	
								CT-CO	RR			VR-20	
XS-2618A	F-6	NC	D	1.5	GA	EXP	C	DT	RR				
XS-2618B	D-6	NC	D	1.5	GA	EXP	C	DT	RR				

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
MO-2700	F-8	1	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	OP	020			
								PIT	2Y				
MO-2701	F-7	1	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	OP	020			
								PIT	2Y				
MO-2740	G-4	1	A	4	GL	MO	O	AT-1	RR		NA	VR-37	
								BTC	OP	010			
								PIT	2Y				

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-29-001	D-6	3	C	18	CK	SA	O	CT-CC CT-CO	OP OP				
V-29-003	D-5	3	C	18	CK	SA	O	CT-CC CT-CO	OP OP				
V-29-005	D-5	3	C	18	CK	SA	O	CT-CC CT-CO	OP OP				
V-29-007	D-4	3	C	18	CK	SA	O	CT-CC CT-CO	OP OP				

P&ID M-130 REVISION 16
SYSTEM : COMPRESSED AIR

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-30-287	B-8	NC	A	1	GA	M	C	AT-1	RR		NA	VR-36	

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-32-005	B-3	NC	C	1.5	CK	SA	C	CT-CO	OP				
V-32-010	B-2	NC	C	1.5	CK	SA	C	CT-CO	OP				
V-32-032	G-7	NC	A/C	.75	CK	SA	C	AT-6 CT-CC CT-CO	RR OP OP		NA		
V-32-034	D-7	NC	A/C	.75	CK	SA	C	AT-6 CT-CC CT-CO	RR OP OP		NA		

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-3704	H-7	3	A	3	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	004			
								FST	OP			VR-17	
								PIT	2Y				
CV-3705	H-7	3	A	3	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	004			
								FST	OP			VR-17	
								PIT	2Y				
CV-3728	D-6	3	A	3	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	004			
								FST	OP			VR-17	
								PIT	2Y				
CV-3729	D-6	3	A	3	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	004			
								FST	OP			VR-17	
								PIT	2Y				
SV-3704	G-7	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-3705	G-7	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-3728	C-6	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-3729	C-6	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	

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	18	BTF	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005		VR-37	
								FST	OP			VR-49	
								PIT	2Y			VR-17	
CV-4308	E-3	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005		VR-37	
								FST	OP			VR-49	
								PIT	2Y			VR-17	
CV-4309	D-7	NC	A	2	GA	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4310	D-7	NC	A	2	GA	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4311	F-3	NC	A	6	GA	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4312	F-3	NC	A	6	GA	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4313	F-3	NC	A	6	GA	AO	C/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4327A	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA		
								CT-CC	OP			VR-11	
								CT-CO	OP			VR-50	
								PIT	2Y			VR-50	

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-4327B	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				
CV-4327C	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				
CV-4327D	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				
CV-4327F	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				
CV-4327G	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				
CV-4327H	C-7	NC	A/C	18	CK	SAT	C	AT-4	RR		NA	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				
CV-4371A	E-5	NC	A	2	GA	AO	O/EC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4371C	E-5	NC	A	2	GA	AO	O/EC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				

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-4378A	E-5	NC	A	2	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	025			
								FST	OP			VR-17	
								PIT	2Y				
CV-4378B	E-5	NC	A	2	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	025			
								FST	OP			VR-17	
								PIT	2Y				
MO-4320A	C-3	NC	B	2	GA	MO	C	BTC	OP	012			
								BTO	OP	012			
								PIT	2Y				
MO-4320B	C-4	NC	B	2	GA	MO	C	BTC	OP	012			
								BTO	OP	012			
								PIT	2Y				
MO-4323A	B-3	NC	B	2	GL	MO	C	BTO	OP	040			
								PIT	2Y				
MO-4323B	B-4	NC	B	2	GL	MO	C	BTO	OP	040			
								PIT	2Y				
SV-4300	C-7	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4301	C-8	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4302	D-7	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4303	D-7	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4304	B-7	NC	B	.75	3WY	SO	NE	BTD	OP	NA		VR-2	
								BTE	OP	NA		VR-2	
SV-4305	B-7	NC	B	.75	3WY	SO	NE	BTD	OP	NA		VR-2	
								BTE	OP	NA		VR-2	

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
SV-4306	E-1	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4307	E-3	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4308	E-3	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4309	D-7	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4310	D-7	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4311	F-3	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4312	F-3	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4313	F-3	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
SV-4331A	C-2	2	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4331B	C-2	NC	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4332A	C-2	2	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4332B	C-2	NC	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				

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
SV-4333A	C-2	2	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4333B	C-2	NC	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4334A	B-2	2	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4334B	B-2	NC	A	2	GA	SO	C/KC	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								BTO	OP	005		VR-34	
								FST	OP			VR-17	
								PIT	2Y				
SV-4371A	E-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4371C	F-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4378A	E-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
SV-4378B	E-5	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
V-43-082	C-3	NC	C	2	CK	SA	C	CT-CO	RR			VR-24	
V-43-084	C-3	NC	C	2	CK	SA	C	CT-CO	RR			VR-24	

