PUMP AND VALVE INSERVICE TESTING PROGRAM

FOR

DUANE ARNOLD ENERGY CENTER

Commercial Service Date: February 1, 1975

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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
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Rev. 9	January 5, 1990

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1.0 INTRODUCTION

Revision 9 of the Duane Arnold Energy Center (Unit 1) ASME Inservice Testing Program for Pumps and Valves will be in effect through February 1, 1995, the end of the second 120-month (10-year) inspection interval, unless changed for other reasons. The program will be updated prior to the start of the third inspection interval in accordance with the requirements of 10CFR 50.55a(g).

This document outlines the inservice testing (IST) program for Duane Arnold Energy Center, based on the requirements of Section XI of the ASME Boiler & Pressure Vessel Code, 1980 Edition through the Winter 1981 Addenda. All references to IWP or IWV in this document correspond to Subsections IWP or IWV, respectively, of ASME Section XI, 1980 Edition through the Winter 1981 Addenda unless otherwise noted.

- 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.
- "NRC Guidance on Developing Acceptable Inservice Testing Programs" (Generic Letter 89-04)

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 following the pump listing 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-013. 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-007, PR-011 and PR-012).

SECTION 2.2

RELIEF REQUESTS FOR PUMP TESTING PROGRAM

RELIEF REQUEST NO. PR-001
TYPE 3

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-004
TYPE 3

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-005
TYPE 3

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-005.1). 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.

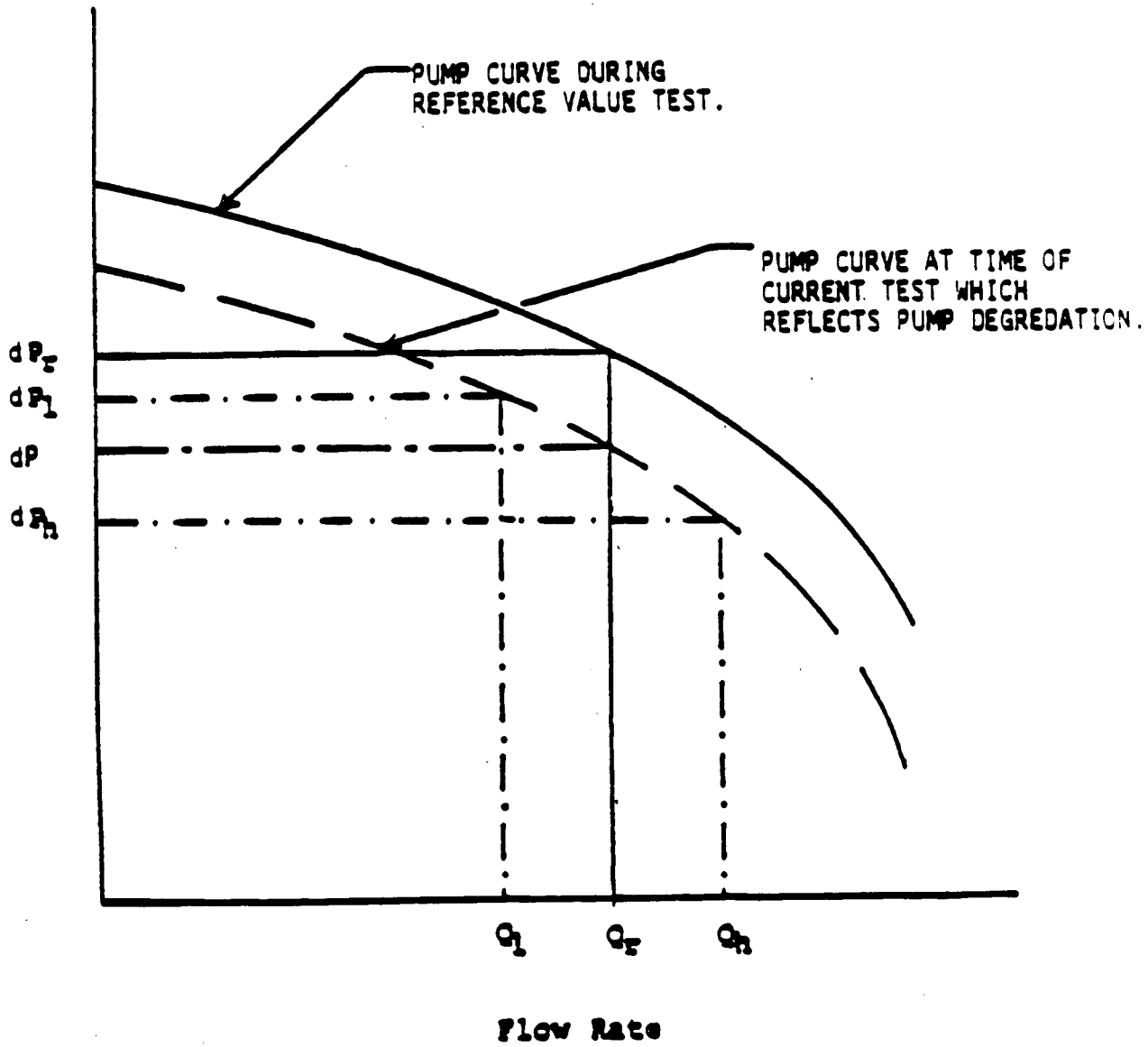

Figure PR-5.1 Alternate Testing Approach for Determination of Hydraulic Change

RELIEF REQUEST NO. PR-007
TYPE 3

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-010
TYPE 3

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-011
TYPE 3

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-012
TYPE 3

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	± 0.15 mv

(1) Based on FLUKE Model 8024B Digital Multimeter

ALTERNATE TESTING:

No alternate method of measurement is proposed.

RELIEF REQUEST NO. PR-013
TYPE 3

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-013 (CONTINUED)

* 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-014
TYPE 3

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 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.

- BODY STYLE: The valve body design as indicated by the following abbreviations:

AIR PILOT	AP
ANGLE	ANG
AUTO VENTS	AV
BALL	BAL
BUTTERFLY	BTF
CHECK	CK
DIAPHRAGM	DIA
EXCESS FLOW CHECK	XFC
EXPLOSIVE SHEAR	SH
GATE	GA
GLOBE	GL
NEEDLE	NDL
NOTCHED GLOBE	NGL
PLUG	PLG
RELIEF	RV
RUPTURE DIAPHRAGM	RPD
SAFETY	SV
STOP CHECK	SCK
TRIP VALVE	TV
2-WAY	2WY
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
O/LO	Normally Open/Locked Open
O/ND	Normally Open, Breaker De-energized
C/FO	Normally Closed/Fail Open
C/FC	Normally Closed/Fail Closed
C/KC	Normally Closed/Key Locked and Fail Closed
C/KL	Normally Closed/Key Locked
C/LC	Normally Closed/Locked Closed
C/LO	Normally Closed/Locked Open
C/ND	Normally Closed, Breaker De-energized
NE	Normally Energized
ND	Normally De-energized
PAS	Passive Valve
SYS	Open or Closed, Depending on System Usage

  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.
AT-7	Purge/vent pressure decay test	
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.

TABLE 3.1-1: INSERVICE VALVE TESTS

TEST	TEST NAME	TEST DESCRIPTION
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.
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-PO	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-PC	Check valve partial-stroke exercise test to the CLOSE position (IWV-3522)	Check valves will be tested from the open to a partially-closed 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.

TABLE 3.1-1: INSERVICE VALVE TESTS

TEST	TEST NAME	TEST DESCRIPTION
CTCME	Mech. Exer. Closed	Mechanical exercise to the CLOSE position.
CTOME	Mech. Exer. Open	Mechanical exercise to the OPEN position.
DT-E	Explosive valve test (IWV-3610 and 3620)	Explosively-actuated valves will be tested in accordance with IWV-3610.
DT-M	Rupture diaphgram	Rupture diaphragm test per manufacturers' recommendation.
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
M1	No operational condition limitations	Monthly testing required
OP	Power operation	At least once per 92 days
CS	Cold shutdown	See (2) below
RR	Refueling	Nominally every two years - during reactor refueling
R2	Refueling	One half of main steam relief and safety valves tested during successive refueling outages.
SA	Refueling	Tested on a group sample basis
SP	See appropriate relief request	See appropriate relief request
Y5	No operational condition limitations	Every five years (see Paragraph IWV-3511). Applies to CT-SP test.
Y2	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 3.3

RELIEF REQUESTS FOR INSERVICE VALVE TESTING PROGRAM

RELIEF REQUEST NO. VR-002
TYPE 5

SYSTEMS:

Various

COMPONENTS:

All solenoid and air-pilot operator valves without individual position indication.

CATEGORY:

B

FUNCTION:

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

TEST REQUIREMENT:

Exercise Category B valves to the closed and/or open position and evaluate stroke time quarterly (IWV-3412, IWV-3413, and IWV-3417(a)).

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 and has done so within the required time.

Relief Requests VR-006, VR-013, and VR-035 and Cold Shutdown requests CSJ-014 address alternate test frequencies, for some of the main valves and their solenoid or air pilot valves.

RELIEF REQUEST NO. VR-003
TYPE 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-004
TYPE 3

SYSTEM:

NUCLEAR BOILER

COMPONENTS:

V-14-0001

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-005
TYPE 4

SYSTEM:

Various

COMPONENTS:

PSV-1911	PSV-2109	PSV-3221A	PSV-4439A
PSV-1952	PSV-2129	PSV-3221B	PSV-4439B
PSV-1988	PSV-2223	PSV-3222A	PSV-4439C
PSV-2043	PSV-2228	PSV-3222B	PSV-4439D
PSV-2068	PSV-2301	PSV-3223A	PSV-4439E
		PSV-3223B	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-3512.

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-3512. This standard is more definitive and better suited to operational testing than is ASME/PTC 25.3-1976 which is referenced in IWV-3512.

ALTERNATE TESTING:

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

RELIEF REQUEST NO. VR-006
TYPE 4

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), (2) act as primary system safety valves actuating on high system pressure or capable manual actuation from the control room, and (3), for the ADS valves only, to close to maintain the primary system pressure boundary and prevent uncontrolled depressurization of the reactor (stuck open relief valve). 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, BTC, BTD, and BTE).

RELIEF REQUEST NO. VR-006 (continued)

BASIS FOR RELIEF:

Relief is requested from the Section XI required testing frequency of once every three months. Exercising these relief and solenoid 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 valves since the stroke times are on the order of 100 milliseconds.

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. Closure will be demonstrated by turbine bypass valve position increase and the response of pressure switches and thermocouples downstream of the relief valves. Stroke times will not be measured.

NOTE: Stroke timing requirements for the solenoid valves are discussed in Relief Request No. VR-002.

RELIEF REQUEST NO. VR-007
TYPE 5

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. IWV-3412, IWV-3413, IWV-3417

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-008
TYPE 3

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-008 (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-011
TYPE 5

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-012
TYPE 4

SYSTEM:

CONTROL ROD DRIVE HYDRAULIC

COMPONENTS:

V-17-0083	V-17-0052
V-17-0096	V-17-0053

CATEGORY:

A/C

FUNCTION:

Valves V-17-0083 and V-17-0096 prevent backflow through the reactor recirculation pumps seal purge line. They also function as primary containment isolation valves. Valves V-17-0052 and V-17-0053 act as primary containment isolation valves.

