DUANE ARNOLD ENERGY CENTER

INSERVICE TESTING PROGRAM

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Effective Date: MAY 1, 1987

List of Effective Pages

TITLE: Duane Arnold Energy Center
Inservice Testing Program

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

ASME INSERVICE TESTING PROGRAM

FOR

PUMPS AND VALVES

RECORD OF REVISIONS

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
Rev. 8	April 1, 1987

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1.0 INTRODUCTION

Revision 8 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 X1, 1980 Edition through the Winter 1981 Addenda unless otherwise noted.

- 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. (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-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:

All pumps in Program

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 (Ql), lower than Qr, will be obtained and recorded along with the corresponding differential pressure (dPl). Next, a flowrate (Qh), higher than Qr, will be obtained and recorded along with its corresponding differential pressure (dPh). These two points, (Ql, dPl) 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 Ql and Qh. Procedural limits for Ql and Qh have been established and individual pump curves have been analyzed to ensure near linearity between Ql 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+) corresponding to the measured flowrate (Qa) on the pump curve and evaluated per the requirements of Table IWP-3100-2.

graph

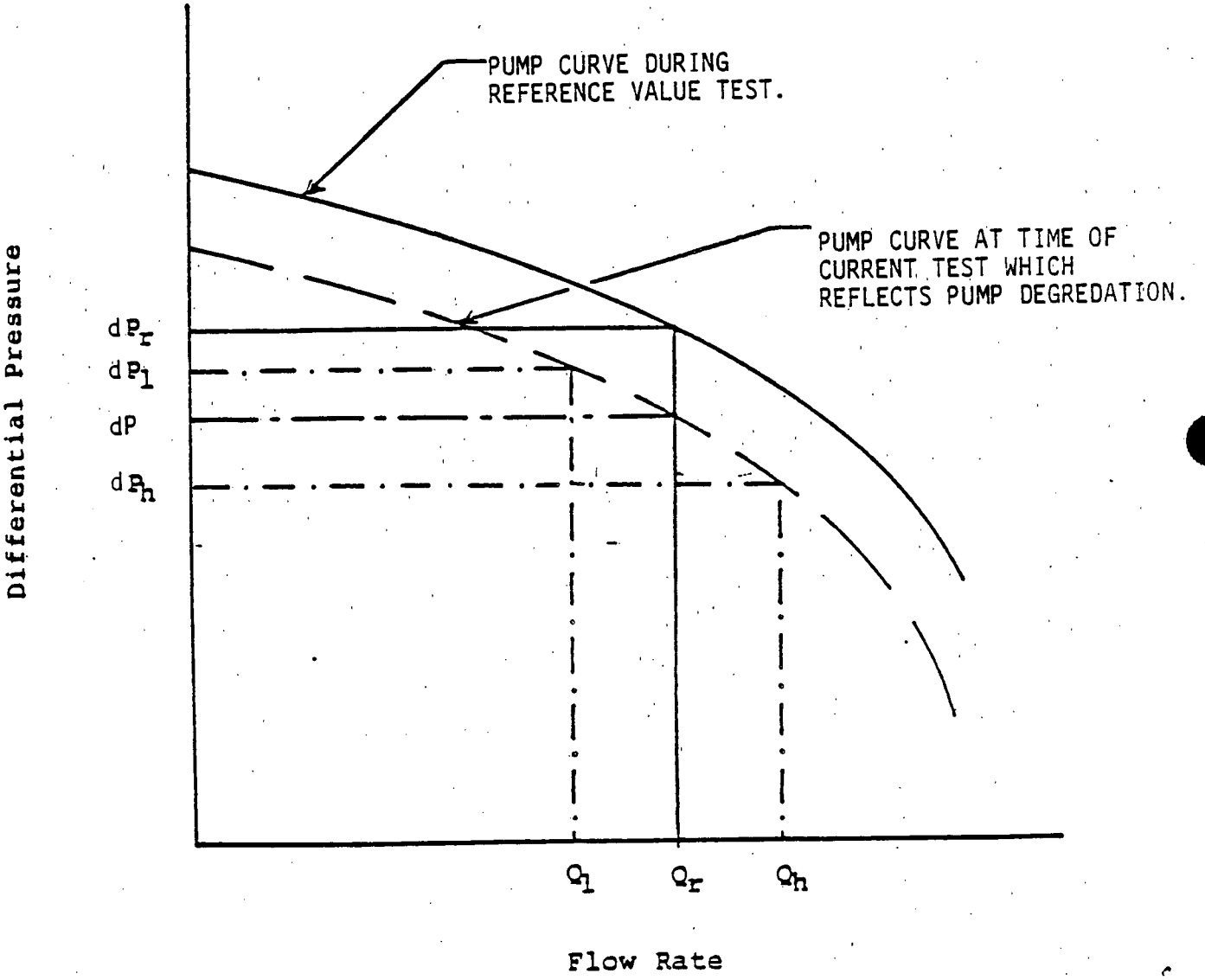

Figure PR-5.1 Alternate Testing Approach for Determination of Hydraulic Change

RELIEF REQUEST NO. PR-7

PUMP NUMBER:

CORE SPRAY 1P-211A & B
HIGH PRESSURE COOLANT INJECTION (HPCI) 1P-216

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
HPCI Pump Turbine Speed	2.26

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-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:

All pumps in Program.

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

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	$\pm$ 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 in Program.

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:

All pumps in Program.

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.

3.2 Deferred Testing

When a valve in a redundant system is determined to be inoperable, non-redundant valve(s) in the other train may not be tested (exercised), as required by plant procedures or this Program, but may be tested after the inoperable valve(s) are returned to service.

3.3 Valve Program Table

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 Type C 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 for operability in accordance with DAEC Technical Specifications, Section 4.7.D.1.d.
AT-4	Vacuum breaker leaktest	The suppression chamber-drywell vacuum breakers will be leak tested in accordance with DAEC Technical Specification, Section 4.7.A.4.d.
AT-5	Pressure isolation valve leaktest	Those valves so designated will be leak tested in accordance with Subsubarticle IWV-3420 per the NRC SER dated 9/26/83.
AT-6	Accumulator check valve test	Leaktesting of air/nitrogen accumulator check valves.
BTPC	Partial-stroke exercise test to the CLOSED position (IWV-3412)	Exercise test in the closed direction, verified by stroke time measurement, will be performed to confirm partial stroke capacity from intermediate position to the fully closed position.
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.
BTD	Full-stroke exercise test to de-energize position	Solenoid valves, which direct control air to main air-operated valves, are shown to stroke to their de-energized position by the proper operation of the associated main valves.

TABLE 3.1-1: INSERVICE VALVE TESTS

TEST	TEST NAME	TEST DESCRIPTION
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 associated 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 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-CPO	Check valve partial-stroke exercise test to the OPEN position (IWV-3522)	Check valves will be tested from the closed to a partially-open position.
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 shutdown is not required if plant operating conditions do not permit testing of specific valves.

SECTION 3.4

RELIEF REQUESTS FOR INSERVICE VALVE TESTING PROGRAM

RELIEF REQUEST NO. VR-1

SYSTEMS:

RHR Service Water

COMPONENTS:

MO-1947
MO-2046

CATEGORY:

B

FUNCTION:

These valves provide a return path for RHR service water from the RHR heat exchangers to the cooling towers. They are normally throttled to maintain a predetermined differential pressure across the RHR heat exchanger tubes and to prevent runout of the RHR service water pumps.

TEST REQUIREMENT:

Category B valves shall be full-stroke exercised as required by IWV-3412.

BASIS FOR RELIEF:

These valves are electrically interlocked with their respective pumps such that they open automatically with pump start and cannot be opened without at least one pump in operation. During system operation, they are only partially opened.

ALTERNATE TESTING:

Each valve will be operated in conjunction with RHR service water pump testing. In lieu of measuring stroke times, the necessary valve disc position and motion will be determined by observing system test parameters (flowrate and pressure) as permitted by IWV-3412(b).

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

SYSTEMS:

Residual Heat Removal

COMPONENTS:

V-19-0149
V-20-0082

CATEGORY:

A/C

FUNCTION:

These valves open to provide a pathway for LPCI flow into the recirculation system and close to isolate the RHR system from the high pressure of the recirculation system.

TEST REQUIREMENT:

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

BASIS FOR RELIEF:

During plant operation, manual stroking of these valves is not possible due to their location inside the drywell and stroking using system flow is precluded by the inability of the RHR pumps to overcome recirculation system pressure. When the plant is in cold shutdown, cooling water flow is normally directed through only one of these valves. While shifting system operation to the idle loop is possible, it is a time consuming and generally unnecessary evolution.

ALTERNATE TESTING:

V-19-0149 and V-20-0082 will be exercised by using a mechanical exerciser on a refueling outage basis.

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 due to the possibility of thermal shock to the reactor vessel feedwater nozzles and spargers and the potential for plant trip due to potentially severe reactor vessel water level transients. It is impractical to exercise this valve 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

SYSTEM:

Various

COMPONENTS:

PSV-1988	PSV-2109	PSV-4439A
PSV-2068	PSV-2129	PSV-4439B
PSV-1911	PSV-2223	PSV-4439C
PSV-1952	PSV-2228	PSV-4439D
PSV-2043	PSV-2301	PSV-4439E
		PSV-4439F

CATEGORY:

C

FUNCTION:

These valves provide overpressure protection to the associated system components.

TEST REQUIREMENT:

Safety and relief valves shall be tested in accordance with Subsection IWV-3510.

BASIS FOR RELIEF:

ANSI/ASME OM-1-1981 - Requirements for Inservice Performance testing of Nuclear Power Plant Pressure Relief Devices, was developed to supersede the requirements of Subsubsection IWV-3510. This standard is more definitive and better suited to operational testing than is ASME/PTC 25.3 which is referenced in IWV-3510.

ALTERNATE TESTING:

Safety and relief valves will be tested in accordance with the requirements of ANSI/ASME OM-1-1981.

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.

Relief is also 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 once per operating cycle as specified in DAEC Technical Specifications, Section 4.6.D.3. With reactor pressure >100 psig and turbine bypass flow to the main condenser, each relief valve will be manually opened and verified open by turbine bypass valve position decrease and the response of pressure switches and thermocouples downstream of the relief valves. Stroke times will not be measured.

RELIEF REQUEST NO. VR-7

SYSTEM:

Diesel Generator

COMPONENTS:

SV-3261A, SV-3261B
SV-3262A, SV-3262B

CATEGORY:

B

FUNCTIONS:

These valves are the air start solenoid valves for the A & B Standby Diesel Generators. When the start sequence for the diesel generators is initiated, these valves open to allow pressurized air stored in air receivers to charge the diesel generator air start headers.

TEST REQUIREMENT:

Exercise and time valves every three months (BTO).

BASIS FOR RELIEF:

Relief is requested for the stoke time requirements of Section XI. It is impractical to measure the stroke time of the air start valves directly, since there is no visible stem movement and the valves have no position indicators.

ALTERNATE TESTING:

Starting the Standby Emergency Diesel Generators using the air start system will be considered demonstration of proper operation of the air start solenoids. Therefore, the air start solenoids will be tested when the diesel generators are tested in accordance with Technical Specification 4.8.A.1.a.1. Technical Specification Section 4.8.A.1.a.1 states that the diesel generators shall be manually started once each month. Each air start solenoid will be exercised during this testing at least quarterly.

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.

RELIEF REQUEST NO. VR-8 (continued)

ALTERNATE TESTING:

These valves will be exercised in accordance with DAEC Technical Specifications, Section 4.7.D. During these tests, downstream tubing will be vented and drained and valve performance monitored by individual valve position indication and the cessation of flow from the instrument tubing. Following testing, each valve is opened by actuating a solenoid-operated bypass valve that equalizes pressure and allows the valve to reset (open). Individual valve position is provided.

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 is designed to verify leak tightness between the drywell and the suppression chamber and thus 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-13

SYSTEM:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

SV-1840 A & B
CV-1849
CV-1850
SV-1855
SV-1856
SV-1868 A & B
SV-1869 A & B
V-18-118 thru 206
V-18-919 thru 1007
V-18-1453 thru 1541

CATEGORY:

Category B -- CV-1849, CV-1850, SV-1840 A&B, 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 SCRAM water (from the accumulator) 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.