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-43-086	C-3	NC	C	2	CK	SA	C	CT-CO	RR			VR-24	
V-43-088	B-3	NC	C	2	CK	SA	C	CT-CO	RR			VR-24	
V-43-168	A-7	NC	A/C	20	CK	SA	C	AT-1 CT-CC CT-CO PIT	RR OP OP 2Y		NA	VR-37	
V-43-169	A-7	NC	A/C	20	CK	SA	C	AT-1 CT-CC CT-CO PIT	RR OP OP 2Y		NA	VR-37	
V-43-214	F-4	NC	A/C	2	CK	SA	C	AT-1 CT-CC	RR RR		NA	VR-25	

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-4909	H-6	3	B	24	BTF	AO	O/FC	BTC FST PIT	OP OP 2Y	060		VR-17	
CV-4910A	H-7	3	B	24	BTF	AO	O/FC	BTC FST PIT	OP OP 2Y	060		VR-17	
CV-4910B	H-7	3	B	24	BTF	AO	O/FC	BTC FST PIT	OP OP 2Y	060		VR-17	
SV-4909	H-6	NC	B	--	3WY	SO	NE	BTC FST	OP OP	NA		VR-2 VR-17	
SV-4910A	H-7	NC	B	--	3WY	SO	NE	BTC FST	OP OP	NA		VR-2 VR-17	
SV-4910B	H-7	NC	B	--	3WY	SO	NE	BTC FST	OP OP	NA		VR-2 VR-17	
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 OP			VR-39	
V-46-021	C-6	3	C	8	CK	SA	C	CT-CC CT-CO	RR OP			VR-39	
V-46-026	B-7	3	C	12	CK	SA	C	CT-CC CT-CO	OP OP				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-146 REVISION 15
SYSTEM : SERVICE WATER PUMP HOUSE

IST PROGRAM REVISION : 007 , 11/01/85

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-46-030	B-7	3	C	12	CK	SA	C	CT-CC CT-CO	OP OP				

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-5704A	H-6	NC	A	4	GL	AO	O/FO	AT-1	RR		NA	VR-37	
								BTC	OP	005			
								BTO	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-5704B	H-6	NC	A	4	GL	AO	O/FO	AT-1	RR		NA	VR-37	
								BTC	OP	005			
								BTO	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-5718A	B-8	NC	A	4	GL	AO	O/FO	AT-1	RR		NA	VR-37	
								BTC	OP	005			
								BTO	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-5718B	A-8	NC	A	4	GL	AO	O/FO	AT-1	RR		NA	VR-37	
								BTC	OP	005			
								BTO	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
SV-5704A	H-6	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
								BTE	OP	NA		VR-2	
SV-5704B	H-6	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
								BTE	OP	NA		VR-2	
SV-5718A	B-8	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
								BTE	OP	NA		VR-2	
SV-5718B	A-8	NC	B	-	3WY	SO	ND	BTD	OP	NA		VR-2	
								BTE	OP	NA		VR-2	

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

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-57-075	G-7	NC	A	3	GL	M	C	AT-1	RR		NA	VR-37	
V-57-076	F-7	NC	A	3	GL	M	C	AT-1	RR		NA	VR-37	
V-57-077	B-7	NC	A	3	GL	M	C	AT-1	RR		NA	VR-37	
V-57-078	A-7	NC	A	3	GL	M	C	AT-1	RR		NA	VR-37	

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-181 REVISION 10
SYSTEM : CONTAINMENT ATMOSPHERE MONITORING

IST PROGRAM REVISION : 007 , 11/01/85

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
SV-8101A	F-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8101B	F-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8102A	F-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8102B	F-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8103A	E-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8103B	E-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8104A	E-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8104B	E-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8105A	E-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	

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
SV-8105B	E-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8106A	E-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8106B	E-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8107A	D-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8107B	D-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8108A	D-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8108B	D-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8109A	D-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8109B	D-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	

P&ID M-181 REVISION 10
SYSTEM : CONTAINMENT ATMOSPHERE MONITORING

IST PROGRAM REVISION : 007 , 11/01/85

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
SV-8110A	D-5	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	
SV-8110B	D-4	NC	A	1	GL	SO	O/FC	AT-1	RR		NA		
								BTC	OP	NA		VR-32	
								FST	OP			VR-17	

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
MO-8401A	F-3	1	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8401B	F-3	1	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8401C	F-3	1	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8401D	F-3	1	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8402A	F-3	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8402B	F-3	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8402C	F-3	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8402D	F-3	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8403A	F-4	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				

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
MO-8403B	F-4	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8403C	F-4	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-8403D	F-4	NC	B	1	GA	MO	C	BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				

P&ID M-187 REVISION 01
SYSTEM : POST ACCIDENT SAMPLING SYSTEM

IST PROGRAM REVISION : 007 , 11/01/85

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
SV-8772A	B-8	NC	A	1	GL	SO	C	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-34	
								PIT	2Y			VR-17	
SV-8772B	B-8	NC	A	1	GL	SO	C	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-34	
								PIT	2Y			VR-17	

The American Society of Mechanical Engineers

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

February 16, 1978

Date 1/8/79

Revision 0

L. T. Harrold, Supervisor, ISI Programs
Washington Public Power Supply System
PO Box 968
3000 George Washington Way
Richland, WA 99352

Subject: Section XI, Division 1, IWA-1100
Scope of Section XI, Division 1

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

/fs