TEST REQUIREMENT:

Exercise every three (3) months (CT-CC) IWV-3521.

BASIS FOR RELIEF:

These simple check valves cannot be remotely operated. Valves V-17-0083, V-17-0096 and V-17-0053 are located inside primary containment and are not accessible for testing during reactor operation. Additionally, the primary containment is inerted with nitrogen during plant operation. De-inerting and then re-inerting the containment atmosphere each cold shutdown solely for the purpose of conducting valve testing would represent an excessive operational burden. These valves cannot be exercised by utilizing outside drywell test lines because the reactor recirculation pumps would require venting and the V-17-0054 valve would require closure, necessitating containment entry. These valves can be exercised closed during leakrate testing performed during refueling outage.

Valve V-17-0052 cannot be tested during operation or cold shutdown because a blind flange inserted in the CRD return line upstream of V-17-0051 blocks the vent path behind the check valve. This blind flange prevents flow in the line during operation and cold shutdown.

ALTERNATE TESTING:

These valves will be exercised during leaktesting conducted in accordance with DAEC Technical Specification 4.7.A.2.c (Appendix J, Type C tests). Prior to performing the leaktest, it will be verified that the valves stroke open or have stroked open since the last leaktest. By verifying that the valves close with the leaktest, the valves are indirectly observed to stroke from their open to closed position.

RELIEF REQUEST NO. VR-013
TYPE 1, POSITION 7

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-17-0062
V-18-0118 thru 0206
V-18-0919 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-17-0062, V-18-0118 thru 0206, V-18-0919 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-1840 & CV-1850, respectively. Open on SCRAM signal to vent air operators.

V-17-0062 - Back-up SCRAM check valves; ensure the venting of the screen valve pilot air header if SV-1840B has a plugged vent port with the air supply isolated.

V-18-0118 thru 0206 - Prevent bypassing SCRAM water (from the accumulator) to charging water header (if depressurized); open to charge accumulators following SCRAM.

V-18-0919 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-013 (continued)

TEST REQUIREMENTS:

Exercise and time air-operated and solenoid valves every three months (BTO,BTC). IWV-3411, IWV-3413, IWV-3417
Exercise check valves every three months (CT-CO, CT-CC) IWV-3521. The corresponding fail-safe test is discussed in VR-017.

BASIS FOR RELIEF:

Individual testing of the backup scram valves CV-1840A and CV-1840B requires modifying the electrical configuration of the reactor protection system by jumpers, etc and inserting a scram signal to each valve - a complex test.

Testing of valves SV-1840A, SV-1840B, V-17-0062 would require or result in depressurization of the SCRAM air header and the initiation of a full SCRAM signal. Testing of valves SV-1868A, SV-1868B, SV-1869A, and SV-1869B would require the initiation of a full SCRAM signal. Valves CV-1849C, CV-1850, SV-1855, SV-1856, and V-18-1453 thru 1541 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. Therefore, position indication tests will not be required of valves CV-1849 and CV-1850.

Closure testing of valves V-18-0118 thru 0206 require that the control rod drive pumps be stopped to depressurize the charging water header. This test will not be performed during power operation because stopping the pumps results in loss of cooling water to all control rod drive mechanisms and seal damage could result. Additionally, this test cannot be performed during each cold shutdown because control rod drive pumps supply seal water to the reactor recirculation pumps and one of the recirculation pumps is usually kep running.

Proper operation of the check valve V-18-0919 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.

Relief Request VR-002 applies to some of the valves discussed in this relief request.

Relief Request No. VR-013 (continued)

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."

Valves SV-1840A and SV-1840B will be tested at each refueling by inserting a SCRAM signal and monitoring that the valves energize to vent the air header. Check valve V-17-0062 is verified to open when SV-1840A and SV-1840B energize and vent. In order for air to exhuast from both SV-1840A and SV-1840B, check valve V-17-0062 must fully open. Valves SV-1868A, SV-1868B, SV-1869A, and SV-1869B will be tested at each refueling by initating a SCARM signal to the valves and verifying that the de-energized CRD supplies air to the main valves (CV-1867A, CV-1867B, CV-1859A and CV-1859B).

CV-1840A, CV-1840B, CV-1849, CV-1850, SV-1855, SV-1856, and V-18-1453 thru V-18-1541

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-1859A & 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-017
TYPE 4

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 or air 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.

ALTERNATE TESTING:

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

Relief Requests VR-013, VR-006, VR-032, and VR-035 and CSJ-014 address alternate test frequencies for some of these valves.

RELIEF REQUEST NO. VR-019
TYPE 5

SYSTEM:

NUCLEAR BOILER

COMPONENTS:

V-14-0009	V-14-0032	V-14-0112
V-14-0014	V-14-0100	V-14-0116
V-14-0015	V-14-0104	V-14-0120
V-14-0016	V-14-0108	V-14-0124

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-020
TYPE 3

SYSTEM:

STANDBY LIQUID CONTROL (SBLC)

COMPONENTS:

V-26-0008
V-26-0009

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-021
TYPE 1, POSITION 2

SYSTEM:

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

COMPONENTS:

V-23-0001
V-25-0001

CATEGORY:

C

FUNCTIONS:

These valves prevent backflow into the suppression pool in the event of pump suction shift from the condensate storage tank (CST) to the suppression pool. They open to provide flow from the suppression pool to the HPCI or RCIC pumps.

TEST REQUIREMENT:

Exercise every three months (CT-CO and CT-CC).

BASIS FOR RELIEF:

There is no convenient method for verifying the ability of these valves to swing to the full-open or full-closed positions. 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. For the reasons noted above these valves cannot be opened. Therefore, they cannot be stroked from the open to the fully closed position (i.e., a close test during quarterly testing could only demonstrate that the valve stayed closed. As a result, full-closed testing also cannot be done quarterly.

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 and closed positions.

RELIEF REQUEST NO. VR-025
TYPE 3

SYSTEM:

CONTAINMENT ATMOSPHERE CONTROL

COMPONENTS:

V-43-0214

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-031
TYPE 5

SYSTEM:

NEUTRON MONITORING

COMPONENT:

1S266/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-032
TYPE 5

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 every three months (BTC and BTO). (BTO applies to valves SV-8109A, SV-8109B, SV-8110A, and SV-8110B only.) The stroke time of all power-operated valves shall be measured. (IWV-3413(b), IWV-3417(a))

BASIS FOR RELIEF:

These valves are not provided with individual position indicators and the only reasonable means of verifying their position is by performing leaktests and then re-opening the valves--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 and open positions 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-033
TYPE 3

SYSTEM:

CORE SPRAY

COMPONENTS:

V-21-0072
V-21-0073

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-034
TYPE 1, POSITION 6

SYSTEM:

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

COMPONENTS:

SV-4331A	SV-4333A	1S260A/BALL	SV-4594A	SV-1972
SV-4331B	SV-4333B	1S260B/BALL	SV-4594B	SV-1973
SV-4332A	SV-4334A	1S260C/BALL	SV-4595A	SV-2051
SV-4332B	SV-4334B		SV-4595B	SV-2052
			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.

The RHR Sample valves provide a flowpath for post-accident sampling of the RHR system.

TEST REQUIREMENT:

Evaluate stroke times in accordance with IWV-3417(a).

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-034

(CONTINUED)

ALTERNATE TESTING:

Stroke times for these valves will be measured. Valves exceeding the maximum allowable stroke time of 2 seconds 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-035
TYPE 3

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-037
TYPE 1, POSITION 10

SYSTEM:

VARIOUS

COMPONENTS:

All containment isolation valves six inches and greater.

CATEGORY:

A & C

FUNCTIONS:

Containment isolation

TEST REQUIREMENT:

If a leakage rate exceeds the rate determined by the previous test by an amount that reduces the margin between the measured leakage and the maximum permissible rate by 50% or greater, the test frequency shall be doubled. Further, if the trend of leakage rates indicates that the next scheduled test will exceed the maximum permissible leakage rate by greater than 10%, the valve shall be replaced or repaired. IWV-3427(b)

BASIS FOR RELIEF:

Per Generic Letter 89-04, the usefulness of IWV-3427(b) does not justify the burden of complying with this requirement.

ALTERNATE TESTING:

None

RELIEF REQUEST NO. VR-039
TYPE 3

SYSTEMS:

EMERGENCY SERVICE WATER (ESW)

COMPONENTS:

V-46-0018
V-46-0021

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-040
TYPE 3

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-040

(CONTINUED)

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-041
TYPE 3

SYSTEMS:

NUCLEAR BOILER, REACTOR FEEDWATER

COMPONENTS:

V-14-0001
V-14-0003

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-14-0001 and V-14-0003 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-041

(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-043
TYPE 3

SYSTEMS:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

V-18-0919 through V-18-1007
V-18-1453 through V-18-1541

CATEGORY:

C

FUNCTION:

V-18-0919 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-043

(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-044
TYPE 3

SYSTEMS:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-22-0016
V-22-0017
V-22-0021
V-22-0022

CATEGORY:

A/C

FUNCTION:

Provide primary containment (torus) isolation for the HPCI steam exhaust (V-22-0016 and V-22-0017) and HPCI condensate return (V-22-0021 and V-22-0022) piping.

V-22-0016 and V-22-0017 provide an exhaust path to the suppression pool for the HPCI turbine.

V-22-0021 and V-22-0022 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-044

(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-045
TYPE 3

SYSTEMS:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-22-0026
V-22-0028
V-22-0029

CATEGORY:

C

FUNCTION:

V-22-0026 HPCI condensate pump discharge
V-22-0028 HPCI condensate return to the HPCI pumps suction
V-22-0029 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-045
(CONTINUED)

BASIS FOR RELIEF:

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-046
TYPE 3

SYSTEMS:

HIGH PRESSURE COOLANT INJECTION (HPCI)

COMPONENTS:

V-23-0014

CATEGORY:

C

FUNCTION:

V-23-0014 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-046

(CONTINUED)

BASIS FOR RELIEF:

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-047
TYPE 3

SYSTEMS:

REACTOR CORE ISOLATION COOLING (RCIC)

COMPONENTS:

V-24-0008
V-24-0023

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-047
(CONTINUED)

BASIS FOR RELIEF: (CONTINUED)

Valves V-24-0008 and V-24-0023 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-048
TYPE 3

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-050
TYPE 5

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 partially stroked quarterly during plant operation using installed air operators without any quantitative set point measurements. Additionally, each will be tested to open and closed positions using a mechanical exerciser and obtaining set point measurements at least once each refueling cycle.

RELIEF REQUEST NO. VR-051
TYPE 4

SYSTEMS:

VARIOUS

COMPONENTS AND FUNCTION:

* V-22-0064, V-22-0063, V-24-0046, V-24-0047
  These HPCI / RCIC Vacuum Breaker Check Valves open to prevent syphoning of torus water into the HPCI/RCIC exhaust lines.

  V-22-0021, V-22-0028, V-22-0029, V-24-0012
  The first valve of this group routes HPCI Exhaust Drainpot Drain check valve condensate to torus. The other three provide a path for HPCI/RCIC lube oil cooling.

  V-22-0022 HPCI Exhaust Drainpot Drain check valve supports normal operation of HPCI.

  V-24-0009 RCIC Barometric Condenser check valve supports normal operation of RCIC.