SV-1868 A & B and SV-1869 A & B - Safety related pilot valves for CV-1859A & B and CV-1867 A & B. Open on SCRAM signal to vent air operators.

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.

Exercising and measuring the individual stroke times for the solenoid valves is impractical since they possess no indicator lights. Operation of the main valve implies that the solenoid valve is performing satisfactorily. The only method of exercising these solenoids with their respective main valves is to simulate or experience a RPS trip. To simulate a RPS trip would require modifying the electrical configuration of the reactor protection system by jumpers, etc. and inserting a scram signal to each valve - a complex task.

ALTERNATIVE TESTING:

Proper operation of these valves is demonstrated by testing performed during plant operation or each refueling outage. SV-1840 A & B are tested once per operating cycle as required by a commitment (NG-84-0825). During the test, valve operation is locally observed upon initiation of a manual scram. This 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-13 (continued)

ALTERNATE TESTING: (continued)

CV-1849, CV-1850, SV-1855, SV-1856, V-18-1453 thru V-18-1541, and V-18-919 thru V-18-1007 -

These valves are tested once each operating cycle per DAEC Technical Specifications, Section 4.3.C. Following each refueling outage, all operable control rods are SCRAM time tested from the fully withdrawn position with nuclear system pressure above 950 psig. The time-position performance of each control rod and all rods collectively are compared against the acceptance criteria established for various rod insertion positions per DAEC Technical Specifications, Section 3.3.C.

V-18-118 thru V-18-206 -

Once each operating cycle, the CRD charging header is depressurized and HCU accumulator levels monitored over a period of time. Proper operation of these valves is verified by each accumulator remaining in a charged condition during the test.

V-18-919 thru V-18-1007 -

During normal plant operation at power, each partially or fully withdrawn operable control rod is exercised one notch at least once each week (Technical Specification, Section 4.3.A.2.a). Excessive backleakage through these valves would prevent rod movement.

SV-1868 A & B and SV-1869 A & B -

These valves are tested with the associated main valves (CV-1957A&B and CV-1967A&B). The main valves are exercised closed and the stroke times are verified to be within specified limits, during the Mode Switch Placed in Shutdown test, performed every refueling.

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-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. Technical Specification 4.4.A.2.b requires demonstration of design flow through the system and into the reactor vessel. Section 4.7.A.2.c refers to Appendix J, Type C leak testing.

RELIEF REQUEST NO. VR-21

SYSTEM:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-23-01

CATEGORY:

C

FUNCTIONS:

This valves is 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 this valve is to open to provide flow from the suppression pool to the HPCI pump.

TEST REQUIREMENT:

Exercise every three months (CT-CO).

BASIS FOR RELIEF:

There is no convenient method for verifying the ability of this valve 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 this valve has 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 valve during each refueling outage and verifying that the valve disk swings freely to the open position.

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. (Appendix J, Type C leak test.)

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. (Appendix J, Type C leaktest.)

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. (Appendix J, Type c leaktest.) Stroke times will not be measured.

RELIEF REQUEST NO. VR-33

SYSTEM:

CORE SPRAY

COMPONENTS:

V-21-072
V-21-073

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 must be operated at rated flow discharging directly into the reactor vessel. This cannot be done during normal operation because the core spray pumps are not capable of overcoming reactor pressure. 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 flowstream 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-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-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 will perform its containment isolation function.

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

(CONTINUED)

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 will perform its containment isolation function.

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-18-919 through V-18-1007

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

V-18-1453 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 will perform it's containment isolation function. 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)

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 will perform it's containment isolation function.

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 partial-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 drywell pressure decrease below that of the suppression chamber. These valves in conjunction with the torus to reactor building vacuum breakers protect the drywell if the drywell pressure becomes less then the reactor building.

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 008 04/15/87

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-5	Y:PR-5	N:PR-1	N:PR-14	QUARTERLY	NOTE-001
1P-044B	DFO	NC	M-132	A-3	NA	Y:PR-4	Y:PR-5	Y:PR-5	N:PR-1	N:PR-14	QUARTERLY	NOTE-001
1P-099A	ESW	3	M-146	B-7	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-099B	ESW	3	M-146	B-6	NA	Y:PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-112A	SCREEN	NC	M-129	C-7	NA	Y	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-112B	SCREEN	NC	M-129	C-3	NA	Y	Y:PR-5	Y:PR-5	Y	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	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

					INSERVICE TEST QUANTITIES							
PUMP NUMBER	PUMP NAME	IST CLASS	P&ID	P&ID COOR	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:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	
1P-230B	SBLC	NC	M-126	C-5	NA	Y PR-4	Y:PR-5	Y:PR-5	Y	N:PR-14	QUARTERLY	

FOOTNOTES FOR PUMP LISTING

(1) SEE PR-13

(2) SEE 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.

APPENDIX B

VALVE LISTING

PREPARED BY : JELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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	RR		NA		
								BTC	OP	005		VR-34	
								PIT	2Y				
TIP-BALB	----	NC	A	.375	BAL	SO	C	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								PIT	2Y				
TIP-BALC	----	NC	A	.375	BAL	SO	C	AT-1	RR		NA		
								BTC	OP	005		VR-34	
								PIT	2Y				
TIP-CK	----	NC	A/C	.375	CK	SA	C	AT-1	RR		NA		
								CT-CC	RR			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
SYSTEM : CONDENSATE & DEMINERALIZED WATER

IST PROGRAM REVISION : 008 , 04/15/87

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		PASSIVE
V-09-111	G-2	NC	A	1	GA	M	C	AT-1	RR		NA		PASSIVE

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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

IOWA ELECTRIC LIGHT AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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	NA		VR-35 VR-17	
CV-1956B	H-2	3	B	4	GA	AO	C/FO	BTO FST	OP OP	NA		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-1947	D-6	3	B	14	GA	MO	C	BTO PIT	OP 2Y	NA		VR-1	
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-2046	D-5	3	B	14	GA	MO	C	BTO PIT	OP 2Y	NA		VR-1	
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			

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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-1988	E-7	3	C	.75	RV	SA	C	CT-SP	5Y			VR-5	
PSV-2068	E-6	3	C	.75	RV	SA	C	CT-SP	5Y			VR-5	
SV-1956A	H-3	NC	B	-	3WY	SO	NE	BTD	OP	NA		VR-2	
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	

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-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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 : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT AND POWER

P&ID M-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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	OP	NA		VR-2	
								FST	OP			VR-17	
AP-4420B	----	NC	B	-	4WY	AP	NE	BTD	OP	NA		VR-2	
								FST	OP			VR-17	
AP-4421A	----	NC	B	-	4WY	AP	NE	BTD	OP	NA		VR-2	
								FST	OP			VR-17	
AP-4421B	----	NC	B	-	4WY	AP	NE	BTD	OP	NA		VR-2	
								FST	OP			VR-17	
CV-4412	E-3	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
CV-4413	E-2	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
CV-4415	C-7	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
CV-4416	C-8	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
CV-4418	C-3	1	A	20	GL	AO	O/FC	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-4419	C-2	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
CV-4420	E-7	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
CV-4421	E-8	1	A	20	GL	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	RR			VR-17	
								PIT	2Y				
MO-4423	B-3	1	A	3	GA	MO	C	AT-1	RR		NA		
								BTC	OP	015			
								PIT	2Y				
MO-4424	B-3	1	A	3	GA	MO	C	AT-1	RR		NA		
								BTC	OP	015			
								PIT	2Y				
MO-4441	B-3	1	A/C	16	SCK	SAM	O/KL	AT-1	RR		NA	VR-37	
								BTC	CS	053			
								CT-CC	CS				
								PIT	2Y				
MO-4442	B-7	1	A/C	16	SCK	SAM	O/KL	AT-1	RR		NA	VR-37	
								BTC	CS	053			
								CT-CC	CS				
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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-SP	5Y			VR-5	
PSV-4439B	B-4	3	C	6	RV	SA	C	CT-SP	5Y			VR-5	
PSV-4439C	A-5	3	C	6	RV	SA	C	CT-SP	5Y			VR-5	
PSV-4439D	B-4	3	C	6	RV	SA	C	CT-SP	5Y			VR-5	
PSV-4439E	A-5	3	C	6	RV	SA	C	CT-SP	5Y			VR-5	
PSV-4439F	A-4	3	C	6	RV	SA	C	CT-SP	5Y			VR-5	

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-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	

P&ID M-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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	
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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT AND POWER

P&ID M-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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	RR		NA		
								CT-CC	RR			VR-19	
V-14-016	D-5	NC	A/C	2	CK	SA	C	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-032	F-1	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-100	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-104	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-108	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-112	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-116	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-120	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
V-14-124	G-8	NC	A/C	.75	CK	SA	O	AT-6	RR		NA		
								CT-CC	RR			VR-19	
XFV-4453A	E-3	2	A/C	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								PIT	2Y				
XFV-4453B	D-3	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-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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	

P&ID M-114
SYSTEM : NUCLEAR BOILER

IST PROGRAM REVISION : 008 , 04/15/87

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	G-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
SYSTEM : REACTOR VESSEL INSTRUMENTATION

IST PROGRAM REVISION : 008 , 04/15/87

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 : JELF
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
SYSTEM : REACTOR VESSEL INSTRUMENTATION

IST PROGRAM REVISION : 008 , 04/15/87

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

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-115
SYSTEM : REACTOR VESSEL INSTRUMENTATION

IST PROGRAM REVISION : 008 , 04/15/87

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	

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	

P&ID M-116
SYSTEM : REACTOR RECIRCULATION

IST PROGRAM REVISION : 008 , 04/15/87

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	O	AT-1 BTC PIT	RR OP 2Y	005	NA	VR-37	
CV-4640	F-6	NC	A	.75	GL	AO	O	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	O	BTC PIT	CS 2Y	036			
MO-4630	C-8	1	B	4	GA	MO	O	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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-116
SYSTEM : REACTOR RECIRCULATION

IST PROGRAM REVISION : 008 , 04/15/87

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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT AND POWER

P&ID M-116
SYSTEM : REACTOR RECIRCULATION

IST PROGRAM REVISION : 008 , 04/15/87

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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-116
SYSTEM : REACTOR RECIRCULATION

IST PROGRAM REVISION : 008 , 04/15/87

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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-116
SYSTEM : REACTOR RECIRCULATION

IST PROGRAM REVISION : 008 , 04/15/87

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

P&ID M-117
SYSTEM : CONTROL ROD DRIVE HYDRAULIC

IST PROGRAM REVISION : 008 , 04/15/87

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	RR		NA		
								BTC	OP	005			
								PIT	2Y				
CV-1804B	A-5	NC	A	1	GL	AO	O	AT-1	RR		NA		
								BTC	OP	005			
								PIT	2Y				
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	RR		NA		PASSIVE
V-17-053	E-2	1	A/C	3	CK	SA	C	AT-1	RR		NA		PASSIVE
V-17-083	A-6	2	A/C	1	CK	SA	O	AT-1	RR		NA		
								CT-CC	RR			VR-12	
V-17-096	A-4	2	A/C	1	CK	SA	O	AT-1	RR		NA		
								CT-CC	RR			VR-12	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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	BTC FST	SP SP	NA		VR-13 VR-17	NOTE-001
CV-1850	D-6	2	B	.75	GA	AO	C/FO	BTC FST	SP SP	NA		VR-13 VR-17	NOTE-001
CV-1859A	G-4	NC	B	1	GL	AO	O/FC	BTC FST PIT	OP OP 2Y	030		VR-17	
CV-1859B	G-4	2	B	1	GL	AO	O/FC	BTC FST PIT	OP OP 2Y	007		VR-17	
CV-1867A	D-5	NC	B	2	GL	AO	O/FC	BTC FST PIT	OP OP 2Y	032		VR-17	
CV-1867B	D-5	2	B	2	GL	AO	O/FC	BTC FST PIT	OP OP 2Y	007		VR-17	
SV-1855	E-6	NC	B	-	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1856	E-6	NC	B	-	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1868A	D-4	NC	B	.25	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1868B	D-4	NC	B	.25	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1869A	D-4	NC	B	.25	3WY	SO	NE	BTD	SP	NA		VR-13	
SV-1969B	D-4	NC	B	.25	3WY	SO	NE	BTD	SP	NA		VR-13	
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