  V-24-0010 RCIC Barometric Condenser check valve supports normal operation of RCIC.

* V-25-0006 RCIC Minimum Flow Line check valve.
* V-23-0014 HPCI Minimum Flow Line check valve.

* V-20-0006, V-20-0008, V-19-0014, V-19-0016
  These minimum flow check valves are on the RHR pump discharge bypass lines must open to provide adequate minimum flow to prevent pump overheating.

CATEGORY:

C

TEST REQUIREMENTS:

Check valves shall be exercised to positions in which they perform their safety functions every three months. (IWV-3521, IWV-3522(a), IWV-3522(b))

BASIS FOR RELIEF:

Verification of maximum accident required flow to verify stroke-open position is not possible without extensive equipment modification. Disassembly and inspection of these valves, either quarterly during operation or during cold shutdown, would require rendering the respective systems inoperable, a major system operating restriction.

RELIEF REQUEST NO. VR-051

(CONTINUED)

ALTERNATIVE TESTING:

All valves, except those indicated by an asterisk (*), will be partial stroke tested by performance of the respective quarterly system surveillance. (The asterisked (*) valves have no positive indication of partial stroking.) The first group of valves are sized for maintaining a specific differential pressure rather than a specified flow so that full flow testing is not possible.

During refuel outages each of the individually listed valves shall be disassembled and inspected for full-stroke operability. One valve of each group of identical valves in similar applications shall be disassembled and inspected (in rotation) each refueling outage. With eighteen month refueling cycles, all valves in a group of four would be tested approximately every six years.

RELIEF REQUEST NO. VR-052
TYPE 4

SYSTEMS:

CONTROL ROD DRIVE (CRD) HYDRAULIC

COMPONENTS:

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

CATEGORY:

B

FUNCTION:

The function of these valves is to insert and withdraw the control rods.

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:

There is no position indication on these valves. Neither stem movement nor flow movement through the valve can be visually observed. Individually testing each of these valves would require installation of test lights for each of the valves for each of the HCUs.

ALTERNATE TESTING:

Proper control rod operation demonstrates the operability of each valve for each of the control rods.

INSERVICE TESTING PROGRAM - PUMP TABLES
IST CLASS 1, 2, 3, AND NC PUMPS

PUMP NUMBER	PUMP NAME	IST CLASS	DRAWING NUMBER	DWG COOR	INSERVICE TEST QUANTITIES: SPEED	INLET PRESSURE	DELTA PRESSURE	FLOW RATE	BEARING VIB	BEARING TEMP	TEST INTERVAL	PROGRAM RMKS
1P-022A	RHRSW	3	M-146	B-8	NA	Y:PR-04	Y	Y:PR-12	Y	N:PR-14	QUARTERLY	
1P-022B	RHRSW	3	M-146	B-8	NA	Y:PR-04	Y	Y:PR-12	Y	N:PR-14	QUARTERLY	
1P-022C	RHRSW	3	M-146	B-8	NA	Y:PR-04	Y	Y:PR-12	Y	N:PR-14	QUARTERLY	
1P-022D	RHRSW	3	M-146	B-8	NA	Y:PR-04	Y	Y:PR-12	Y	N:PR-14	QUARTERLY	
1P-044A	DFO	NC	M-132	A-2	NA	Y:PR-04	Y:PR-05	Y:PR-05	N:PR-01	N:PR-14	QUARTERLY	
1P-044B	DFO	NC	M-132	A-3	NA	Y:PR-04	Y:PR-05	Y:PR-05	N:PR-01	N:PR-14	QUARTERLY	
1P-099A	ESW	3	M-146	B-7	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-099B	ESW	3	M-146	B-6	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-112A	SCREEN	NC	M-129	C-7	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-112B	SCREEN	NC	M-129	C-3	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-117A	RW	3	M-129	D-7	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-117B	RW	3	M-129	D-4	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-117C	RW	3	M-129	D-6	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-117D	RW	3	M-129	D-3	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-211A	CS	2	M-121	C-3	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-211B	CS	2	M-121	C-4	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-216	HPCI	2	M-123	D-2	Y	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-226	RCIC	NC	M-125	D-2	Y	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-229A	RHR	2	M-120	B-3	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-229B	RHR	2	M-119	B-7	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-229C	RHR	2	M-120	B-2	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-229D	RHR	2	M-119	B-8	NA	Y	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	

INSERVICE TESTING PROGRAM - PUMP TABLES
IST CLASS 1, 2, 3, AND NC PUMPS

PUMP NUMBER	PUMP NAME	IST CLASS	DRAWING NUMBER	DWG COOR	INSERVICE TEST QUANTITIES: SPEED	INLET PRESSURE	DELTA PRESSURE	FLOW RATE	BEARING VIB	BEARING TEMP	TEST INTERVAL	PROGRAM RMKS
1P-230A	SBLC	NC	M-126	B-5	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	
1P-230B	SBLC	NC	M-126	C-5	NA	Y:PR-04	Y:PR-05	Y:PR-05	Y	N:PR-14	QUARTERLY	

FOOTNOTES FOR PUMP LISTING

(1) See PR-013

(2) See PR-008 and PR-011

(3) See PR-014

PUMP IST PROGRAM REMARKS

NOTE 001: Although the diesel fuel oil transfer pumps (1P-44A & B) are included in the program, they do not strictly fall within the jurisdiction of the ASME B & PV Code, Section XI. (Reference ASME response to WPPSS inquiry, File no. BC 77-666/NI 77-371 dated 1/8/79) See Relief Request No. PR-010 for further discussion of this issue.

NOTE 002: See Relief Request PR-012

NOTE 003: See Relief Requests PR-007 and PR-012

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : C51-1-7(APED)
DRAWING TITLE : TIP SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
1S260A/BALL	A-1	NC	A	.375	BAL	SO	C	AT-01	RR	375.000	SCCM	VR-037	
								BTC	OP	5.00D	SECS	VR-034	
FUNCTION : TIP BALL VALVE													
1S260A/SHR	A-1	NC	A/D	.375	SH	EXP	O/KL	AT-01	RR		SCCM	VR-037	
								DT-E	SP		PF		
FUNCTION : TIP EXPLOSIVE VALVE													
1S260B/BALL	A-1	NC	A	.375	BAL	SO	C	AT-01	RR	375.000	SCCM	VR-037	
								BTC	OP	5.000	SECS	VR-034	
FUNCTION : TIP BALL VALVE													
1S260B/SHR	A-1	NC	A/D	.375	SH	EXP	O/KL	AT-01	RR	.999	SCCM	VR-037	
								DT-E	SP		PF		
FUNCTION : TIP EXPLOSIVE VALVE													
1S260C/BALL	A-1	NC	A	.375	BAL	SO	C	AT-01	Y2	375.000	SCCM	VR-037	
								BTC	OP	5.000	SECS	VR-034	
FUNCTION : TIP BALL VALVE													
1S260C/SHR	A-1	NC	A/D	.375	SH	EXP	O/KL	AT-01	RR	.999	SCCM	VR-037	
								DT-E	SP		PF		
FUNCTION : TIP EXPLOSIVE VALVE													
1S266/CK	A-1	NC	A/C	.375	CK	SA	SYS	AT-01	RR	1500.000	SCCM	VR-037	
								CT-CC	RR			VR-031	
FUNCTION : TIP CHECK VALVE													

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-109
DRAWING TITLE : CONDENSATE AND DEMINERALIZED WATER

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-09-D65	G-3	NC	A	1.000	GA	M	C	AT-01	RR	1000.000	SCCM	VR-037	
	FUNCTION : *												
V-09-111	G-3	NC	A	1.000	GA	M	C	AT-01	RR	1000.000	SCCM	VR-037	
	FUNCTION : *												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-112
DRAWING TITLE : REACTOR BUILDING COOLING WATER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-4841A	E-3	NC	A	4.000	GA	MO	O	AT-01	RR	4000.000	SCCM	VR-037	
								BTC	CS	20.000	SECS	CSJ-01	
								PIT	Y2				
FUNCTION : ISOL OF RBCCW TO DW													
MO-4841B	F-3	NC	A	4.000	GA	MO	O	AT-01	RR	4000.000	SCCM	VR-037	
								BTC	CS	20.000	SECS	CSJ-01	
								PIT	Y2				
FUNCTION : ISOL OF RBCCW TO DW													
PSV-4842	F-2	NC	C	.750	RV	SA	SYS	CT-SP	Y5	150.000	PSIG		
FUNCTION : *													

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-113
DRAWING TITLE : RHR SERVICE WATER SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-1956A	H-3	3	B	4.000	GA	AO	C/FO	BTO	OP	99999.000	PF	VR-035	
								FST	OP		PF	VR-017	
								PIT	Y2		PF	VR-035	
	FUNCTION : ESW, CNTL BLDG CHILL												
CV-1956B	H-2	3	B	4.000	GA	AO	C/FO	BTO	OP	99999.000	PF	VR-035	
								FST	OP		PF	VR-017	
								PIT	Y2		PF	VR-035	
	FUNCTION : ESW, CNTL BLDG CHILL												
CV-208D	G-5	3	B	6.000	GL	AO	C/FO	BTO	OP	99999.000	SECS	VR-035	
								FST	OP		PF	VR-017	
								PIT	Y2		PF	VR-035	
	FUNCTION : ESW, STDBY DG HTEXCH												
CV-2081	G-5	3	B	6.000	GL	AO	C/FO	BTO	OP	99999.000	SECS	VR-035	
								FST	OP		PF	VR-017	
								PIT	Y2		PF	VR-035	
	FUNCTION : ESW, STDBY DG HTEXCH												
MO-1943A	G-8	3	B	12.000	GA	MO	C/KL	BTC	OP	72.000	SECS		
								PIT	Y2				
E11-FD73A	FUNCTION : SERVICE WTR CROSSTIE												
MO-2077	H-3	3	B	4.000	GA	MO	O	BTC	OP	70.000	SECS		
								PIT	Y2				
	FUNCTION : SFGRD EQUIP DISCH WW												
MO-2078	H-2	3	B	4.000	GA	MO	O	BTC	OP	70.000	SECS		
								PIT	Y2				
	FUNCTION : SFGRD EQUIP DISCH WW												
PSV-1988	E-7	3	C	.750	RV	SA	C	CT-SP	5Y	460.000		VR-D05	
	FUNCTION : RHRSW AND ESW												
PSV-2068	E-6	3	C	.750	RV	SA	C	CT-SP	5Y	460.000		VR-D05	
	FUNCTION : HTEXCH RELIEF VALVE												

APPENDIX B
VALVE LISTING

DRAWING : M-113
DRAWING TITLE : RHR SERVICE WATER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTUATOR	NORMAL POSITION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-1956A	H-3	NC	B	.313	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOL CV-1956A												
SV-1956B	H-2	NC	B	.313	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOL CV-1956B												
SV-2080	G-5	NC	B	.325	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOL CV-2080												
SV-2081	G-5	NC	B	.325	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOL CV-2081												
V-13-036	H-3	3	C	4.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : *												
V-13-037	H-3	3	C	4.000	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
V-13-051	H-4	3	C	4.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : *												
V-13-052	H-4	3	C	4.000	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
V-13-103	G-5	3	C	.001	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	OP		PF		
	FUNCTION : *												
V-13-104	G-5	3	C	.001	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	OP		PF		
	FUNCTION : *												

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG CGOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
AP-4412A	G-3	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : NSIV AIR PLT CV-4412												
AP-4412C	G-2	NC	B	.001	2WY	SO	C/FO	BTD	OP		PF	VR-002	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4413A	G-1	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : MSIV AIR PLT CV-4413												
AP-4413C	F-1	NC	B	.001	2WY	SO	C/FO	BTD	OP		PF	VR-002	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4415A	D-7	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : MSIV AIR PLT CV-4415												
AP-4415C	G-2	NC	B	.001	2WY	SO	C/FO	BTD	OP		PF	VR-002	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4416A	D-8	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : MSIV AIR PLT CV-4416												
AP-4416C	F-1	NC	B	.001	2WY	SO	C/FO	BTD	OP		PF	VR-002	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4418A	D-3	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : MSIV AIR PLT CV-4418												
AP-4418C	G-2	NC	B	.001	2WY	SO	C/FO	BTD	OP		PF	VR-002	

DUANE ARNOLD ENERGY CENTER
IMSERVICE TESTIWG PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	MORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
AP-4418C	G-2	NC	B	.001	2WY	SO	C/FO	FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4419A	D-1	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : NSIV AIR PLT CV-4419												
AP-4419C	F-1	NC	B	.0D1	2WY	SO	C/FO	BTD	OP		PF	VR-002	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4420A	E-7	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : MSIV AIR PLT CV-4420												
AP-4420C	G-2	NC	B	.001	2WY	SO	C/FO	BTD	OP		PF	VR-D02	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
AP-4421A	E-8	NC	B	.375	4WY	AP	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : MSIV AIR PLT CV-4421												
AP-4421C	F-1	NC	B	.0D1	2WY	SO	C/FO	BTO	OP		PF	VR-002	
								FST	OP	9.999	PF	VR-017	
	FUNCTION : *												
CV-4412	E-3	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.000	PF	VR-017	
								P1T	Y2				
B21-F022A	FUNCTION : MSIV (INBOARD)												
CV-4413	E-2	1	A	20.D00	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.00D	SECS		
								FST	RR	5.000	PF	VR-017	
								PIT	Y2				

DUANE ARNOLD ENERGY CENTER
IMSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
B21-F028A	FUNCTION : MSIV (OUTBOARD)												
CV-4415	C-7	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.000	PF	VR-017	
								PIT	Y2				
B21-F022B	FUNCTION : MSIV (INBOARD)												
CV-4416	C-8	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.00D	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.000	PF	VR-017	
								PIT	Y2				
B21-F028B	FUNCTION : MSIV (OUTBOARD)												
CV-4418	C-3	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.000	PF	VR-017	
								PIT	Y2				
821-F022C	FUNCTION : MSIV (INBOARD)												
CV-4419	C-2	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.0D0	PF	VR-017	
								PIT	Y2				
B21-F028C	FUNCTION : MSIV (OUTBOARD)												
CV-4420	E-7	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.000	PF	VR-017	
								PIT	Y2				
B21-F022D	FUNCTION : MSIV (INBOARD)												
CV-4421	E-8	1	A	20.000	GL	AO	O/FC	AT-01	RR	5428.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	RR	5.0D0	PF	VR-017	
								PIT	Y2				
B21-F028D	FUNCTION : NSIV (OUTBOARO)												

APPENDIX B
VALVE LISTIWG

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	MORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTOOWN	TECHNICAL POSITION
CV-4428	H-6	1	B	.500	GL	AO	C	BTC	CS	5.000	SECS	CS-NEW	
								PIT	Y2		PF		
B21-F003	FUNCTION : RX VSL HD SL ISO-IN												
CV-4429	H-7	1	B	.500	GL	AO	C	BTC	CS	5.000	SECS	CS-NEW	
								PIT	Y2		PF		
B21-F004	FUNCTION : RX VSL HD SL ISO-OUT												
MO-4423	B-3	1	A	3.000	GA	MO	O	AT-D1	RR	3000.0D0	SCCM	VR-037	
								BTC	OP	15.D00	SECS		
								PIT	Y2		PF		
B21-F016	FUNCTION : MAIN STEAM DRN(INBD)												
NO-4424	B-3	1	A	3.000	GA	MO	O	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	15.000	SECS		
								PIT	Y2		PF		
B21-F019	FUNCTION : MAIN STM DRN (OUTBD)												
MO-4441	B-3	1	A/C	16.000	SCK	MO	O/KL	AT-01	RR	24D0D.000	SCCM	VR-037	TAV-06
								CT-CC	CS		PF	CSJ-02	
								PIT	Y2		PF		
	FUNCTION : FEEDWATER ISOLATION												
MO-4442	8-7	1	A/C	16.000	SCK	MO	O/KL	AT-01	RR	2400D.000	SCCM	VR-037	TAV-06
								CT-CC	CS		PF	CSJ-02	
								PIT	Y2		PF		
	FUNCTION : FEEDWATER ISOLATION												
PSV-4400	E-5	1	B/C	6.000	RV	SAP	C/KL	BTC	RR		PF	VR-006	
								BTO	RR		PF	VR-006	
								CT-SP	5Y	1130.000	PSIG		
	FUNCTION : FEEDWATER ISOLATION												
PSV-4401	E-4	1	B/C	6.000	RV	SAP	C/KL	BTC	RR		PF	VR-006	
								BTO	RR		PF	VR-006	
								CT-SP	5Y	1120.000	PSIG		
	FUNCTION : MSIV RELIEF VALVE												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	OWG CGOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BUDY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
PSV-4402	C-6	1	B/C	6.000	RV	SAP	C/KL	BTC	RR		PF	VR-006	
								BTO	RR		PF	VR-006	
								CT-SP	5Y	1130.000	PSIG		
	FUNCTION : NSIV RELIEF VALVE												
PSV-4403	C-6	1	C	6.000	SV	SA	C	CT-SP	Y2	1240.000	PSIG		
	FUNCTION : SAFETY RELIEF VALVE												
PSV-4404	C-5	1	C	6.000	SV	SA	C	CT-SP	Y2	1240.000	PSIG		
	FUNCTION : SAFETY RELIEF VALVE												
PSV-4405	C-4	1	B/C	6.000	RV	SAP	C/KL	BTC	RR		PF	VR-006	
								BTO	RR		PF	VR-006	
								CT-SP	5Y	1140.000	PSIG		
	FUNCTION : MSIV RELIEF VALVE												
PSV-4406	E-6	1	B/C	6.000	RV	SAP	C/KL	BTC	RR		PF	VR-006	
								BTO	RR		PF	VR-D06	
								CT-SP	5Y	1140.0DD	PSIG		
	FUNCTION : MSIV RELIEF VALVE												
PSV-4407	E-6	1	B/C	6.000	RV	SAP	C/KL	BTC	RR		SECS	VR-006	
								BTO	RR		PF	VR-D06	
								CT-SP	5Y	1110.000	PSIG		
	FUNCTION : MSIV RELIEF VALVE												
PSV-4439A	B-5	1	C	6.000	RV	SA	C	CT-SP	5Y	2.500	PSIG	VR-005	
	FUNCTION : RELIEF VALVE												
PSV-4439B	B-4	1	C	6.D00	RV	SA	C	CT-SP	5Y	2.500	PSIG	VR-005	
	FUNCTION : RELIEF VALVE												
PSV-4439C	A-5	1	C	6.000	RV	SA	C	CT-SP	5Y	2.500	PSIG	VR-005	
	FUNCTION : RELIEF VALVE												
PSV-4439D	B-4	1	C	6.000	RV	SA	C	CT-SP	5Y	2.500	PSIG	VR-005	
	FUNCTION : RELIEF VALVE												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
PSV-4439E	A-5	1	C	6.000	RV	SA	C	CT-SP	5Y	2.500	PSIG	VR-005	
	FUNCTION : RELIEF VALVE												
PSV-4439F	A-4	1	C	6.000	RV	SA	C	CT-SP	5Y	2.500	PSIG	VR-005	
	FUNCTION : RELIEF VALVE												
SV-4400	E-5	NC	B	1.000	3WY	SO	ND	BTD	RR		PF	VR-002	
								BTE	RR		PF	VR-002	
	FUNCTION : SOL PSV-4400												
SV-4401	E-4	NC	B	1.000	3WY	SO	ND	BTD	SP		PF	VR-002	
								BTE	SP		PF	VR-002	
	FUNCTION : SOL PSV-4401												
SV-4402	C-6	NC	B	1.000	3WY	SO	ND	BTD	RR		PF	VR-002	
								BTE	RR		PF	VR-002	
	FUNCTION : SOL PSV-4402												
SV-4405	C-4	NC	B	1.000	3WY	SO	ND	BTD	RR		PF	VR-002	
								BTE	RR		PF	VR-D02	
	FUNCTION : SOL PSV-4405												
SV-4406	F-6	NC	B	1.000	3WY	SO	NO	BTD	RR		PF	VR-002	
								BTE	RR		PF	VR-002	
	FUNCTION : SOL PSV-4406												
SV-4407	F-6	NC	B	1.000	3WY	SO	ND	BTO	RR		PF	VR-0D2	
								BTE	RR		PF	VR-002	
	FUNCTION : SOL PSV-4407												
SV-4412A	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-D02	
								FST	OP		PF	VR-017	
	FUNCTION : SOL CV-4412												
SV-4412B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-D02	
								FST	OP		PF	VR-017	
	FUNCTION : SOL CV-4412												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-4413A	F-2	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4413													
SV-4413B	F-2	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4412													
SV-4415A	G-8	NC	8	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4415													
SV-4415B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4412													
SV-4416A	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4416													
SV-4416B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4412													
SV-4418A	G-8	NC	8	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4418													
SV-4418B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
FUNCTION : SOL CV-4412													
SV-4419A	G-8	NC	8	1.000	3WY	SO	NE	BTD	OP	99999.000	PF	VR-002	
								FST	OP	99999.000	PF	VR-017	
FUNCTION : SOLENOID VALVE													
SV-4419B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-4419B	G-8	NC	B	1.000	3WY	SO	NE	FST	OP		PF	VR-017	
	FUNCTION : SOL CV-4412												
SV-4420A	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP	99999.000	PF	VR-002	
								FST	OP	99999.000	PF	VR-017	
	FUNCTION : SOL CV-4420												
SV-4420B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : SOL CV-4412												
SV-4421A	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP	99999.000	PF	VR-002	
								FST	OP	99999.000	PF	VR-017	
	FUNCTION : SOL CV-4421												
SV-4421B	G-8	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
								FST	OP		PF	VR-017	
	FUNCTION : SOL CV-4412												
SV-4428	H-6	NC	B	1.000	3WY	SO	ND	BTD	CS	99999.000	PF	VR-002	
	FUNCTION : SOL CV-4428												
SV-4429	H-7	NC	B	1.000	3WY	SO	ND	BTD	CS	99999.000	PF	VR-002	
	FUNCTION : SOL CV-4429												
V-14-001	B-6	1	A/C	16.000	CK	SA	SYS	AT-01	RR	24000.000	SCCM	VR-037	
								CT-CC	RR		PF	VR-004	
								CT-CO	OP		PF		
	FUNCTION : FEEDWATER CHECK VLV												
V-14-003	B-4	1	A/C	16.000	CK	SA	SYS	AT-01	RR	24000.000	SCCM	VR-037	
								CT-CC	CS		PF	CSJ-03	
								CT-CO	OP		PF		
	FUNCTION : FEEDWATER CHECK VLV												
V-14-0D9	F-6	NC	C	2.000	CK	SA	SYS	AT-06	RR	25.000	SCCM		
								CT-CC	RR		PF	VR-019	