P&ID M-119
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 008 , 04/15/87

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-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			

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT AND POWER

P&ID M-119
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : Q08 , 04/15/87

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

P&ID M-119
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 008 , 04/15/87

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			VR-5	
PSV-1952	D-4	2	C	4	RV	SA	C	CT-SP	5Y			VR-5	
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				
V-19-149	E-7	1	A/C	20	CK	SA	C	AT-5 CT-CC CT-CO	RR RR RR		NA	 VR-3 VR-3	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-120
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 008 , 04/15/87

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

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-120
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 008 , 14/15/87

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				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-120
SYSTEM : RESIDUAL HEAT REMOVAL

IST PROGRAM REVISION : 008 , 04/15/87

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	OP	140			
								BTO	OP	140			
								PIT	2Y				
PSV-2043	D-6	2	C	4	RV	SA	C	CT-SP	5Y			VR-5	
V-20-001	B-3	2	C	12	CK	SA	C	CT-CC	OP				
								CT-CO	OP				
V-20-003	A-5	2	C	12	CK	SA	C	CT-CC	OP				
								CT-CO	OP				
V-20-006	B-4	2	C	3	CK	SA	C	CT-CC	OP				
								CT-CO	OP				
V-20-008	B-2	2	C	3	CK	SA	C	CT-CC	OP				
								CT-CO	OP				
V-20-082	F-3	1	A/C	20	CK	SA	C	AT-5	RR		NA		
								CT-CC	RR			VR-3	
								CT-CO	RR			VR-3	

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
SYSTEM : CORE SPRAY

IST PROGRAM REVISION : 008 , 04/15/87

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-2100	B-5	2	B	12	GA	MO	O/KL	BTO	OP	078			
								PIT	2Y				
MO-2104	D-3	2	B	2	GA	MO	O	BTC	OP	013			
								PIT	2Y				
MO-2112	F-5	2	B	8	GL	MO	C	BTC	OP	033			
								PIT	2Y				
MO-2115	G-5	2	A	8	GA	MO	O	AT-1	RR		NA		
								BTC	OP	008			
								BTO	OP	008			
								PIT	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			
								PIT	2Y				
MO-2120	C-5	2	B	12	GA	MO	O/KL	BTO	OP	078			
								PIT	2Y				
MO-2124	D-4	2	B	2	GA	MO	O	BTC	OP	013			
								PIT	2Y				
MO-2132	E-5	2	B	8	GL	MO	C	BTC	OP	033			
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-121
SYSTEM : CORE SPRAY

IST PROGRAM REVISION : 008 , 04/15/87

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-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			VR-5	
PSV-2129	E-4	2	C	2	RV	SA	C	CT-SP	5Y			VR-5	
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				
V-21-072	F-6	1	A/C	8	CK	SA	C	AT-5	RR		NA		
								CT-CC	RR			VR-33	
								CT-CO	RR			VR-33	
V-21-073	E-6	1	A/C	8	CK	SA	C	AT-5	RR		NA		
								CT-CC	RR			VR-33	
								CT-CO	RR			VR-33	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID : M-121
SYSTEM : CORE SPRAY

IST PROGRAM REVISION : 008 , 04/15/87

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-2119	G-7	2	A/C	1	XFC	SA	O	AT-2	RR				
								CT-CC	RR			VR-8	
								CT-CO	2Y				
XFV-2139	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
IST CLASS 1, 2, 3, AND NC VALVES
DUANE ARNOLD ENERGY CENTER

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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				
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	CS	013			
								BTO	CS	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				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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			VR-5	
PSV-2228	C-4	2	C	1	RV	SA	C	CT-SP	5Y			VR-5	
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	
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-CC	CS				
								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-CC	CS				
								CT-CO	OP				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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 PIT	RR RR 2Y			VR-8	
XFV-2246B	F-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-2246C	F-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	
XFV-2246D	E-6	2	A	1	XFC	SA	O	AT-2 CT-CC PIT	RR RR 2Y			VR-8	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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-2315	E-6	2	B	8	GL	AO	C	BTC	OP	024			
								PIT	2Y				
MO-2300	F-4	2	B	14	GA	MO	O	BTC	OP	077			
								PIT	2Y				
MO-2311	C-6	2	B	12	GA	MO	O	BTO	OP	018			
								PIT	2Y				
MO-2312	C-7	1	A	12	GA	MO	C	AT-1	RR		NA	VR-37	
								BTC	OP	020			
								BTO	OP	020			
								PIT	2Y				
MO-2316	E-6	NC	B	8	GA	MO	C	BTC	OP	024			
								PIT	2Y				
MO-2318	C-5	2	B	4	GL	MO	C	BTC	OP	018			
								BTO	OP	018			
								PIT	2Y				
MO-2321	A-7	2	B	14	GA	MO	C	BTC	OP	077			
								BTO	OP	077			
								PIT	2Y				
MO-2322	F-4	2	B	14	GA	MO	C	BTO	OP	077			
								PIT	2Y				
PSV-2301	F-3	2	C	1.5	RV	SA	C	CT-SP	5Y			VR-5	
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				
V-23-049	C-7	1	C	12	CK	SA	C	CT-CC	CS				
								CT-CO	CS				

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-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				
MO-2400	G-6	1	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	CS	020			
								PIT	2Y				
MO-2401	G-5	1	A	4	GA	MO	O	AT-1	RR		NA		
								BTC	OP	020			
								PIT	2Y				
V-24-008	D-7	NC	A/C	10	SCK	MSA	C	AT-1	RR		NA	VR-37	
								CT-CC	CS				
V-24-023	D-7	NC	A/C	10	CK	SA	C	AT-1	RR		NA	VR-37	
								CT-CC	CS				
V-24-046	D-7	NC	A/C	3	CK	SA	C	AT-1	RR		NA		
								CT-CC	CS				
V-24-047	D-7	NC	A/C	3	CK	SA	C	AT-1	RR		NA		
								CT-CC	CS				

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-2512	D-6	1	A	4	GA	MO	C	AT-1 BTC PIT	RR OP 2Y	015	NA	VR-37	

PREPARED BY : IELP
PROGRAM : PRISTM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-126
SYSTEM : STANDBY LIQUID CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-127
SYSTEM : REACTOR WATER CLEANUP

IST PROGRAM REVISION : 008 , 04/15/87

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

P&ID M-129
SYSTEM : RIVER WATER SUPPLY - INTAKE

IST PROGRAM REVISION : 008 , 04/15/87

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				

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-130
SYSTEM : COMPRESSED AIR

IST PROGRAM REVISION : 008 , 04/15/87

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		PASSIVE

P&ID M-132
SYSTEM : DIESEL GENERATOR SYSTEMS

IST PROGRAM REVISION : 008 , 04/15/87

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-3261A	---	NC	B	1.5	3WY	SO	C	BTO	OP			VR-7	
SV-3261B	---	NC	B	1.5	3WY	SO	C	BTO	OP			VR-7	
SV-3262A	---	NC	B	1.5	3WY	SO	C	BTO	OP			VR-7	
SV-3262B	---	NC	B	1.5	3WY	SO	C	BTO	OP			VR-7	
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		
V-32-043	F-8	NC	C	2	CK	SA	C	CT-CC CT-CO	OP OP				
V-32-045	F-7	NC	C	2	CK	SA	C	CT-CC CT-CO	OP OP				
V-32-052	C-8	NC	C	2	CK	SA	C	CT-CC CT-CO	OP OP				
V-32-054	C-7	NC	C	2	CK	SA	C	CT-CC CT-CO	OP OP				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-137
SYSTEM : RADWASTE SUMP

IST PROGRAM REVISION : 008 , 04/15/87

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	

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-143
SYSTEM : CONTAINMENT ATMOSPHERE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

VALVE NUMBER	P&ID COOR	IST CLASS	VALVE CAT	VALVE SIZE	VALVE TYPE	ACTUATOR TYPE	NORMAL POSITION	TEST	TEST FREQ	MAXIMUM STROKE TIME	MAXIMUM LEAKAGE	RELIEF REQUEST	REMARKS
CV-4300	C-7	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				
CV-4301	C-8	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				
CV-4302	D-7	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				
CV-4303	D-7	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				
CV-4304	B-7	NC	A	20	BTF	AO	C/FO	AT-1	RR		NA	VR-37	
								BTC	OP	005			
								BTO	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4305	B-7	NC	A	20	BTF	AO	C/FO	AT-1	RR		NA	VR-37	
								BTC	OP	005			
								BTO	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4306	E-1	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				

P&ID M-143
SYSTEM : CONTAINMENT ATMOSPHERE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				
CV-4308	E-3	NC	A	18	BTF	AO	C/FC	AT-1	RR		NA	VR-37	
								BTC	OP	005		VR-49	
								FST	OP			VR-17	
								PIT	2Y				
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	VR-11	
								CT-CC	OP			VR-50	
								CT-CO	OP			VR-50	
								PIT	2Y				

P&ID M-143
SYSTEM : CONTAINMENT ATMOSPHERE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				
CV-4371C	F-5	NC	A	2	GA	AO	O/FC	AT-1	RR		NA		
								BTC	OP	005			
								FST	OP			VR-17	
								PIT	2Y				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-143
SYSTEM : CONTAINMENT ATMOSPHERE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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	

P&ID : M-143
SYSTEM : CONTAINMENT ATMOSPHERE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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				

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-143
SYSTEM : CONTAINMENT ATMOSPHERE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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	OP				
V-43-084	C-3	NC	C	2	CK	SA	C	CT-CO	OP				

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SYSTEM : CONTAINMENT ATMOSPHERE CONTROL IST PROGRAM REVISION : 008 , 04/15/87

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	OP				
V-43-088	B-3	NC	C	2	CK	SA	C	CT-CO	OP				
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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

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

IST PROGRAM REVISION : 008 , 04/15/87

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	OP	060			
								FST	OP			VR-17	
								PIT	2Y				
CV-4910A	H-7	3	B	24	BTF	AO	O/FC	BTC	OP	060			
								FST	OP			VR-17	
								PIT	2Y				
CV-4910B	H-7	3	B	24	BTF	AO	O/FC	BTC	OP	060			
								FST	OP			VR-17	
								PIT	2Y				
SV-4909	H-6	NC	B	--	3WY	SO	NE	BTC	OP	NA		VR-2	
								FST	OP			VR-17	
SV-4910A	H-7	NC	B	--	3WY	SO	NE	BTC	OP	NA		VR-2	
								FST	OP			VR-17	
SV-4910B	H-7	NC	B	--	3WY	SO	NE	BTC	OP	NA		VR-2	
								FST	OP			VR-17	
V-46-011	B-5	3	C	12	CK	SA	C	CT-CC	OP				
								CT-CO	OP				
V-46-013	B-5	3	C	12	CK	SA	C	CT-CC	OP				
								CT-CO	OP				
V-46-018	C-6	3	C	8	CK	SA	C	CT-CC	RR			VR-39	
								CT-CO	OP				
V-46-021	C-6	3	C	8	CK	SA	C	CT-CC	RR			VR-39	
								CT-CO	OP				
V-46-026	B-7	3	C	12	CK	SA	C	CT-CC	OP				
								CT-CO	OP				

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

IST PROGRAM REVISION : 008 , 04/15/87

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	QP QP				

P&ID M-157
SYSTEM : DRYWELL COOLING WATER

IST PROGRAM REVISION : 008 , 04/15/87

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	

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	

P&ID M-181
SYSTEM : CONTAINMENT ATMOSPHERE MONITORING IST PROGRAM REVISION : 008 , 04/15/87

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	

PREPARED BY : IELP
PROGRAM : PRISIM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-181
SYSTEM : CONTAINMENT ATMOSPHERE MONITORING

IST PROGRAM REVISION : 008 , 04/15/87

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	

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-181
SYSTEM : CONTAINMENT ATMOSPHERE MONITORING

1ST PROGRAM REVISION : 008 , 04/15/87

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	

P&ID M-184
SYSTEM : MSIV LEAKAGE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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				

PREPARED BY : IELP
PROGRAM : PRISIM

INSERVICE TESTING PROGRAM

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

IOWA ELECTRIC LIGHT
AND POWER

P&ID M-184
SYSTEM : MSIV LEAKAGE CONTROL

IST PROGRAM REVISION : 008 , 04/15/87

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
SYSTEM : POST ACCIDENT SAMPLING SYSTEM

IST PROGRAM REVISION : 008 , 04/15/87

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

VALVE IST PROGRAM REMARKS

NOTE 001: THERE ARE 89 CRD HYDRAULIC CONTROL MODULES EACH CONTAINING ONE OF THESE VALVES. THE VALVE NUMBER LISTED IN THE VALVE IST PROGRAM IS TYPICAL OF 89.