APPENDIX B
VALVE LISTING

ORAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NGRMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : PSV-4400 ACCM CK VLV													
V-14-014	F-6	NC	C	2.D00	CK	SA	SYS	AT-06 CT-CC	RR RR	25.000	SCCM PF	 VR-019	
FUNCTION : PSV-4402 ACCUN CK VL													
V-14-015	G-5	NC	C	2.000	CK	SA	SYS	AT-06 CT-CC	RR RR	25.000	SCCM PF	 VR-019	
FUNCTION : ACCUM CK VLV													
V-14-016	D-5	NC	C	2.000	CK	SA	SYS	AT-06 CT-CC	RR RR	25.000	SCCM PF	 VR-019	
FUNCTION : PSV-4405 ACCUM CK VL													
V-14-032	F-1	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	10000.000	SCCM PF	 VR-019	
FUNCTION : ACCUM CK VLV (A, B, C, 0)													
V-14-100	F-3	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	1000.000	SCCM PF	 VR-019	
FUNCTION : ACCUM CK VLV (A, B, C, D)													
V-14-104	G-8	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	1000.000	SCCM PF	 VR-D19	
FUNCTION : ACCUM CK VLV (A,B,C,D)													
V-14-108	G-8	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	10D0.000	SCCM PF	 VR-019	
FUNCTION : ACCUM CK VLV (A,B,C,D)													
V-14-112	G-8	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	1000.000	SCCM PF	 VR-019	
FUNCTION : ACCUM CK VLV (A,B,C,D)													
V-14-116	G-8	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	1000.D00	SCCM PF	 VR-019	
FUNCTION : ACCUM CHK VALVE (A,B,C,0)													

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DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-14-120	G-8	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	1000.000	SCCM PF	 VR-019	
	FUNCTION : ACCUM CK VLV (A,B,C,D)												
V-14-124	G-8	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	RR RR	1000.000	SCCM PF	 VR-019	
	FUNCTION : ACCUM CK VLV (A,B,C,D)												
V-14-4412-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4412-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4413-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4413-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4415-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4415-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4416-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4416-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4418-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4418-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-14-4419-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4419-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4420-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4420-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4421-LATER-A	Z-99	NC	C	.001	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
V-14-4421-LATER-B	Z-99	NC	C	.001	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : MSIV ACTUATOR SPEED CONTROL CHECK VALVE												
XFV-4453A	E-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4453B	0-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4454A	E-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4454B	0-1	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-4455A	C-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VALVE													
XFV-4455B	C-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4456A	C-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CHECK													
XFV-4456B	C-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CHECK													
XFV-4457A	E-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CHECK													
XFV-4457B	D-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CHECK													
XFV-4458A	E-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4458B	D-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	

APPENDIX B
VALVE LISTING

DRAWING : M-114
DRAWING TITLE : NUCLEAR BOILER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-4458B	D-7	2	A/C	1.000	XFC	SA	SYS	PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CHECK												
XFV-4459A	C-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CHECK												
XFV-4459B	C-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CHECK												
XFV-4460A	C-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CHECK												
XFV-4460B	C-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CHECK												

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APPENDIX B
VALVE LISTING

DRAWING : M-115
DRAWING TITLE : REACTOR VESSEL INSTRUMENTATION

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-4594A	D-3	2	A	1.000	GL	SO	C/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : PASS VALVE												
SV-4594B	O-6	2	A	1.000	GL	SO	C/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : PASS VALVE												
SV-4595A	D-3	NC	A	1.000	GL	SO	C/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : PASS VALVE												
SV-4595B	D-6	NC	A	1.000	GL	SO	C/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : PASS VALVE												
XFV-4501A	E-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4501B	E-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4503	E-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		

DRAWING : M-115
DRAWING TITLE : REACTOR VESSEL IMSTRUMENTATION

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4504	E-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4505	C-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4506	8-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4507	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : RX VESSEL INSTR.												
XFV-4508	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4510A	E-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-45108	E-7	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4511	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	

APPENDIX B
VALVE LISTING

DRAWING : M-115
DRAWING TITLE : REACTOR VESSEL INSTRUMENTATION

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-4511	8-3	2	A	1.000	XFC	SA	SYS	CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4512	8-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4513	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-45I4	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4515	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4516	B-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4518	0-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4519	0-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		

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APPENDIX B
VALVE LISTING

DRAWING : M-115
DRAWING TITLE : REACTOR VESSEL INSTRUMENTATION

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : EXCESS FLOW CK VLV													
XFV-4528	D-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLON CK VLV													
XFV-4562	E-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLON CK VLV													
XFV-4578	F-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4579	F-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4580	F-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4581	E-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4582	E-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4583	E-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	

APPENDIX B
VALVE LISTING

DRAWING : M-115
DRAWING TITLE : REACTOR VESSEL INSTRUMENTATION

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-4583	E-6	2	A	1.000	XFC	SA	SYS	CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4584	D-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4585	D-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4586	F-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4587	F-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4588	F-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4589	F-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4590	D-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		

DRAWING : M-115
DRAWING TITLE : REACTOR VESSEL INSTRUMENTATION

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTOOWN	TECHNICAL POSITION
	FUNCTION : EXCESS FLON CK VLV												
XFV-4591	0-3	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLON CK VLV												

APPENDIX B
VALVE LISTING

ORAWING : M-116
DRAWING TITLE : REACTOR RECIRCULATION SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-4639	F-6	2	A	.750	GL	AO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000			
								FST	Y2		PF	VR-017	
								PIT	Y2				
B31-F019	FUNCTION : RECIRC. SANPLE												
CV-4640	F-6	2	A	.750	GL	AO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000			
								FST	Y2		PF	VR-017	
								PIT	Y2				
B31-F020	FUNCTION : RECIRC. SANPLE												
MO-4627	C-2	1	B	22.000	GA	MO	O	BTC	CS	30.000		CSJ-04	
								PIT	Y2				
	FUNCTION : RX RECIRC.												
MO-4628	C-8	1	B	22.000	GA	MO	O	BTC	CS	30.000		CSJ-04	
								PIT	Y2				
	FUNCTION : RX RECIRC.												
MO-4629	C-3	1	B	4.000	GA	MO	C	BTC	CS	33.000		CSJ-05	
								PIT	Y2				
	FUNCTION : RX RECIRC.												
MO-4630	C-8	1	B	4.000	GA	MO	C	BTC	CS	33.000		CSJ-05	
								PIT	Y2				
	FUNCTION : RX RECIRC												
SV-4639	F-6	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUMCTION : SOLENOIO VLV CV-4639												
SV-4640	F-6	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOLENOIO VLV CV-4640												
XFV-4607	A-5	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		

DRAWING : M-116
DRAWING TITLE : REACTOR RECIRCULATION SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : EXCESS FLOW CK VLV													
XFV-4608	A-5	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4611	A-5	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4612	A-5	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4637	E-6	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4638	E-6	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4641A	H-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4641B	H-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4642A	G-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	

APPENDIX B
VALVE LISTING

DRAWING : M-116
DRAWING TITLE : REACTOR RECIRCULATION SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-4642A	G-7	2	A/C	1.000	XFC	SA	SYS	CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4642B	G-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4643A	G-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4643B	G-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4644A	G-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4644B	G-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4663	F-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4664	F-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		

APPENDIX B
VALVE LISTING

DRAWING : M-116
DRAWING TITLE : REACTOR RECIRCULATION SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : EXCESS FLOW CK VLV													
XFV-4665	F-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4666	F-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4667	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4668	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4669	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4670	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4671	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4672	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	

APPENDIX B
VALVE LISTING

DRAWING : M-116
DRAWING TITLE : REACTOR RECIRCULATION SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-4672	E-4	2	A/C	1.000	XFC	SA	SYS	CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4673	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4674	E-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4675	D-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4676	D-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4677	D-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4678	D-4	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : EXCESS FLOW CK VLV												
XFV-4679	A-1	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-116
DRAWING TITLE : REACTOR RECIRCULATION SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTUATOR	NORMAL POSITION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : EXCESS FLOW CK VLV													
XFV-4680	A-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4681	A-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													
XFV-4682	A-3	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : EXCESS FLOW CK VLV													

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

ORAWING : M-117
DRAWING TITLE : CONTROL ROD DRIVE HYDRAULIC SYSTEM, SHEET 1

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UMIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-1804A	A-5	NC	A	1.000	GL	AO	O	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								PIT	Y2		PF		
	FUNCTION : CRD MINIPURGE RECIRC PUNP A ISOLATION												
CV-1804B	A-5	NC	A	1.000	GL	AO	O	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								PIT	Y2		PF		
	FUNCTION : CRD MINIPURGE RECIRC PUMP B ISOLATION												
SV-1804A	A-5	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : CRD MINIPURGE SOLENOID												
SV-1804B	A-5	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : CRD MINIPURGE SOLENOID												
SV-1840A	G-6	NC	B	1.000	3WY	SO	ND	BTE	RR		PF	VR-013	
	FUNCTION : CRD BACKUP SCRAM VALVE												
SV-1840B	G-6	NC	B	1.000	3WY	SO	ND	BTE	RR		PF	VR-013	
	FUNCTION : CRD BACKUP SCRAM VALVE												
V-17-052	E-3	1	A/C	3.000	CK	SA	SYS	AT-01	RR	3000.000	SCCM	VR-037	
								CT-CC	RR		PF	VR-012	
	FUNCTION : CRD RETURN CHECK												
V-17-053	E-2	1	A/C	3.000	CK	SA	SYS	AT-01	RR	3000.000	SCCM	VR-037	
								CT-CC	RR		PF	VR-012	
	FUNCTION : CRD RETURN CHECK												
V-17-062	G-6	NC	C	1.500	CK	SA	SYS	CT-CO	RR		PF	VR-013	
	FUNCTION : CRD BACK-UP SCRAW CHECK VALVE												
V-17-083	A-6	2	A/C	1.000	CK	SA	SYS	AT-01	RR	1000.000	SCCM	VR-037	
								CT-CC	RR		PF	VR-012	
	FUNCTION : CHECK VALVE												
V-17-096	A-4	2	A/C	1.000	CK	SA	SYS	AT-01	RR	1000.000	SCCM	VR-037	

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-117
DRAWING TITLE : CONTROL ROD DRIVE HYDRAULIC SYSTEM, SHEET 1

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-17-096	A-4	2	A/C	1.000	CK	SA	SYS	CT-CC	RR		PF	VR-012	
FUNCTION : RECIRC PUMP A SEAL PURGE CHECK VALVE													