NOTE 002: VALVE NO. V-18-0118 IS A TYPICAL VALVE NUMBER FROM A GROUP OF 89 VALVES. THE COMPLETE SET OF NUMBERS IS V-18-0118 THRU V-18-0206.

NOTE 003: VALVE NO. V-18-0919 IS A TYPICAL VALVE NUMBER FROM A GROUP OF 89 VALVES. THE COMPLETE SET OF NUMBERS IS V-18-0919 THRU V-18-1007.

NOTE 004: VALVE NO. V-18-1453 IS A TYPICAL VALVE NUMBER FROM A GROUP OF 89 VALVES. THE COMPLETE SET OF NUMBERS IS V-18-1453 THRU V-18-1541.

NOTE 005: THESE VALVES ARE VERIFIED TO OPEN DURING PERIODIC TESTING OF THE RCIC PUMP.

NOTE 006: SEE RELIEF REQUEST VR-2.

The American Society of Mechanical Engineers

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

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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

Member of Engineers Council for Professional Development and Engineers Joint Council

1. MO-4841A and MO-4841B - Reactor Building Closed Cooling Water System (RBCCW) Drywell Isolation Valves

During plant operation, RBCCW is supplied (and returned) through these valves to provide cooling to critical components located in the drywell including the reactor recirculation pump motor windings, seal water coolers, and lube oil coolers. Closing MO-4841A or B will interrupt cooling water flow and could result in damage to pump and motor components.

2. MO-4441 and MO-4442 - Reactor Feedwater Outboard Containment Isolation Valves

During plant operation at power, reactor feedwater is supplied through both these valves to maintain reactor coolant inventory in the reactor vessel and maintain reactor vessel water level. Closing either of these valves will isolate two of the four supplies of feedwater into the reactor vessel. This could result in thermal shock to the reactor vessel feedwater nozzles and spargers upon resumption of flow and a plant trip due to the potential for severe reactor vessel water level transients during the evolutions.

3. V-14-003 - Reactor Feedwater Inboard Containment Isolation Valve

During plant operation at power, reactor feedwater is supplied through this valve and V-14-001 to maintain reactor coolant inventory in the reactor vessel and maintain reactor vessel water level. Closing V-14-003 requires isolation of two of the four supplies of feedwater to the reactor vessel. This could result in thermal shock to the reactor vessel feedwater nozzles and spargers upon resumption of flow and a plant trip due to the potential for severe reactor vessel water level transients during the evolution.

4. MO-4627 and MO-4628 - Reactor Recirculation Pump Discharge Valves

Closing either of these valves during plant operation places the recirculation system in a "single loop" configuration. Although single-loop operation is possible, it requires power reduction and is a complex evolution. It is not considered prudent to routinely and voluntarily place the plant in this configuration.

5. MO-4629 and MO-4630 - Reactor Recirculation Pump Discharge Bypass Valves

During normal plant operation, these valves remain open to provide an improved environment for the 4-inch bypass piping. With the valves open and flow through the line, thermal stresses across the valves are eliminated as is the "dead leg" condition in the bypass line - a potential cause of stress corrosion cracking, (Reference General Electric SIL No. 104). If during testing, either of these valves were to fail in the closed position, prudency may require a plant shutdown to correct the problem and reopen the valve(s).

6. MO-2238 - High Pressure Coolant Injection Steam Supply Valve
MO-2400 - Reactor Core Isolation Cooling Steam Supply Valve

During plant operation these valves remain open to ensure steam supply to the respective turbine-driven pump. Exercising these valves to the closed position renders the associated system inoperable while the valve is closed. Since these valves are located inside the drywell and are inaccessible during operation, if one were to fail in the closed position during testing, the plant would enter into an LCO condition and ultimately require shutdown.

7. V-22-016 - HPCI Turbine Exhaust Check Valve
V-24-023 - RCIC Turbine Exhaust Check Valve

During plant operation these valves must be capable of opening to allow turbine exhaust steam to exit into the suppression chamber. Testing of these valves to the closed position requires downstream valves to be closed when air pressure is used to verify valve closure. While the tests are in progress, the respective pump is effectively inoperable since there is no pathway for turbine exhaust steam.

8. V-22-17 - HPCI Turbine Exhaust Stop-Check Valve
V-24-08 - RCIC Turbine Exhaust Stop-Check Valve

During plant operation these valves must be capable of opening to allow turbine exhaust steam to exit in to the suppression chamber. These valves are provided with a manual operator that forces the plug to the closed position. While the manual operation is in the closed position, the respective pump is effectively inoperable since there is no pathway for turbine exhaust steam. Furthermore, the associated turbine stop valve must be defeated in the closed position to preclude turbine auto initiation that could result in personnel injury as a result of steam exhausting via the blowout plugs.

9. V-22-021 - HPCI Condensate Drain Valve
V-22-022 - HPCI Condensate Drain Valve

During HPCI system operation these valves allow condensate to drain from the HPCI turbine exhaust drain pot to the suppression chamber. Testing of this valve to the closed position requires V-22-022 to be closed. If HPCI were to initiate while this test was in progress, condensate could backup into the turbine exhaust piping and casing resulting in potential damage to critical components or adverse affects with respect to system performance.

10. V-22-63 and V-22-64 - HPCI Exhaust Line Vacuum Breakers
V-24-46 and V-24-47 - RCIC Exhaust Line Vacuum Breakers

These valves open following operation of the respective turbine to prevent a vacuum buildup in the exhaust line and subsequent filling of the turbine exhaust piping from the torus. If HPCI should initiate during the period when these valves are isolated for air testing they would not function and repetitive operation of the pump could cause water to back fill into the piping. Operating a turbine with the exhaust piping filled with water could result in damage to the turbine or the exhaust piping.

11. MO-1908 and MO-1909 - Residual Heat Removal - Shutdown Cooling Supply Valves

These valves are electrically interlocked to prevent opening with reactor pressure greater than 135 psig to preclude overpressurization of the residual heat removal system.

12. V-23-049 - HPCI Pump Discharge Check Valve

This valve opens to provide an injection flow path into the reactor vessel for the HPCI system. Injection with the HPCI system at power is not possible due to the potential for severe reactor vessel water level transients that could result. This valve is not accessible during power operation.

REFERENCED MATERIAL FOR ATTACHMENT 1

operating plant services information letter

October 18, 1974
Tab "A"

SIL No. 104
Category 2

OPERATION WITH OPEN BYPASS VALVE IN RECIRC SYSTEM

The following presents the recommendation of GE-NED to implement operation with the recirc bypass valve open at all operating GE/BWRs, particularly at those having recirc pumps driven by MG sets.

Operation with the bypass open will avoid the thermal stresses in the bypass by eliminating the temperature differential between the bypass and the main recirc line during normal operation. It will also eliminate the "dead leg" condition as a potential cause of stress corrosion cracking. While neither the thermal stress nor dead leg conditions have been identified as the cause of cracks in any of the recently affected plants, any reduction of stress is an improvement, and elimination of dead legs is not detrimental.

The recommendation to operate "Bypass Open" applies to all GE/BWRs although completed engineering evaluations were done only for BWR/3 and BWR/4 plants which have jet pumps, MG sets and four-inch bypass lines. The recommendation, however, is equally valid for earlier plants, although there may be differences in interlocks, operating procedures, etc., which in these cases should be reviewed on an individual plant basis. GE-NED will provide technical assistance if requested; however, it is expected that in most cases such reviews will be conducted between the utility and the AEC.

A. Recommended Procedure for Implementing "Bypass Open" Operation, BWR/2, BWR/3 and BWR/4 Plants

1. Obtain AEC concurrence that bypass open operation is not an unresolved safety question, does not require a tech spec change, or is otherwise unacceptable.

2. During the next plant shutdown, visually or otherwise verify absence of bypass line vibration during cold pump operation at 20 percent pump speed, bypass open, main valve closed. For BWR/2, BWR/3 and BWR/4 plants, allowable vibration, as measured at the bottom of the bypass vertical leg and perpendicular to the plane formed by the vertical and horizontal legs of the main recirc pipe, should not exceed 0.4 inch, peak to peak. If the bypass has a strut, the allowable vibration is 0.07 inch, peak to peak.

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3. Existing pump start procedures still apply with the exception that bypass valve remains open instead of being closed. Keep the bypass valve open during all normal operating conditions.

4. There are no new restrictions on closing the bypass valve for purposes of isolating the recirc pump.

5. There are no changes required to the valve interlock system for either operating or safety reasons. The above is true for BWR/3 and BWR/4 plants. BWR/2 plants should review their system for confirmation.

B. BWR/3 and BWR/4 Evaluations

1. Calculations by GE-NED Engineering show that operation with the bypass valve open and the main valve closed and with the pump at 20 percent speed results in a flow of 800 - 1000 gpm through the bypass. Operation with the bypass valve open and the main valve open and the pump at 100 percent speed results in a flow of 500 - 600 gpm through the bypass. It is concluded that the flow rate during normal operation is less than during pump startup, during which no significant vibration has been noted.

2. For those plants having LPCI injection into the recirc loops, the discharge and bypass valves in the unbroken loop now close automatically on an accident signal. No change is required to accomplish this safety related action.

3. For those plants having LPCI injection into the vessel, closure of the bypass valve is not required during an accident involving severance of the recirc line.

If additional assistance is needed in implementing the above recommendation, contact GE-NED, Operating Plant Services, through your local GE service representative.

Prepared by: V. G. Grayhek

Approved by: D. G. Bridenbaugh, Manager
Performance Evaluation and
Improvement

Issued by: V. G. Grayhek, Manager
Performance Analysis and
Service Communications

Product Reference:

A71 - Plant Recommendations

operating plant services information letter

October 31, 1974

File: TAB "A"

SIL No. 104
Supplement 1
Category 4

OPERATION WITH OPEN BYPASS VALVE IN RECIRC SYSTEM

This supplement to SIL No. 104 (original SIL issued October 18, 1974) presents the GE-NED safety evaluation for operation with the recirculation system isolation valve bypass line open.

Operation with the recirculation pump isolation valve bypass line open is intended to provide an improved operating environment for the bypass line. The purpose of this evaluation is to verify that an unreviewed safety hazard does not exist for plant operation with the bypass valve open. Of primary concern here are the BWR 2, 3 and 4 reactors; however, the conclusions reached are considered applicable to BWR 5 and 6 reactors.

A review of the safety analysis shows that operation of the recirculation system with the bypass valve open or closed has an indeterminately negligible effect on the primary system coolant flow. Thus, operation with this valve in either position does not affect core characteristics, such as void fraction, which could have an effect on total core steady state and transient operation. Transient effects due to cold loop startup remain unchanged from the current safety analyses since the transient is based on the isolation valve being closed and the bypass valve open. Thus, there is no change from the safety analyses previously reviewed by the AEC.

A review of the accident considerations indicates that none of the analytical results would be changed. This review showed that the only case in which the bypass valve played a role was in the LPCI system operation during a LOCA. In this operating mode, initiation of the LPCI system also automatically initiates closure of the recirculation pump discharge isolation valves and the bypass valves. Regardless of the position of the valve initially, it receives a signal to close so that the final position of the valve in either case is closed. These valves are closed so that the coolant flow, which enters the recirculation system downstream of the valves, goes directly into the reactor and down through the jetpumps. This was also done (automatic

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valve closure) so that the valve would close if a LOCA occurred during pump startup with the valve open. These conditions have been previously reviewed by the AEC and there is no change in the safety analyses.

Conclusion

Based on this review of the safety analyses, operation with the bypass valve open does not present any new conditions which the AEC has not previously reviewed. This operation with this valve configuration does not present an unreviewed safety hazard.