APPENDIX B
VALVE LISTING

DRAWING : M-118
DRAWING TITLE : CONTROL ROD DRIVE HYDRAULIC SYSTEM, SHEET 2

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UMIT	RELIEF REQUEST OR COLD SHUTOOWN	TECHNICAL POSITION
CV-1849	D-7	2	B	.750	GA	AO	C/FO	BTO	RR	7.000	SECS	VR-013	TAV-01
								FST	RR		PF	VR-017	
C11-F126	FUNCTION : CRD SCRAM ACCUM DISCH INLET TO HCU												
CV-1850	D-6	2	B	2.000	GA	AO	C/FO	BTO	RR	7.000	SECS	VR-013	TAV-01
								FST	RR		PF	VR-017	
C11-F127	FUNCTION : CRD SCRAM ACCUM DISCH OUTLET FROM HCU TO SOV												
CV-1859A	G-4	NC	B	1.000	GL	AO	O/FC	BTC	OP	30.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CRD SDV VENT												
CV-1859B	G-4	2	B	1.000	GL	AO	O/FC	BTC	OP	7.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CRD SDV VENT												
CV-1867A	D-5	NC	B	2.000	GL	AO	O/FC	BTC	OP	30.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CRD SOV DRAIN												
CV-1867B	0-5	2	B	2.000	GL	AO	O/FC	BTC	OP	7.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CRD SOV ORAIN												
PSE-1848	C-8	2	0	.750	RPD	SA	SYS	DT-M	NA		PF		TAV-10
	FUNCTION : CRD SCRAM ACCUM RUPTURE OIAPHRAGM												
SV-1851	C-7	2	B	.500	GA	SO	C/FC	BTC	OP		PF	VR-052	TAV-01
								FST	OP		PF	VR-017	TAV-01
C11-F123	FUNCTION : CRD HCU INSERT SOLENOIO VALVE (DRIVE)												
SV-1852	C-7	2	B	.750	GA	SO	C/FC	BTC	OP		PF	VR-052	TAV-01
								FST	OP		PF	VR-017	TAV-01

APPENOIX B
VALVE LISTING

DRAWING : M-118
ORAWING TITLE : CONTROL ROO DRIVE HYDRAULIC SYSTEM, SHEET 2

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UMIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
C11-F122	FUNCTION : CRD HCU WITHDRAWAL SOLENOID VALVE (ORIVE)												
SV-1853	C-7	2	B	.5D0	GA	SO	C/FC	BTC	OP		PF	VR-052	TAV-D1
								FST	OP		PF	VR-017	TAV-01
C11-F120	FUNCTION : CRD HCU WITHDRAWAL SOLENOID VALVE (EXHAUST)												
SV-1854	C-7	2	B	.750	GA	SO	C/FC	BTC	OP		PF	VR-052	TAV-01
								FST	OP		PF	VR-017	TAV-01
C11-F121	FUNCTION : CRD HCU INSERT SOLENOID VALVE (EXHAUST)												
SV-1855	E-6	NC	B	.500	3WY	SO	NE	BTD	RR		PF	VR-013	TAV-01
C11-F118	FUNCTION : CRD SCRAM PILOT SOLENOID VALVE												
SV-1856	E-6	NC	B	.500	3WY	SO	NE	BTO	RR		PF	VR-013	TAV-01
C11-F117	FUNCTION : CRD SCRAM PILOT SOLENOID VALVE												
SV-1868A	D-4	NC	B	.500	3WY	SO	NE	BTD	RR		PF	VR-013	
	FUNCTION : CRD SCRAM OUMP SOLENOID												
SV-1868B	0-4	NC	B	.500	3WY	SO	NE	BTO	RR		PF	VR-013	
	FUNCTION : CRD SCRAM DUMP SOLENOID												
SV-1869A	D-4	NC	B	.500	3WY	SO	NE	BTD	RR		PF	VR-013	
	FUNCTION : CRD SCRAM DUMP SOLENOID												
SV-1869B	0-4	NC	B	.500	3WY	SO	NE	BTD	RR		PF	VR-013	
	FUNCTION : CRD SCRAM DUMP SOLENOID												
V-18-0118	B-8	2	C	.500	CK	SA	SYS	CT-CC	RR		PF	VR-013	TAV-02
C11-F115	FUNCTION : CRD CHARGING LINE CHECK VALVE												
V-18-0919	E-7	2	C	.500	CK	SA	SYS	CT-CC	OP		PF	VR-013	TAV-03
C11-F138	FUNCTION : CRO COOLING WATER CHECK												
V-18-1453	0-6	2	C	.500	CK	SA	SYS	CT-CC	RR		PF	VR-013	TAV-04
								CT-CO	RR			VR-013	
C11-F114	FUMCTION : CRO HCU CHECK VALVE												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-119
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 1

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-1902	G-7	2	B	10.000	GA	MO	C/KL	BTC	OP	10.000	SECS		
								PIT	Y2		PF		
E11-F021B	FUNCTION : CONTAINMENT SPRAY												
MO-1903	G-6	2	B	10.000	GL	MO	C	BTC	OP	10.000	SECS		
								PIT	Y2		PF		
E11-F016B	FUNCTION : CONTAINMENT SPRAY												
MO-1904	E-6	2	B	20.000	ANG	NO	O	BTC	OP	22.000	SECS		
								BTO	OP	22.000	SECS		
								PIT	Y2		PF		
E11-F017B	FUNCTION : RHR INJECT OUTBOARD												
MO-1905	E-6	1	A	20.000	GA	MO	C	AT-05	RR	5.000	GPM		
								BTC	OP	22.000	SECS		
								BTO	OP	22.000	SECS		
								PIT	Y2		PF		
E11-F015B	FUNCTION : RHR INJECT INBOARD												
MO-1908	E-8	1	A	18.000	GA	MO	C	AT-05	RR	5.000	GPM		
								BTC	CS	22.000	SECS	CSJ-11	
								PIT	Y2		PF		
E11-F109	FUNCTION : RHR SHTDN CLG SUCT-I												
MO-1909	E-8	1	A	18.000	GA	MO	C	AT-05	RR	5.000	GPM		
								BTC	CS	22.000	SECS	CSJ-11	
								PIT	Y2		PF		
E11-F118	FUNCTION : RHR SHTON CLG SUCT-O												
MO-1912	C-7	2	B	18.000	GA	MO	C/KL	BTC	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F006B	FUNCTION : SHUTDOWN COOLING												
MO-1913	C-7	2	B	14.000	GA	NO	O/KL	BTO	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F004B	FUNCTION : RHR PMP 1P-229B SUCT												
MO-1920	C-8	2	B	18.000	GA	MO	C/KL	BTC	OP	78.000	SECS		

APPENDIX B
VALVE LISTING

DRAWING : M-119
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 1

VALVE NUMBER	ONG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-1920	C-8	2	B	18.000	GA	MO	C/KL	PIT	Y2		PF		
E11-F006D	FUNCTION : SHUTDOWN COOLING												
NO-1921	C-7	2	B	14.000	GA	NO	O/KL	BTO	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F0040	FUNCTION : RHR PMP 1P-229D SUCT												
MO-1932	F-5	2	B	12.000	GA	NO	C/KL	BTC	OP	83.000	SECS		
								BTO	OP	83.000	SECS		
								PIT	Y2		PF		
E11-F028B	FUNCTION : CONTAINMENT SPRAY												
NO-1933	F-5	2	B	4.000	GL	MO	C	BTC	OP	10.000	SECS		
								PIT	Y2		PF		
E11-F027B	FUNCTION : CONTAINMENT SPRAY												
NO-1934	F-5	2	B	12.000	GL	MO	C	BTC	OP	37.000	SECS		
								BTO	OP	37.000	SECS		
								PIT	Y2		PF		
	FUNCTION : RHR VALVE												
NO-1935	C-5	2	B	3.000	GA	NO	O	BTC	OP	17.000	SECS		
								BTO	OP	17.000	SECS		
								PIT	Y2		PF		
E11-F007B	FUNCTION : RHR 1P-229B MIN FLOW												
MO-1936	D-6	NC	B	4.000	GL	MO	C	BTC	OP	6.000	SECS		
								PIT	Y2		PF		
E11-F040	FUNCTION : OISCH TO RW ISOL-IN												
MO-1937	D-6	2	B	4.000	GA	NO	C	BTC	OP	19.000	SECS		
								PIT	Y2		PF		
E11-F049	FUNCTION : DISCH TO RW ISOL-OUT												
MO-1939	O-4	2	B	12.000	GA	MO	O/KL	BTC	OP	72.000	SECS		
								BTO	OP	72.000	SECS		
								PIT	Y2		PF		

APPENDIX B
VALVE LISTING

DRAWING : M-119
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 1

VALVE NUMBER	ONG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
E11-F047B	FUNCTION : HTEXCH SHELL SIDE IN												
MO-1940	E-4	2	B	18.000	GL	MO	O	BTC	OP	53.000	SECS		
								BTO	OP	53.000	SECS		
								PIT	Y2		PF		
	FUNCTION : RHR VALVE												
MO-1941	E-3	2	B	12.000	GA	MO	O/KL	BTC	OP	72.000	SECS		
								BTO	OP	72.000	SECS		
								PIT	Y2		PF		
E11-F003B	FUNCTION : HTEXCH SHLL SIDE OUT												
MO-1949B	C-4	2	B	1.000	GL	MO	C	BTC	OP	18.000	SECS		
								PIT	Y2		PF		
E11-F104B	FUNCTION : RHR HEAT EXCH VENT												
MO-1989	0-7	2	B	24.000	GA	MO	O/KL	BTO	OP	133.000	SECS		
								PIT	Y2		PF		
E11-F020B	FUNCTION : RHR PMP SUCT - TORUS												
PSV-1911	0-8	2	C	1.000	RV	SA	C	CT-SP	5Y	175.000	PSIG	VR-005	
	FUNCTION : RESIDUAL HEAT REMOVEL												
PSV-1952	0-4	2	C	4.000	RV	SA	C	CT-SP	5Y	450.000	PSIG	VR-005	
	FUNCTION : *												
PSV-1975	G-3	2	C	1.000	RV	SA	C	CT-SP	5Y	425.000	PSIG		
	FUNCTION : *												
SV-1972	0-3	2	B	1.000	GL	SO	C/KL	BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF		
	FUNCTION : *												
SV-1973	0-2	NC	B	1.000	GL	SO	C/KL	BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF		

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTINO

DRAWING : M-119
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 1

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : *												
V-19-001	A-7	2	C	12.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	OP		PF		
	FUNCTION : RESIDUAL HEAT REMOVE												
V-19-003	A-5	2	C	12.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	OP		PF		
	FUNCTION : RESIDUAL HEAT REMOVE												
V-19-014	B-8	2	C	3.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	S4		PF	VR-051	
	FUNCTION : RESIDUAL HEAT REMOVE												
V-19-016	B-5	2	C	3.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	S4		PF	VR-051	
	FUNCTION : RESIDUAL HEAT REMOVE												
V-19-149	E-7	1	A/C	20.000	CK	SA	SYS	AT-05	RR	5.000	GPM		
								CT-CC	RR		FTLB	VR-003	
								CT-CO	RR		FTLB	VR-003	
	FUNCTION : RESIOUAL HEAT REMOVE												