Prepared by: V.G. Grayhek

Approved by: D.G. Bridenbaugh, Manager
Performance Evaluation and
Improvement

Issued by: V.G. Grayhek, Manager
Performance Analysis and
Service Communications

Product Reference:

A71 - Plant Recommendations

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 8, 1987

RECEIVED
APR 14 1987
NUCLEAR LICENSING

Docket No. 50-331

Mr. Lee Liu
Chairman of the Board and
Chief Executive Officer
Iowa Electric Light and Power Company
Post Office Box 351
Cedar Rapids, Iowa 52406

Dear Mr. Liu:

SUBJECT: TECHNICAL EXEMPTION FROM THE REQUIREMENTS OF APPENDIX J (TAC 56809)

Re: Duane Arnold Energy Center

The Commission has issued an exemption from certain requirements of Appendix J to 10 CFR Part 50 in response to your letters dated October 29, 1984 and December 7, 1984. Additional letters dated April 22, 1985 and July 15, 1985 clarified the request and responded to staff requests for additional information. Your letters requested two exemptions. One would exempt containment spray isolation valves from Appendix J, Type C, testing requirements and the other would exempt the flanges connecting the torus to the torus drain line piping from Type B testing requirements.

We have granted the exemption of the containment spray isolation valves from Type C testing. The basis for this action is included in the exemption and a Safety Evaluation supporting the staff's action is enclosed. The staff has determined that the exemption from Type B testing of the flanges connecting the torus to the torus drain line piping is not needed because there is a 30 day water seal around the flanges which places them outside Appendix J requirements. The basis for the staff position is also presented in the enclosed Safety Evaluation.

NRC / INPO DISTRIBUTION
Response Due: NO
SOR
• McGaughy • Loehrlein
• Lossly • McDermott
• Matthews • Miller
• Mineck • Murphy
• Reichert •
• Wilson • Peterson, N.
• Bolton • Salmon
• Browning • Shea (N&H)
• Burns • Shearer
• Forker • Smith, Jim
• Gucciardo • Swails
• Hannen • VanMiddlesworth
• Hingtgen • Vavra
• Kozman • Young
File Code: A-105, P-72a
Comm. Cont.
Reference:
•• Records Control

8704100079 (30pp)

received 4-13-87

The Exemption is being forwarded to the Office of the Federal Register for publication. The enclosed Environmental Assessment and Finding of No Significant Impact has been published in the Federal Register.

Sincerely,

Robert A Gilbert

Robert A. Gilbert, Project Manager
BWR Project Directorate #2
Division of BWR Licensing

Enclosures:
1. Exemption
2. Safety Evaluation
3. Environmental Assessment and Finding of No Significant Impact

cc w/enclosures:
See next page

Mr. Lee Liu
Iowa Electric Light and Power Company

Duane Arnold Energy Center

cc:
Jack Newman, Esquire
Kathleen H. Shea, Esquire
Newman and Holtzinger
1615 L Street, N. W.
Washington, D. C. 20036

Office for Planning and Programming
523 East 12th Street
Des Moines, Iowa 50319

Chairman, Linn County
Board of Supervisors
Cedar Rapids, Iowa 52406

Iowa Electric Light and Power Company
ATTN: D. L. Mineck
Post Office Box 351
Cedar Rapids, Iowa 52406

U. S. Nuclear Regulatory Commission
Resident Inspector's Office
Rural Route #1
Palo, Iowa 52324

Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Mr. Thomas Houvenagle
Regulatory Engineer
Iowa Commerce Commission
Lucas State Office Building
Des Moines, Iowa 50319

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
IOWA ELECTRIC LIGHT AND POWER COMPANY, ET AL	)	Docket No. 50-331
	)	
Duane Arnold Energy Center	)	

EXEMPTION

I.

Iowa Electric Light and Power Company (IELP/the licensee) is the holder of Facility Operating License No. DPR-49 which authorizes operation of the Duane Arnold Energy Center (DAEC/the facility). This license provides, among other things, that the facility is subject to all rules, regulations and orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility is a boiling water reactor located at the licensee's site in Linn County, Iowa.

II.

By letters dated October 29 and December 7, 1984, as supplemented April 22 and July 12, 1985, IELP requested two exemptions from the requirements of Appendix J, 10 CFR Part 50. The first would exempt containment spray isolation valves from Appendix J, 10 CFR Part 50, Section III.C.1 Type C testing and the second would exempt the flanges connecting the torus to the torus drain line piping from Appendix J, 10 CFR Part 50, Section III.B Type B test requirements. The staff has determined that the second exemption is not needed because the flanges are outside Appendix J requirements.

Pursuant to Final Rule 10 CFR 50.12 (50 FR 50764), published on December 12, 1985, the special circumstance for granting the one remaining exemption has been identified as follows:

8704080071 4pp

The containment spray subsystem consists of two 10" diameter lines to the spray headers in the drywell and two 4" diameter lines to the spray headers on top of the torus. Each line has two isolation valves outside containment that are normally closed. The inboard valves are required by Appendix J to be Type C tested. However, since the packing and body-to-bonnet seals are the only potential sources of leakage, the testing may be limited to these areas. To do this test according to Type C Appendix J requirements would require installation of an additional inboard valve inside containment and a test connection. Due to limited space in the drywell, such a modification would be difficult. The licensee, therefore, has proposed the following two-part alternative testing program:

(1) perform soap bubble testing on the valve body-to-bonnet seals during Type A Integrated Leak Rate testing and initiate corrective action if leakage is detected and

(2) pressurize between the inboard and outboard valves at the same frequency required for Type C tests to indicate the general condition of the valves.

The staff has determined that the alternate proposal will test the valves to an equivalent level as that required by the strict interpretation of Appendix J. Therefore, the strict application of the requirements is not necessary to achieve the underlying purpose of the regulation. Thus, the special circumstance presented in 10 CFR 50.12(a)(2)(ii) is applicable.

Accordingly, based on the above analysis, the staff concludes that, because the licensee's proposed alternate test method for the containment spray isolation valves Type C testing is equivalent to that required by Appendix J, the exemption from the requirements of Section III.C.1 of Appendix J to 10 CFR Part 50 is justified and should be granted.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption is authorized by law, will not endanger life or property or the common defense and security and is otherwise in the public interest; furthermore, in accordance with 10 CFR 50.12(a)(2)(ii), a special circumstance, as discussed above, is present. The Commission hereby grants an exemption, as described above, from Section III.C.1 of Appendix J to the extent that the alternate Type C test method proposed by the licensee for the containment spray isolation valves is acceptable.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the environment (52 FR 10833).

A copy of the Commission's concurrently issued Safety Evaluation related to this action is available for public inspection at the Commission's Public

Document Room, 1717 H. Street, N.W., Washington, D.C., and at the Cedar Rapids Public Library, 500 First Street, S.E., Cedar Rapids, Iowa 52401.

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

R. Wayne Houston, Acting Director
Division of BWR Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 8th day of April 1987

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AN EXEMPTION FROM CERTAIN REQUIREMENTS

OF APPENDIX J TO 10 CFR PART 50

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

On August 7, 1975, the NRC requested the licensee (Iowa Electric Light and Power Co.) to review its containment leakage test program for Duane Arnold Energy Center (DAEC) for compliance with the requirements of 10 CFR 50, Appendix J. In a letter dated October 13, 1975, the licensee identified several areas in the current Technical Specifications (TS) which deviated from the requirements of Appendix J. Subsequently, through submittals and telephone discussions, the licensee requested that certain test methodology, components and penetrations be exempted from Appendix J requirements. The NRC staff with its consultant, the Franklin Research Center (FRC), reviewed these submittals and prepared a Safety Evaluation Report (SER). The SER was forwarded to the licensee by letter dated January 17, 1984.

By letter dated October 29, 1984, as supplemented December 7, 1984 and April 22 and July 12, 1985, the licensee requested an exemption from the Type C testing requirements for containment spray isolation valves. In the December 7, 1984 letter, the licensee submitted a summary status of Appendix J issues resulting from the previous staff review:

- Torus Drain Line and RCIC steam supply line modifications to allow testing in accordance with Appendix J requirements are to be completed by the cycle 7/8 refueling outage.

- Valves MO-4423, MO-2238, MO-2400 are now leak testable in accordance with Appendix J. The Technical Specifications will be revised accordingly.

and requested the following exemptions from Appendix J:

- Exemptions from Appendix J testing requirements for containment spray isolation valves and torus drain line flanges.

The following evaluation addresses the acceptability of the licensee's Appendix J exemption requests.

8704080073 (4pp)

2.0 EVALUATION

2.1 Containment Spray Isolation Valves

The licensee requested an exemption from the requirements of Type C testing for containment spray isolation valves, MOV-1902, 1933, 2000 and 2006.

The containment spray subsystem, which delivers water to the spray headers through low pressure coolant injection (LPCI) loops, is an integral part of the residual heat removal (RHR) system. The subsystem consists of two 10" diameter lines to the spray headers in the drywell and two 4" diameter lines to the spray headers on top of the suppression pool. Each line has two isolation valves outside containment that are normally closed. The subject valves, MOV-1902, 2000, are the inboard valves which isolate the lines to the drywell spray headers and MOV-1933, 2006 are the inboard valves which isolate the lines to the torus spray headers. These valves are manually opened following a LOCA to divert the LPCI pump flow from the reactor vessel to the spray headers after core cooling requirements have been satisfied. FRC has previously reviewed these valves and found that, if any of them leak through the packing or body-to-bonnet seals, the leakage will cause containment air to reach the outside atmosphere. Consequently, Appendix J requires that these inboard valves be Type C tested. However, since the packing and body-to-bonnet seals are the only potential sources of leakage, the testing may be limited to these potential areas.

The containment spray isolation valves do not receive containment isolation signals, are required to remain closed for the duration of the accident when sprays are not required and are single active failure protected. In a letter dated July 12, 1985, the licensee explained that the existing configuration of the valves and the associated piping allows no practical means of testing these inboard valve seals. These inboard valves are located outside the drywell and the torus. There is no flange or other valve between the valve and the spray header. To pressurize the inboard valve from the containment side would require an additional inboard valve inside containment and a test connection. Due to limited space in the drywell, modifying the containment spray piping is undesirable. The licensee has proposed the following alternate testing of these valves in lieu of Type C testing:

(1) performing a soap bubble test on the valve body-to-bonnet seals during Type A testing and initiate corrective actions if leakage is detected.

(2) pressurizing between the inboard and outboard valves at the same frequency required for Type C tests to indicate the general condition of the valves.

The staff has reviewed the licensee's submittals and finds Type C testing of these valves to detect potential body-to-bonnet leakage is necessary. However, because of the difficulty in modifying the system due to limited space in the drywell, the staff considered the alternative test methods in lieu of Type C testing. Through the submittals and telephone conversations

with the licensee, the staff realizes that these inboard valves are designed at zero-leakage in the body-to-bonnet seals. If any leak through valve packing or seals is detected during Type A testing, the deteriorated packing and seal materials will be replaced. Furthermore, the piping around the valves is normally filled with water and water will flow into the containment to the spray header during accident conditions. Consequently, the possibility of containment air leakage through the body-to-bonnet seals would be minimized because of the water seal in the valve. Based on the above discussion, the staff concludes that the licensee requested exemption from Type C testing requirements for the inboard valve body-to-bonnet seals and its proposed alternative test methods summarized above and as detailed in the submittals are acceptable.

213A D. Grim 4/21/87

2.2 Penetrations N-~~231~~A and B

The licensee also requested an exemption from Type B testing requirements for flanges connecting the torus and torus drain line (penetrations N-~~231~~A and B).

213 D. Grim 4/21/87

The torus drain line is connected to the torus at two locations with flanges sealed with FLEXITALLIC spiral wound (inorganic) gaskets. The torus drain connections afford no mechanism for performing Type B testing. To perform Type B testing would require replacing the existing flanges and gaskets with flanges designed for double O-ring (organic) gaskets. The licensee stated that such a design modification would downgrade the integrity of the containment and requested an exemption from Type B testing with the following justification:

(1) The gasket and flange assemblies will be exposed to the Appendix J required Type A Containment Integrated Leak Rate Test (CILRT) pressure. Leakage through flanges could be identified and corrected.