APPENDIX B
VALVE LISTING

DRAWING : M-120
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 2

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2000	G-2	2	B	10.000	GA	MO	C/KL	BTC	OP	10.000	SECS		
								PIT	Y2		PF		
E11-F021A	FUNCTION : CONTAINMENT SPRAY												
MO-2001	G-4	2	B	10.000	GL	MO	C	BTC	OP	10.000	SECS		
								PIT	Y2		PF		
E11-F016A	FUNCTION : CONTAINMENT SPRAY												
MO-2003	F-4	1	A	20.000	GA	MO	C	AT-05	RR	5.000	GPM		
								8TC	OP	22.000	SECS		
								BTO	OP	22.000	SECS		
								PIT	Y2		PF		
E11-F015A	FUNCTION : RHR INJECT INBOARD												
MO-2004	F-4	2	B	20.000	ANG	MO	O	BTC	OP	22.000	SECS		
								BTO	OP	22.000	SECS		
								PIT	Y2		PF		
E11-F017A	FUNCTION : RHR INJECT OUTBOARD												
MO-2005	G-4	2	B	12.000	GA	MO	C/KL	BTC	OP	83.000	SECS		
								BTO	OP	83.000	SECS		
								PIT	Y2		PF		
E11-F028A	FUNCTION : CONTAINMENT SPRAY												
MO-2006	F-4	2	B	4.000	GL	MO	C	BTC	OP	10.000	SECS		
								PIT	Y2		PF		
E11-F027A	FUNCTION : CONTAINMENT SPRAY												
MO-2007	F-5	2	B	12.000	GL	MO	C	BTC	OP	37.000	SECS		
								BTO	OP	37.000	SECS		
								PIT	Y2		PF		
E11-F024A	FUNCTION : CONTAINMENT SPRAY												
MO-2009	C-4	2	B	3.000	GA	MO	O	BTC	OP	17.000	SECS		
								BTO	OP	17.000	SECS		
								PIT	Y2		PF		
E11-F007A	FUNCTION : RHR PMP 1P-229A MIN												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-120
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 2

VALVE NUMBER	ORG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTUATOR	NORMAL POSITION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2011	C-3	2	B	8.000	GA	MO	C/KL	BTC	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F006A	FUNCTION : SHUTDOWN COOLING												
MO-2012	C-3	2	B	14.000	GA	MO	O/KL	BTO	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F004A	FUNCTION : RHR 1P-229A SUCTION												
MO-2015	C-3	2	B	14.000	GA	NO	O/KL	BTO	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F004C	FUNCTION : RHR 1P-229C SUCTION												
MO-2016	C-2	2	B	8.000	GA	MO	C/KL	BTC	OP	78.000	SECS		
								PIT	Y2		PF		
E11-F006C	FUNCTION : SHUTDOWN COOLING												
MO-2029	D-5	2	B	12.000	GA	MO	O/KL	BTC	OP	72.000	SECS		
								BTO	OP	72.000	SECS		
								PIT	Y2		PF		
E11-F047A	FUNCTION : RHR HTEXCH SIDE INLT												
MO-2030	E-5	2	B	18.000	GL	MO	O	BTC	OP	53.000	SECS		
								BTO	OP	53.000	SECS		
								PIT	Y2		PF		
	FUNCTION : RESIDUAL HEAT REMOVE												
NO-2031	E-7	2	B	12.000	GA	MO	O/KL	BTC	OP	72.000	SECS		
								BTO	OP	72.000	SECS		
								PIT	Y2		PF		
E11-F003A	FUNCTION : RHR HTEXCH SIDE OUTL												
MO-2044B	O-6	2	B	1.000	GL	MO	C	BTC	OP	18.000	SECS		
								PIT	Y2		PF		
E11-F104A	FUNCTION : RHR HEAT EXCH VENT												
MO-2069	D-3	2	B	24.000	GA	MO	O/KL	BTO	OP	133.000	SECS		
								PIT	Y2		PF		

APPENDIX B
VALVE LISTING

DRAWING : M-120
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 2

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : RHR												
PSV-2043	0-6	2	C	4.000	RV	SA	C	CT-SP	5Y	450.000	PSIG	VR-005	
	FUNCTION : RHR												
PSV-2057	G-7	2	C	1.000	RV	SA	C	CT-SP	Y5	450.000	PSIG		
	FUNCTION : *												
SV-2051	D-7	2	B	1.000	GA	SO	C/KL	BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF		
	FUNCTION : *												
SV-2052	0-8	NC	B	1.000	GA	SO	C/KL	BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF		
	FUNCTION : *												
V-20-001	B-3	2	C	12.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	OP		PF		
	FUNCTION : RHR												
V-20-003	B-5	2	C	12.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	OP		PF		
	FUNCTION : RHR												
V-20-006	B-4	2	C	3.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	S4		PF	VR-051	
	FUNCTION : RHR												
V-20-008	B-2	2	C	3.000	CK	SA	SYS	CT-CC	OP		PF		
								CT-CO	S4		PF	VR-051	
	FUNCTION : RHR												
V-20-082	F-3	1	A/C	20.000	CK	SA	SYS	AT-05	RR	5.000	GPM		
								CT-CC	RR		FTLB	VR-003	
								CT-CO	RR		FTLB	VR-003	

DUANE ARNOLD ENERGY CENTER
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APPENDIX B
VALVE LISTING

DRAWING : M-120
DRAWING TITLE : RESIDUAL HEAT REMOVAL (RHR) SYSTEM, SHEET 2

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : RHR													

APPENDIX B
VALVE LISTING

DRAWING : M-121
DRAWING TITLE : CORE SPRAY SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NGRMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2100	B-5	2	B	12.000	GA	MO	O/KL	BTO	OP	73.000	SECS		
								PIT	Y2		PF		
FUNCTION : CS SUPPRESSION POOL SUCTION LINE ISOLATION													
MO-2104	D-3	2	B	2.000	GA	MO	O	BTC	OP	12.000	SECS		
								BTO	OP	9.999	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY MIN FLOW RECIRC LINE ISOLATION													
MO-2112	F-5	2	B	8.000	GL	MO	C	8TC	OP	33.000	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY FULL FLOW TEST RTN TO SUPPRESSION POOL													
MO-2115	G-5	2	A	8.000	GA	MO	O	AT-01	RR	8000.000	SCCM	VR-037	
								BTC	OP	8.000	SECS		
								BTO	OP	8.000	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY INJECTION TO RX VESSEL SPARGER													
MO-2117	G-6	1	A	8.000	GA	MO	C	AT-01	RR	8000.000	SCCM	VR-037	
								AT-05	RR	4.000	GPM		
								BTC	OP	8.000	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY INJECTION TO RX VESSEL SPARGER													
MO-2120	C-5	2	B	12.000	GA	MO	O/KL	BTO	OP	73.000	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY SUPP POOL SUCTION LINE ISOLATION													
MO-2124	D-4	2	B	2.000	GA	MO	O	BTC	OP	12.000	SECS		
								BTO	OP	9.999	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY MIN FLOW RECIRC LINE ISOLATION													
MO-2132	F-5	2	B	8.000	GL	MO	C	BTC	OP	35.000	SECS		
								PIT	Y2		PF		
FUNCTION : CORE SPRAY FULL FLOW TEST RETURN TO SUPP POOL													

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-121
DRAWING TITLE : CORE SPRAY SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2135	E-5	2	A	8.000	GA	MO	O	AT-01	RR	8000.000	SCCM	VR-037	
								BTC	OP	10.000	SECS		
								BTO	OP	10.000	SECS		
								PIT	Y2		PF		
	FUNCTION : CORE SPRAY INJECTION TO RX VESSEL SPARGER												
MO-2137	E-6	1	A	8.000	GA	MO	C	AT-01	RR	8000.000	SCCM	VR-037	
								AT-05	RR	4.000	GPM		
								BTC	OP	10.000	SECS		
								PIT	Y2		PF		
	FUNCTION : CORE SPRAY INJECTION TO RX VESSEL SPARGER												
MO-2146	C-5	2	B	12.000	GA	MO	O/KL	BTO	OP	74.000	SECS		
								PIT	Y2		PF		
	FUNCTION : CORE SPRAY SUPPRESSION POOL SUCTION LINE ISOLATION												
MO-2147	B-5	2	B	12.000	GA	MO	O/KL	BTO	OP	74.000	SECS		
								PIT	Y2		PF		
	FUNCTION : CORE SPRAY SUPP POOL SUCTION LINE ISOLATION												
PSV-2102	C-3	2	C	.750	RV	SA	SYS	CT-SP	Y5	125.000	PSIG		
	FUNCTION : CS PUMP SUCTION OVERPRESSURE PROTECTION												
PSV-2109	G-4	2	C	2.000	RV	SA	SYS	CT-SP	5Y	450.000	PSIG	VR-005	
	FUNCTION : CS PUMP DISCH OVERPRESSURE PROTECTION												
PSV-2122	C-4	2	C	.750	RV	SA	SYS	CT-SP	Y5	125.000	PSIG		
	FUNCTION : CS PUMP SUCTION OVERPRESSURE PROTECTION												
PSV-2129	E-4	2	C	2.000	RV	SA	SYS	CT-SP	5Y	450.000	PSIG	VR-005	
	FUNCTION : CS PUMP DISCH OVERPRESSURE PROTECTION												
V-21-007	D-3	2	C	10.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : CS PUMP DISCH CHECK												
V-21-009	O-3	2	C	2.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : CS MIN FLOW RECIRC LINE CHECK												

APPENDIX B
VALVE LISTING

DRAWING : M-121
DRAWING TITLE : CORE SPRAY SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-21-010	D-4	2	C	10.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : CS PUMP OISCH CHECK												
V-21-012	D-4	2	C	2.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : CS MIN FLON RECIRC LINE CHECK												
V-21-072	F-7	1	A/C	8.000	CK	SA	SYS	AT-05	RR	4.000	GPM		
								CT-CC	RR		PF	VR-033	
								CT-CO	RR		PF	VR-033	
	FUNCTION : CS INJECTION TO SPARGER CHECK												
V-21-073	E-7	1	A/C	8.000	CK	SA	SYS	AT-05	RR	4.000	GPM		
								CT-CC	RR		PF	VR-033	
								CT-CO	RR		PF	VR-033	
	FUNCTION : CS INJECTION TO SPARGER CHECK												
XFV-2119	G-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : CS EXCESS FLOW CHECK												
XFV-2139	G-7	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : CS EXCESS FLOW CHECK												

APPENDIX B
VALVE LISTING

DRAWING : M-122
DRAWING TITLE : HIGH PRESSURE COOLANT SYSTEM (HPCI), STEAN SIDE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UMIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-2211	D-2	NC	B	1.000	GA	AO	O/FC	BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : HPCI STEAMLINE DRAIN POT DISCHARGE												
CV-2212	D-2	NC	B	1.0D0	GA	AO	O/FC	BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : HPCI STEAMLINE ORAIN POT DISCH												
CV-2235	C-5	2	B	1.000	GA	AO	C/FC	BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : HPCI LUBE OIL/BAROMETRIC COND. CW RETURN ISOLATION												
HV-2201	F-3	2	B	10.000	GL	HO	C	BTC	OP	5.000	SECS		
								BTO	OP	30.000			
								PIT	Y2				
	FUNCTION : HPCI TURBINE STOP VALVE												
MO-2202	E-3	2	B	10.000	GA	MO	C	BTC	OP	20.000	SECS		
								BTO	OP	20.000	SECS		
								PIT	Y2		PF		
E41-F001	FUNCTION : HPCI STM SPPLY TURB												
MO-2238	G-6	1	A	10.000	GA	MO	O	AT-01	RR	10000.000	SCCM	VR-037	
								BTC	CS	13.000	SECS	CSJ-06	
								BTO	CS	13.000	SECS	CSJ-06	
								PIT	Y2		PF		
E41-F002	FUNCTION : HPCI STM SPLY ISOL I												
MO-2239	G-5	1	A	10.000	GA	MO	O	AT-01	RR	10000.000	SCCM	VR-037	
								BTC	OP	13.000	SECS		
								BTO	OP	13.000	SECS		
								PIT	Y2		PF		
E41-F003	FUNCTION : HPCI STM SPLY ISOL O												
MO-2247	D-5	2	B	2.000	GL	MO	C	BTO	OP	15.000	SECS		