(2) A constant pressure of approximately 5 psi (torus water head) would detect gross leakage of the gaskets.

(3) The flanges are rarely disassembled for maintenance or access. The probability of leakage through the flanges would not increase.

(4) The torus water provides a water seal for the submerged torus drain line. If the existing flanges should leak, the leakage rate would not be sufficient to expose the connection to the containment atmosphere within 30 days following a postulated accident.

The staff has reviewed the licensee's submittals and finds the torus drain line is below the torus water level and is water sealed. Since the licensee stated that the water seal will be maintained for 30 days following a postulated accident, there is no potential air leakage from containment through the flanges. Consequently, no Type B testing on the flanges is required and no exemption from Appendix J is required.

3.0 CONCLUSIONS

From its review of the licensee's submittals, the staff concludes the following:

(1) The licensee's proposals to exempt containment spray isolation valves from Type C testing and to use the alternative testing methods described above are acceptable.

(2) The licensee's proposed exemption from Type B testing for the flanges connected to the torus drain line is not required since the system is water sealed.

Principal Contributors: J. Guo

Dated: April 8, 1987

UNITED STATES NUCLEAR REGULATORY COMMISSION

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an exemption from certain testing requirements of Appendix J to 10 CFR Part 50 to the Iowa Electric Light and Power Company (IELP/the licensee) for the Duane Arnold Energy Center located at the licensee's site in Linn County, Iowa.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action

The proposed action would grant an exemption from Appendix J, Type C, testing requirements for containment spray isolation valves.

The Need for the Proposed Action:

The licensee has stated that the Type C testing requirement for the containment spray isolation valves is not practicable with the existing Duane Arnold Energy Center piping arrangement and proposes an alternate testing method which will also accurately determine the leakage rates for the valves.

Environmental Impact of the Proposed Action:

The proposed exemption only effects components which are within the site boundaries and actually within reactor secondary containment. There is no anticipated decrease in the reliability of these components to operate as designed in the event of an accident. Post-accident radiological releases will not differ from those determined previously and the proposed exemption

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does not otherwise affect facility radiological effluent or occupational exposures. With regard to potential nonradiological impacts, the proposed exemption does not affect plant nonradiological effluents and have no other environmental impact. Therefore, the Commission concludes there are no measurable radiological or nonradiological environmental impacts associated with the proposed exemption.

Alternatives to the Proposed Action:

Since the Commission has concluded there is no measurable environmental impact associated with the proposed exemption, any alternatives with equal or greater environmental impact need not be evaluated. The principal alternative to the exemption would be to require rigid compliance with the test procedures for Type C components required in Appendix J. Such action would not enhance the protection of the environment.

Alternative Use of Resources:

This action does not involve the use of resources not considered previously in the Final Environmental Statement for the Duane Arnold Energy Center, dated March 1973.

Agencies and Persons Consulted:

The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the proposed exemption. Based upon the environmental assessment, the NRC staff concludes that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this proposed action, see the licensee's letters dated October 29, 1984, December 7, 1984, April 22, 1985 and July 12, 1985. These letters are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the Cedar Rapids Public Library, 500 First Street, S.E., Cedar Rapids, Iowa 52401.

Dated at Bethesda, Maryland this 31st day of March 1987.

FOR THE NUCLEAR REGULATORY COMMISSION.

Daniel R. Muller, Director
BWR Project Directorate #2
Division of BWR Licensing

Iowa Electric Light and Power Company

December 7, 1984
NG-84-5036

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Duane Arnold Energy Center
Docket No. 50-331
Operating License No. DPR-49
Revised Schedule for 10 CFR Part 50, Appendix J
Modifications and Requests for Relief

References:
1) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), March 16, 1984 (NG-84-0668), RTS-112B
2) Safety Evaluation Report, D. Eisenhut (NRC) to L. Liu (Iowa Electric), January 17, 1984
3) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), August 24, 1984 (NG-84-3601)
4) Letter, M. Thadani (NRC) to L. Liu (Iowa Electric), August 24, 1984
5) Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC), October 29, 1984 (NG-84-4469)

File: A-286

Dear Mr. Denton:

The purpose of this letter is to inform you of the revised status of modifications required to conform to the testing requirements of 10 CFR Part 50, Appendix J and to request relief from certain portions of Appendix J. This letter is being submitted at the request of our NRC Project Manager so that all issues pertaining to the subject matter are addressed in a single document.

In our letter dated March 16, 1984 (Reference 1), we requested revision to the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC). The TS revisions were required to incorporate the findings of the NRC staff's Safety Evaluation Report (SER) (Reference 2). During the review of Reference 2, it was determined that several plant modifications were needed to fully implement the TS changes required by the NRC staff.

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In our letter of August 24, 1984 (Reference 3), it was noted that we had previously discussed the scope of the modifications with our NRC Project Manager in a March 15, 1984, telephone call and had agreed to provide, by September 15, 1984, a schedule for their completion. (Please note that our August 24 letter fulfilled our September 15 commitment.)

In Reference 3, we stated that three (3) modifications were needed to comply with the testing requirements of 10 CFR Part 50, Appendix J and that the modifications would be completed during the Cycle 8/9 refueling outage. The scope and schedule of these modifications were determined as a result of an ongoing Appendix J engineering evaluation.

Following our submittal of Reference 3, our NRC Project Manager requested that we expedite the completion of the modifications prior to the Cycle 8/9 refueling outage. Because our engineering evaluation was still in progress, we later determined that instead of three (3) modifications being needed, only two (2) were required to conform to the testing requirements of Appendix J (our engineering evaluation concluded that modification of the Main Steam Line Drain (Penetration No. X-8, Valve MO-4423) was not needed). In addition, it was found that the modifications needed for the Torus Drain Lines (Penetration No. N-213A/B, expansion bellows) and the RCIC and HPCI Steam Supply (Penetration No. X-10 and X-11, Valves CV-2410 and CV-2211) could be implemented during the upcoming Cycle 7/8 refueling outage instead of the Cycle 8/9 refueling outage.

On the same date that Iowa Electric transmitted Reference 3 to the NRC, we received Amendment No. 106 (Reference 4) to the Facility Operating License for the DAEC. Amendment No. 106 incorporated those changes that were requested via Reference 1. The transmittal letter of Reference 4 noted that implementation of other requested changes (Type B testing of containment penetrations N-213 A and B, and Type C testing of containment isolation valves MO-4423, CV-2410, MO-2400, MO-2238, CV-2211, MO-2000, MO-1902, MO-1933 and MO-2006) required completion of plant modifications scheduled in the future and that those changes would be considered in a future action when the required plant modification schedules were established. We agree with the NRC philosophy that Amendment No. 106 should have incorporated those TS changes which could be immediately implemented. However, the other changes which required modification to conform to 10 CFR Part 50, Appendix J, were still undergoing an engineering evaluation to determine if modifications were necessary. Thus, until Iowa Electric had concluded its engineering evaluation, we could not identify, with a high degree of confidence, those plant systems which required modifications to comply with the testing requirements of 10 CFR Part 50, Appendix J.

It is our understanding that Amendment No. 106 was issued based on a July 24, 1984, telephone conversation with our NRC Project Manager. During the telephone conversation, we informed our NRC Project Manager of the status of our Appendix J compliance effort with the best information available at the time. As discussed above, we were unaware that the modifications described in Reference 3 could be reduced from three to two and that we could expedite the modification schedules pursuant to our NRC Project Manager's request. We hope the revised modifications and schedules have not inconvenienced the Staff.

Iowa Electric has concluded its engineering evaluation and is providing, in Attachment 1, the latest status of our Appendix J effort.

Furthermore, as a result of our engineering evaluation, we have also concluded that two additional requests for relief are needed. These requests are presented in Attachments 2 and 3.

Because an application fee of $150 was submitted with our October 29, 1984, letter (Reference 5), additional application fees are not being submitted with this letter.

We appreciate the opportunity to discuss the status and background of Iowa Electric's efforts to comply with the testing provisions of 10 CFR Part 50, Appendix J.

Should you require any additional assistance, please feel free to contact my staff.

Very truly yours,

Richard W. McGaughy
Manager, Nuclear Generation

RWM/MG/ta*
Attachments: 1) Summary Status of 10 CFR Part 50, Appendix J Issues
2) Request for Exemption from Type C Testing Requirements
3) Request for Exemption from Type B Testing Requirements

cc: M. Grim
L. Liu
S. Tuthill
S. Swails
M. Thadani
T. Houvenagle (ICC)
NRC Resident Office
Commitment Control No. 84-0110

IOWA ELECTRIC LIGHT AND POWER COMPANY
DUANE ARNOLD ENERGY CENTER
DOCKET NO: 50-331
OPERATING LICENSE NO: DPR-49

SUMMARY STATUS OF 10 CFR PART 50, APPENDIX J ISSUES

I. The following items require modification to conform to the testing requirements of 10 CFR Part 50, Appendix J. This attachment supersedes the information contained in Reference 3.

A) Torus Drain Lines

1) Modifications to the expansion bellows on Penetrations N-213 A and B are required to permit testing in accordance with 10 CFR Part 50, Appendix J.

Schedule: The modification to the expansion bellows will be completed by the Cycle 7/8 refueling outage.

Reference: Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC) dated August 24, 1984 (NG-84-3601)

B) RCIC and HPCI Steam Supply

1) Modifications to the test connections to permit leaktesting of valves CV-2410 and CV-2211 (Penetrations X-10 and X-11) in the correct direction are required to meet the requirements of 10 CFR Part 50, Appendix J.

Schedule: The modifications to relocate the test connections will be completed by the Cycle 7/8 refueling outage.

Reference: Letter, R. W. McGaughy (Iowa Electric) to H. R. Denton (NRC) dated August 24, 1984 (NG-84-3601)

II. The following valves can be leak tested in accordance with 10 CFR Part 50, Appendix J. The DAEC Technical Specifications will be revised accordingly:

MO-4423
MO-2238
MO-2400

III. Relief is requested from the testing requirements of 10 CFR Part 50, Appendix J for the following areas:

1) Torus and Containment Spray Isolation Valves MOV-1902, 1933, 2000 and 2006 (Penetrations X-39 A/B and N-211 A/B).

Justification for the relief request is provided in Attachment 2.

2) Torus Drain Line Piping Flanges (Penetrations N-213 A and B).

Justification for the relief request is provided in Attachment 3.

IOWA ELECTRIC LIGHT AND POWER COMPANY
DUANE ARNOLD ENERGY CENTER
DOCKET NO: 50-331
OPERATING LICENSE NO: DPR-49

REQUEST FOR EXEMPTION FROM TYPE C TESTING REQUIREMENTS

Introduction

Pursuant to 10 CFR 50.55a(a)(5)(iv) and 10 CFR 50.12, Iowa Electric Light and Power Company requests exemption from the requirements of 10 CFR Part 50, Appendix J, Paragraph III.C (Type C Testing Requirements) for the Duane Arnold Energy Center (DAEC) Containment Spray Isolation Valves MOV-1902, 1933, 2000 and 2006.

It has been determined that the Type C testing requirement is not practicable with the existing DAEC piping arrangement; therefore, exemption is requested from the Type C testing requirement with proposed alternate testing methods to determine the leakage rates for the valves. This relief request supersedes a similar request proffered in our letter dated October 29, 1984 (Reference 5).

The following information provides the background and justification pertinent to our request for relief from the requirements for Type C testing of the Torus/Containment Spray isolation valves.

Background

In letters dated October 13, 1975 (L. Liu (Iowa Electric) to K. Goller (NRC), IE-75-1103) and August 29, 1978 (L. Liu (Iowa Electric) to H. Denton (NRC), IE-78-1269), Iowa Electric Light and Power Company requested exemption from Type C testing requirements for penetrations X-39A/B and N-211A/B (Torus and Containment Spray Lines).

In a Safety Evaluation Report (SER) dated December 29, 1976, the NRC staff provided their disposition of the October 13, 1975, letter. The NRC staff stated,

> "IELPCo (Iowa Electric) maintains that several lines do not include containment isolation valves corresponding to the definition of valves requiring Type C tests in Appendix J because these valves do not receive containment isolation signals, are required to remain open for the duration of the accident, or would remain pressurized for the duration of the accident. The lines containing these valves are the RHR suppression pool suction, the core spray suction, the suppression pool suction for RCIC and HPCI, the LPCI injection, the suppression pool spray, the RHR test line, the vessel head spray, and the containment spray.

> In conclusion, the NRC staff stated, "We find that the licensee's proposed exemption from the requirements of Section II.H of Appendix J for the above cited valves is acceptable, provided that the licensee shows that these valves will continue to function even if a single active failure were to occur." (emphasis added)

By letter dated August 29, 1978, Iowa Electric responded to the Staff's request for additional information. In our response, we noted, "the containment isolation function is single active failure protected..."

The above noted Iowa Electric exemption request and clarification, and the Staff's subsequent disposition, are further embodied in the attachment to the Staff's SER dated January 17, 1984. The Staff's prime contractor for the review of the exemption request, Franklin Research Center (FRC), stated that the inboard isolation valves for both the containment spray and suppression pool (torus) are located outside containment (e.g., valves MOV 1902, 2000, 1933 and 2006) and that, "if any of these valves leak through the packing or body-to-bonnet seals, the leakage of containment air reaches the outside atmosphere. Consequently, Appendix J requires that these valves be tested. However, since the packing and body-to-bonnet seals are the only potential sources of leakage, the testing may be limited to these particular areas" (emphasis added).

The NRC staff, in their January 17, 1984, SER, agreed with FRC by stating,

> "for penetration X-39B (sic), the inboard isolation valves should be tested in the direction of accident pressure or by pressurizing between the inboard and outboard isolation valves in order to test the valve packing and body-to-bonnet seals of the inboard valve. For penetration (sic) N-211A & B, the inboard isolation valves should be tested in the direction of accident pressure or by pressurizing between the inboard and outboard valves provided that this testing will expose the packing and body-to-bonnet seal areas of the inboard valves to the test pressure."

Basis for Relief from Type C Testing Requirements

With regard to the foregoing background information and NRC guidance, Iowa Electric requests exemption from the requirements of Type C testing (as interpreted by the Staff) for valves MOV-1902, 1933, 2000 and 2006. In lieu of the Type C testing, we propose the following testing alternative.

1) During Type A testing, the subject valves will be placed in the open position, thereby exposing the gaskets and packing to the containment test pressure. While maintaining containment test pressure, leakage from the valve gaskets and stem packings will be locally identified by non-obtrusive leak detection techniques. Should excessive leakage be detected, corrective actions will be initiated, as appropriate, to eliminate any unacceptable leakage.

2) The subject valves will be leak tested by pressurizing between the inboard and outboard valves. Although there is no conclusive evidence that the packing and gaskets are pressurized during this test, it will provide an indication of the general condition of the valves.

Conclusion

Iowa Electric believes the proposed alternate testing of the subject valves is acceptable and relief from Type C testing requirements should be granted because:

- The area of potential leakage and concern, as noted by FRC, is in the packing and body-to-bonnet seals. The proposed alternate testing will be effective in identifying leakage from the packing and seals; and,

- All four valves will be leak tested by pressurizing between the inboard and outboard valves. Pressurizing between the valves follows the Staff's guidance contained in the January 17, 1984, SER.

IOWA ELECTRIC LIGHT AND POWER COMPANY
DUANE ARNOLD ENERGY CENTER
DOCKET NO: 50-331
OPERATING LICENSE NO: DPR-49

REQUEST FOR EXEMPTION FROM TYPE B TESTING REQUIREMENTS

Introduction

In accordance with 10 CFR 50.12 and 10 CFR 50.55a(a)(5)(iii), Iowa Electric Light and Power Company requests exemption from the Type B testing requirements of 10 CFR Part 50, Appendix J, Paragraph II.G. Specifically, Iowa Electric requests relief from testing requirements for flanges connecting the torus and torus drain line piping (penetrations N-213A and B).

The following information provides justification for this exemption and describes alternative testing methodology. Iowa Electric believes this exemption is in the best interest of the public health and safety as modification of the flanges, to permit Type B testing, would downgrade the integrity of the containment system.

Paragraph II.G of 10 CFR Part 50, Appendix J describes Type B tests as, "...tests intended to detect local leaks and to measure leakage across each pressure-containing or leakage-limiting boundary for the following primary reactor containment penetrations:

1. Containment penetrations whose design incorporates resilient seals, gaskets, or sealant componds (sic), piping penetrations fitted with expansion bellows, and electrical penetrations fitted with flexible metal seal assemblies."

The Duane Arnold Energy Center (DAEC) torus drain line is connected to the torus at two locations with 150 pound ASA class flanges sealed with spiral-wound gaskets. These connections afford no mechanism for conducting conventional Type B testing, e.g., pressurizing between two concentric gaskets.

Performance of Type B testing on the flanges and gaskets would require their replacement. Iowa Electric believes modification or replacement of the flanges would downgrade the integrity of the containment system.

Basis for Relief from Type B Testing Requirements

As noted above, the torus drain connections afford no mechanism for performing conventional Type B testing. Flanges with spiral-wound gaskets are used throughout the power industry and have proven to be highly reliable. Due to the mild service conditions to which these gaskets are subjected, and because of their design specification, significant gasket degradation during the life of the plant is highly unlikely. To perform Type B testing pursuant to Paragraph II.G.1 of 10 CFR Part 50, Appendix J would require replacing the existing flanges and spiral-wound gaskets, composed of inorganic material such as asbestos and stainless steel, with new flanges whose design accommodates two

concentric O-ring gaskets composed of organic material. Iowa Electric believes such a modification, to permit Type B testing, would introduce an inferior gasket material subject to aging, deterioration and leakage. Thus, modifying the present connection would decrease the reliability and integrity of the containment system.

Relief from the Type B testing requirements of Paragraph II.G.1 of 10 CFR Part 50, Appendix J should be granted for the following reasons:

1) The gasket and flange assemblies are tested during performance of the DAEC Integrated Leakrate Test (ILRT) which is conducted at approximately one-half the frequency of the Local Leakrate Test (Type B). Pressurizing the torus during the ILRT places full accident pressure across the gaskets. Any leaks would be identified and corrected.

2) A constant internal pressure of approximately 5 psi is applied to the flanges and gaskets by the water head in the torus. Any gross leakage of the gaskets would be identified during routine plant inspection tours. (The existing type of gasket utilized at the DAEC is not known to be susceptible to gross, catastrophic failure).

3) These flanges are rarely disassembled either for maintenance or access; therefore, damage or errors during flange assembly do not increase the probability of these connections leaking.

4) The torus water provides a water seal for the submerged torus drain line. If the existing flanges should leak, the leakage rate would not be sufficient to expose the connection to the containment atmosphere within thirty (30) days, at a pressure of L_a, following a postulated accident.

Conclusion

Based on the foregoing information, relief should be granted from the Type B testing requirements of Paragraph II.G.1 of 10 CFR Part 50, Appendix J for these flanges since it would be in the best interest with regard to protection of the public health and safety.

Iowa Electric Light and Power Company

April 30, 1986
NG-86-0795

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Technical Specification Change (RTS-174A)
Maintenance of ECCS Discharge Piping Fluid
References: 1) Letter, M. Thadani (NRC) to L. Liu (Iowa Electric) dated January 9, 1986
2) Letter, R. McGaughy (Iowa Electric) to H. Denton (NRC) dated October 17, 1984 (NG-84-4273)
File: A-107a

Dear Mr. Denton:

In accordance with the Code of Federal Regulations, Title 10, Sections 50.59 and 50.90, Iowa Electric Light and Power Company hereby supplements its request of October 17, 1984, for revision of the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC).

This submittal responds to the referenced letter in which the NRC staff requested additional clarification regarding action to be taken if the emergency core cooling system piping cannot be filled with water within one hour after discovery of its unfilled status.

This supplement (proposed change RTS-174A) has been reviewed by the DAEC Operations Committee and DAEC Safety Committee. As a fee of $150 was included with our initial application, additional fees are not being included with this letter.

Pursuant to the requirements of 10 CFR 50.91, a copy of this submittal, including the hazards considerations analysis, is being forwarded to our appointed state official.

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This application, which consists of three signed originals and 37 copies with their enclosures, is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

BY Richard W. McGaughy
Richard W. McGaughy
Manager, Nuclear Division

Subscribed and sworn to Before Me on
this 1st day of May 1986.

Kathleen M Furman
Notary Public in and for the State of Iowa

RWM/MSG/ta*

Attachments: 1) Evaluation of Change Pursuant to 10 CFR 50.92
2) Proposed Change RTS-174A including List of Affected Pages

cc: M. Grim
L. Liu
L. Root
M. Thadani
NRC Resident Office
T. Houvenagle (ICC)

EVALUATION OF CHANGE WITH RESPECT TO 10 CFR 50.92

Summary

By submittal dated October 17, 1984 (RTS-174), supplemented by submittal dated April 28, 1986 (RTS-174A), Iowa Electric Light and Power Company (the licensee) requested amendment of Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC) to add action statements to Technical Specification (TS) 3.5.H, Limiting Condition for Operation (LCO), Maintenance of Filled Discharge Pipe. The proposed action statements would direct operator action in the event the LCOs cannot be met. (The Technical Specifications presently give no such guidance.)

DAEC Technical Specification 3.5.H presently requires that the discharge piping of the HPCI, RCIC, LPCI, and Core Spray Systems be maintained filled with fluid to the last block valve when operability of these systems or subsystems is required. Maintaining the lines filled minimizes the possibility of water hammer and system damage, when the systems are started to provide their designed safety function.

The filled status of the core spray and LPCI lines is continuously monitored by measuring the static pressure in the filled lines; annunciation occurs if the pressure decreases below a set limit. The HPCI and RCIC systems are normally aligned to the Condensate Storage Tank (CST) and, in this alignment, the piping is maintained full.

The licensee proposes to add Action Statement 3.5.H.1.a which specifies that, when these systems are required to be operable, the lines must be returned to the filled condition within 1 hour. If Action Statement 3.5.H.1.a cannot be met, the licensee must follow Action Statement 3.5.H.1.b which requires that the affected system(s) be placed in the test mode (i.e., the pump will be operated, thus assuring the lines are filled) or declared inoperable. In the latter event, the existing LCO for that system must be implemented.

The licensee also proposes to remove Surveillance Requirement 4.5.H.1 from the Technical Specifications. This surveillance test requires that, whenever the HPCI or RCIC systems are aligned to take suction from the torus (the torus serves as a backup water supply to the CST), the discharge piping of the HPCI and RCIC shall be vented from the high point on the injection line and water flow observed on a monthly basis. The basis for removal of the surveillance requirement is threefold. First, should the HPCI or RCIC automatically switch from the normal source of water (the CST) to the backup water supply (the torus), the plant operator may return the system to its normal supply (the CST) after the signal, which caused the switch, is cleared. Thus, a situation where the HPCI or RCIC systems would be lined up to the backup water supply (the torus) may occur for only a few minutes, not for an entire month which is currently implied by Technical Specification 3.5.H.1. Second, the normal torus water level is at an elevation of 729 feet 5 1/4 inches with the high point vent of the systems at an elevation of 760 feet. Therefore, with neither the HPCI nor RCIC pump in operation, a downward gravity flow is assumed and the water in the discharge line would reach equilibrium with the torus water level of 729 feet 5 1/4 inches.

Third, the implementation of proposed Action Statement 3.5.H.1.b provides assurance the plant is placed in a safe condition if the discharge lines from the pump discharge of these systems to the last block valve cannot be filled.

In accordance with the requirements of 10 CFR 50.92, the enclosed application is judged to involve no significant hazards based upon the following information:

(1) Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: Iowa Electric has evaluated the proposed license amendment and has determined it does not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed license amendment provides direction to the operator regarding the actions to be taken if the discharge piping of the above-mentioned system(s) cannot be filled. The actions to be taken are conservative in nature, and would minimize the possibility of a water hammer in the affected piping.

Removal of the surveillance requirement which requires venting of the HPCI and RCIC systems whenever they are lined up to take suction from the torus does not involve any increase in the consequences of an accident previously evaluated as the implementation of Action Statements 3.5.H.1, 3.5.H.1.a and 3.5.H.1.b further minimize the possibility of water hammer occurrence.

(2) Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: Iowa Electric has evaluated the proposed license amendment and has concluded that, if action is taken to ensure that the discharge piping is maintained in a filled configuration, the possibility of a water hammer is minimized. In addition, if the discharge piping cannot be maintained in a filled configuration, the operator must take direct (and conservative) action to either fill the piping or declare the affected system(s) inoperable and enter the applicable Limiting Condition for Operation.

Based upon the proposed action statements, we conclude the proposed license amendment does not create the possibility of a new or different kind of accident from those previously evaluated.

(3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: The proposed license amendment does not involve any reduction in the plant margin of safety. The adoption of Action Statements 3.5.H.1.a and 3.5.H.1.b will direct the course of action for the operator to take if the discharge piping is not maintained in a filled condition. As these actions are conservative, the possibility of introducing a water hammer into the piping system is minimized.

In the April 6, 1983 Federal Register, the NRC published examples of license amendments that are not likely to involve a significant hazards concern if operation of the facility, in accordance with the proposed amendment, involves only one or more of the following examples:

(ii) A change that constitutes an additional limitation, restriction, or control not presently included in the Technical Specifications: for example, a more stringent surveillance requirement.

Iowa Electric believes this proposed license amendment request (RTS-174A) does not involve a significant hazards concern as it clearly fits within the framework of the above example.

Proposed Change RTS-174A
to the
Duane Arnold Energy Center
Technical Specifications

The holders of license DPR-49 for the Duane Arnold Energy Center propose to amend Appendix A (Technical Specifications) to said license by deleting the current pages and replacing them with the attached, new pages. A List of the Affected Pages is provided below.

List of Affected Pages

3.5-11
3.5-24

	Page	Description
1)	3.5-11	Add additional Limiting Condition for Operation statements 3.5.H.1.a and 3.5.H.1.b. These additional restrictions require that the plant operator take specific actions whenever the discharge piping for the core spray or LPCI subsystems, HPCI or RCIC systems is not filled to the last block valve.
2)	3.5-11	Remove Surveillance Requirement 4.5.H.1. Change test frequency of Item 1 from "every operating cycle" to "once per operating cycle." Remove reference to HPCI and RCIC systems.
	Bases	
1)	3.5-24	Provide additional information in the technical specification bases to address the addition of Specifications 3.5.H.1.a and 3.5.H.1.b.

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LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
H. Maintenance of Filled Discharge Pipe	H. Maintenance of Filled Discharge Pipe
1. Whenever core spray subsystems, LPCI subsystems, HPCI, or RCIC are required to be OPERABLE, the discharge piping from the pump discharge of these systems to the last block valve shall be filled.	1. The following surveillance requirement shall be adhered to, to assure that the discharge piping of the core spray and LPCI subsystems are filled:
a. If the pump discharge piping of the core spray or LPCI subsystems depressurizes below the system low pressure alarm setpoint while these systems are required to be OPERABLE, the pressure shall be restored within one hour.	a. The pressure switches which monitor the LPCI and core spray lines to ensure they are full shall be functionally tested once per operating cycle.
b. If Specification 3.5.H.1 or 3.5.H.1.a cannot be met, either place the affected system(s) in the test mode or declare the affected system(s) inoperable and enter the applicable LIMITING CONDITION FOR OPERATION as described in Specification 3.5.A, 3.5.D or 3.5.E.	
I. Engineered Safeguards Compartments Cooling and Ventilation	I. Engineered Safeguards Compartments Cooling and Ventilation
If both unit coolers serving either the RCIC or HPCI room are out of service, the associated pump shall be considered inoperable for purposes of Specifications 3.5.D or 3.5.E as applicable.	The unit coolers for each of the RCIC, HPCI, Core Spray, and RHR pump rooms shall be checked for operability during surveillance testing of the associated pumps.
If the single unit cooler serving either compartment which houses two RHR pumps and a core spray pump is out of service for a period greater than seven days, the associated pumps shall be considered inoperable for purposes of Specification 3.5.A.	

in this piping when the pump and/or pumps are started. If a water hammer were to occur at the time at which the system were required, the system would still perform its design function. However, to minimize damage to the discharge piping, Specification 3.5.H requires that the core spray and LPCI discharge piping pressure be restored within one hour after system depressurization when the system is required to be operable. Likewise, for HPCI and RCIC, the discharge piping to the last block valve shall be filled when these systems are required to be operable. If the discharge piping pressure for the core spray and LPCI subsystems cannot be restored within one hour or the discharge piping for HPCI and RCIC cannot be maintained in a filled condition to the last block valve, the operator is required to perform either of the following actions:

1) place the affected system(s) in the test mode which will ensure that the discharge piping is filled with water, or

2) declare the affected system(s) inoperable in which case the operator will enter the applicable LCO for the affected system(s) as defined in Specification 3.5.A (core spray and LPCI), 3.5.D (HPCI), or 3.5.E (RCIC).

The above actions minimize the possibility of a water hammer and are considered conservative in nature.

I. Engineered Safeguards Compartments Cooling and Ventilation

One unit cooler in each pump compartment is capable of providing adequate ventilation flow and cooling. Engineering analyses indicate that the temperature rise in safeguards compartments without adequate ventilation flow or cooling is such that continued operation of the safeguards equipment or associated auxiliary equipment cannot be assured.

SUMMARY - IST PROGRAM CHANGES

1. Changed paragraph 3 of the instructions (Page 7) to delete the statement that the ISI boundaries are identical to the design classification or quality group boundaries. This is no longer correct.

2. Delete bearing temperatures from Relief Request PR-1 since PR-14 has been expanded to include the diesel fuel oil pumps.

3. Delete Relief Request PR-2 since PR-14 has been expanded to include the ESW pumps.

4. Delete Relief Request PR-3 since the modifications for HPCI vibration monitoring have been completed.

5. Expanded Relief Request PR-5 to include all pumps in the IST Program.

6. Delete Relief Request PR-6 since modifications have been made allowing the pumps to run for more than 5 minutes.

7. Deleted RCIC pump from Relief Request PR-7 since the RCIC system will be removed from the IST Program.

8. Deleted Relief Request PR-8 since the NRC has not provided guidance on velocity vibration acceptance criteria.

9. Deleted Relief Request PR-9 since modifications to the screen wash pump instrumentation have been completed.

10. Changed effected pumps for Relief Request PR-11 from "various" to "all pumps in Program".

11. Deleted RCIC pump from Relief Request PR-12 since the RCIC system will be removed from the Program.

12. Changed effected pumps listing in Relief Request PR-13 from "all pumps" to "all pumps in the Program".

13. Changed effected pumps for Relief Request PR-14 from "various" to "all pumps in Program".

14. Added deferred testing (Section 3.2) to Section 3.0, Inservice Testing Program for valves.

15. Added partial stroke exercise test to the closed position and check valve partial stroke exercise test to the open position to the list of Inservice Valve Tests.

16. Added Relief Request VR-1.

17. Added Relief Request VR-3.

18. Added to the Basis for Relief Section of Relief Request VR-4 reasons why it is impractical to exercise this valve during normal plant operation.

CHANGES TO THE IST PROGRAM

19. Added new Relief Request VR-5.

20. Added information to the Alternate Testing Section of VR-6 describing the Technical Specification testing.

21. Deleted Revision 7 Relief Request VR-7. Added new Relief Request VR-7.

22. Added information to the Alternate Testing Section of VR-8 describing the Technical Specification.

23. Added information to the Basis For Relief section of VR-11 describing the referenced Technical Specification.

24. Added information to the Alternate Testing section of VR-12 describing the Technical Specification testing.

25. Added valves SV-1868 A&B and SV-1869 A&B to Relief Request VR-13. Also added information to Alternate Testing section of Relief Request VR-13 as to how each of the sets of valves is tested.

26. Changed the function for valves V-18-118 and V-18-206 to "prevent SCRAM water (from the accumulators) being bypassed to charging H_2O header" on Relief Request VR-13.

27. Deleted Relief Request VR-14.

28. Removed pages of voided Relief Requests; VR-9, VR-10, VR-15, VR-16, VR-18, VR-22, VR-23, VR-26, VR-27, VR-28, VR-29 and VR-38.

29. Added information to the Alternate Testing section of VR-20 describing the Technical Specification testing.

30. Deleted the RCIC valve V-25-1 from Relief Request VR-21.

31. Deleted Relief Request VR-24.

32. Added information to the Alternate Testing section of VR-25 describing the Technical Specification testing.

33. Deleted Relief Request VR-30 since V-17-52 and V-17-53 are passive valves.

34. Added information to the Alternate Testing section of VR-32 describing the Technical Specification testing.

35. VR-33 has been modified to reflect the removal of the actuator from the core spray valves.

36. Deleted Relief Request VR-36.

37. Changed description in the Alternate Testing of VR-40 on what leakrate testing ensures.

CHANGES TO THE IST PROGRAM

38. Changed description in the Alternate Testing of VR-41 on what leakrate testing ensures.

39. Deleted VR-42.

40. Changed description in the Alternate Testing of VR-44 on what leakrate testing ensures.

41. Removed the open test relief for RCIC valves V-24-8 and V-24-23 from VR-47. Changed description in the Alternate Testing of VR-47 on what leakrate testing ensures.

42. Corrected spelling of "partial" in Alternate Testing section of VR-49.

43. Changed the function of the valves listed in VR-50 to better describe the vacuum breaker function.

44. Updated pump listing to Relief Request deletions and additions. Also deleted RCIC Pump 1P-226 since the RCIC system is not required for mitigating the consequences of an accident or for safe shutdown of the reactor.

45. Updated valve listing to reflect deleted Relief Request and removed P&ID revision numbers.

46. Added the word "passive" to the Remarks section for valves V-09-065 and V-09-111 (P&ID M-109).

47. Added valves MO-1947 and MO-2046 to the valve listing (M-113).

48. Deleted maximum stroke times for CV-1956A and B (M-113).

49. Deleted CV-4428 and CV-4429 (also SV-4428 and SV-4429) from valve listing (M-114).

50. Deleted the CT-CC and CT-CO tests from PSV-4439A through F since they are not required because the valves are relief valves, not check valves.

51. Changed the normal position for valves MO-4629 and MO-4630 to reflect current plant status (M-116).

52. Changed the "normal position" for valves CV-4639 and CV-4640 to open since they are the injection path for the hydrogen water chemistry system.

53. Deleted the CT-CC tests from V-17-52 and V-17-53 (M-117) because the test is not required by the Code since the valves are passive (as is noted in the Remarks section of the valves).

54. Changed the frequency of testing for valves CV-1859 A&B and CV-1867 A&B from CS to OP (M-118).

CHANGES TO THE IST PROGRAM

55. Deleted SV-1851, SV-1852, SV-1853, SV-1854 from the valve listing (M-118).

56. Added SV-1868B and SV-1869B to the valve listing and added "A" designation to SV-1868 and SV-1869 (M-118).

57. Changed CV-1906 to V-19-149 and the testing frequency to reflect removal of operator (M-119).

58. Removed MO-1900 and MO-1901 from the valve listing (M-119).

59. Changed CV-2002 to V-20-082 and the testing frequency to reflect removal of operator (M-120).

60. Changed CV-2118 and CV-2138 to V-21-072 and V-21-073 respectively, reflecting removal of the operators from the valves (M-121).

61. Deleted CV-2235 and SV-2235 from the valve listing (M-122).

62. Changed testing frequency from MO-2238 from Operation to Cold Shutdown.

63. Added CT-CC tests to V-22-17 and V-22-22 (M-122).

64. Added CV-2315 to valve listing (M-123).

65. Changed CV-2313 to V-23-049 to reflect removal of operator (M-123).

66. Changed frequency of testing for MO-2400 from OP to CS.

67. Added CT-CC test to V-24-8 test list.

68. Added the word "passive" to the Remarks section of V-20-287 (M-130).

69. Added SV-3261 A&B, SV-3262 A&B, V-32-43, V-32-45, V-32-52 and V-32-54 to valve listing (M-132).

70. Changed test frequency from "RR" to "OP" for V-43-082, V-43-084, V-43-086 and V-43-088 (M-143).

71. Added Cold Shutdown Justifications for all of the valves in the IST Program exercised on a Cold Shutdown basis.