APPENDIX B
VALVE LISTING

DRAWING : M-122
DRAWING TITLE : HIGH PRESSURE COOLANT SYSTEM (HPCI), STEAM SIDE

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2247	D-5	2	B	2.000	GL	MO	C	PIT	Y2		PF		
E41-F059	FUNCTION : HPCI LUBE OIL COOL/BAROMETRIC COND. TO BSTR PMP ISO												
MO-2290A	B-8	NC	A	2.0D0	GA	MO	O	AT-01	RR	2000.000	SCCM	VR-037	
								BTC	OP	10.000	SECS		
								BTO	OP	10.000	SECS		
								PIT	Y2				
	FUNCTION : HPCI/RCIC TURB EXHAUST VAC BRKR ISO												
MO-2290B	B-8	NC	A	2.000	GA	MO	O	AT-01	RR	2000.000	SCCM	VR-037	
								BTC	OP	10.000	SECS		
								BTO	OP	I0.000	SECS		
								PIT	Y2		PF		
	FUNCTION : HPCI/RCIC TURB EXHAUST VACUUM BRKR ISO												
PSE-2213	D-6	2	D	16.000	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : HPCI TURB EXHAUST RUPTURE DIAPHRAGM												
PSE-2214	D-6	NC	D	16.000	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : HPCI TURB EXHAUST RUPTURE DIAPHRAGM												
PSV-2223	C-3	2	C	1.250	RV	SA	C	CT-SP	5Y	15.000	PSIG	VR-005	
	FUNCTION : HPCI BAROM COND/LUBE OIL COOLER RELIEF												
PSV-2228	C-5	2	C	1.000	RV	SA	C	CT-SP	5Y	110.000	PSIG	VR-005	
	FUNCTION : LUBE OIL COOLER RELIEF												
SV-2211	C-2	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : HPCI DRAIN POT DISCH SOLENOIO												
SV-2212	C-2	NC	B	1.0D0	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : HPCI DRAIN POT DISCH SOLENOIO												
SV-2235	C-6	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : HPCI LO CLR/BAROM COND CW RETURN ISO SOLENOID												
V-22-016	B-7	2	C	16.000	CK	SA	SYS	AT-03	RR	16000.000	SCCM	VR-037	TAV-06

APPENDIX B
VALVE LISTING

DRAWING : M-122
DRAWING TITLE : HIGH PRESSURE COOLANT SYSTEM (HPCI), STEAM SIDE

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-22-016	B-7	2	C	16.000	CK	SA	SYS	CT-CC	CS		PF	CSJ-07	
								CT-CO	OP		PF		
FUNCTION : HPCI TURBINE EXHAUST CHECK													
V-22-017	C-7	2	C	16.000	SCK	MSA	C/LO	AT-03	RR	16000.000	SCCM	VR-037	TAV-06
								CT-CC	CS		PF	CSJ-08	
								CT-CO	OP		PF		
FUNCTION : HPCI TURBINE EXHAUST CHECK													
V-22-021	B-7	NC	C	2.000	CK	SA	SYS	AT-03	RR	2000.000	SCCM	VR-037	TAV-06
								CT-CC	CS		PF	CSJ-09	
								CT-CO	S2		PF	VR-051	
								CT-PO	OP		PF		
FUNCTION : HPCI ORAIN POTS DISCH													
V-22-022	B-7	NC	C	2.000	SCK	MSA	C/LO	AT-03	RR	2000.000	SCCM	VR-037	TAV-06
								CT-CC	CS		PF	CSJ-09	
								CT-CO	RR		PF	VR-051	
								CT-PO	OP		PF		
FUNCTIOM : HPCI DRAIN POTS DISCH													
V-22-028	B-4	2	C	2.000	CK	SA	SYS	CT-CO	S2		PF	VR-051	
								CT-PO	OP		PF		
FUNCTION : BAROM COND/LO CLR CHECK													
V-22-029	B-5	2	C	2.000	CK	SA	SYS	CT-CO	S2		PF	VR-051	
								CT-PO	OP		PF		
FUNCTION : HPCI BAROM COND RETURN CHECK													
V-22-063	B-8	2	C	3.000	CK	SA	SYS	AT-03	RR	3000.000	SCCM	VR-037	
								CT-CC	CS		PF	CSJ-10	
								CT-CO	S1		PF	VR-051	
								CT-PO	CS		PF		
FUNCTION : HPCI TURBINE EXHAUST VACUUM BREAKER													
V-22-064	B-8	NC	C	3.000	CK	SA	SYS	AT-03	RR	3000.000	SCCM	VR-037	
								CT-CC	CS		PF	CSJ-10	

APPENDIX B
VALVE LISTING

DRAWING : M-122
DRAWING TITLE : HIGH PRESSURE COOLANT SYSTEM (HPCI), STEAM SIDE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-22-064	B-8	NC	C	3.00D	CK	SA	SYS	CT-CO	S1		PF	VR-051	
								CT-PO	CS		PF		
FUNCTION : HPCI TURBINE VACUUM BREAKER													
XFV-2246A	F-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF		
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : HPCI EXCESS FLOW CHECK													
XFV-2246B	F-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF		
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : HPCI EXCESS FLOW CHECK													
XFV-2246C	F-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF		
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : HPCI EXCESS FLOW CHECK													
XFV-22460	E-6	2	A	1.000	XFC	SA	SYS	AT-02	RR		PF		
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
FUNCTION : HPCI EXCESS FLOW CHECK													

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-123
DRAWING TITLE : HIGH PRESSURE COOLANT INJECTION (HPCI), WATER SIDE

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-2315	0-6	2	B	8.000	GL	AO	C/FC	BTC	OP	24.000	SECS		
								FST	Y2		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : TEST BYPASS ISO.												
MO-2300	F-3	2	B	14.000	GA	MO	O	BTC	OP	68.000	SECS		
								PIT	Y2		PF		
E41-F004	FUNCTIOM : HPCI PMP SUCT CST												
MO-2311	C-6	2	B	12.000	GA	MO	O	BTO	OP	20.000	SECS		
								PIT	Y2		PF		
E41-F007	FUNCTION : HPCI PUMP DISCH												
MO-2312	C-7	1	A	12.000	GA	MO	C	AT-01	RR	24000.000	SCCM	VR-037	TAV-06
								BTC	OP	20.000	SECS		
								BTO	OP	20.000	SECS		
								PIT	Y2		PF		
E41-F006	FUNCTION : HPCI PUMP DISCH												
MO-2318	C-5	2	B	4.000	GL	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	10.000	SECS		
								PIT	Y2		PF		
E41-F012	FUNCTION : HPCI MINFLW TORUS												
MO-2321	A-7	2	B	14.000	GA	MO	C	BTC	OP	56.000	SECS		
								BTO	OP	56.000	SECS		
								PIT	Y2		PF		
E41-F042	FUNCTION : HPCI PMP SUCT TORUS												
MO-2322	F-4	2	B	14.000	GA	MO	C	BTC	OP	71.000	SECS		
								BTO	OP	71.000	SECS		
								PIT	Y2		PF		
E41-F041	FUNCTIOM : HPCI PUMP SUCT TORUS												
PSV-2301	F-3	2	C	1.500	RV	SA	SYS	CT-SP	5Y	99999.000	PSIG	VR-005	
	FUNCTIOM : HPCI BSTR PMP SUCTION RELIEF												
SV-2315B	E-6	NC	B	.001	3WY	SO	ND	BTD	OP		PF		

APPENDIX B
VALVE LISTING

DRAWING : M-123
DRAWING TITLE : HIGH PRESSURE COOLANT INJECTION (HPCI), WATER SIDE

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NGRMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : HPCI FFT RETURN TO CST CV SOLENGIO												
SV-2315C	E-6	NC	B	.001	3WY	SO	ND	BTD	OP		PF		
	FUNCTION : HPCI FFT RETURN TO CST CV SOLENGID												
V-23-001	A-6	2	C	14.000	CK	SA	SYS	CT-CC	RR		PF	VR-D21	
								CT-CO	RR		PF	VR-021	
	FUNCTION : SUPPRESSION CHAMBER SUCTION CHECK												
V-23-014	C-4	2	C	4.000	CK	SA	SYS	CT-CO	S3		PF	VR-051	
	FUNCTIOM : HPCI MIN FLON RECIRC LINE CHECK												
V-23-049	C-7	1	C	12.000	CK	SA	SYS	CT-CO	CS		FTLB	CSJ-12	
	FUNCTION : HPCI INJECTION TO FEEDNATER CHECK												

APPENDIX B
VALVE LISTING

DRAWING : M-124
DRAWING TITLE : REACTOR CORE ISOLATION COOLING (RCIC), STEAM SIDE

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-2410	D-3	NC	B	1.000	GA	AO	O/FC	BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
E51-F025	FUNCTION : RCIC STM DRN ISOL I												
CV-2411	D-3	NC	B	1.000	GA	AO	O/FC	BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
E41-F026	FUNCTION : RCIC STM DRN ISOL O												
CV-2435	B-5	NC	B	1.000	GA	AO	C/FC	BTC	OP	5.000	SECS		
								FST	Y2		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : *												
MO-2400	G-6	1	A	4.000	GA	MO	O	AT-01	RR	4000.000	SCCM	VR-037	
								BTC	CS	20.000	SECS	CSJ-D6	
								BTO	CS	20.000	SECS	CSJ-06	
								PIT	Y2		PF		
E51-F007	FUNCTION : RCIC STM SPLY ISOL I												
MO-2401	G-5	1	A	4.000	GA	MO	O	AT-01	RR	4000.000	SCCM	VR-037	
								BTC	OP	23.000	SECS		
								BTO	OP	23.000	SECS		
								PIT	Y2		PF		
E51-F045	FUNCTION : RCIC STM SPLY ISOL O												
NO-2404	F-3	NC	B	4.000	GL	MO	C	BTC	OP	9.999	SECS		
								BTO	OP	15.000	SECS		
								PIT	Y2		PF		
E51-F045	FUNCTION : RCIC STEAM TO TURB												
MO-2405	F-3	NC	B	3.000	GL	MO	C	BTC	OP	15.000	SECS		
								BTO	OP	15.000	SECS		
								PIT	Y2		PF		
	FUNCTION : RCIC - STEAM SIOE												
MO-2426	D-6	NC	B	2.000	GL	MO	C	BTC	OP	9.999	SECS		

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INSERVICE TESTING PLAM - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-124
DRAWING TITLE : REACTOR CORE ISOLATION COOLING (RCIC), STEAM SIDE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2426	D-6	NC	B	2.000	GL	MO	C	BTO PIT	OP Y2	15.000	SECS		
E51-F046	FUNCTION : RCIC TURB COOL WATER												
PSE-2418	D-6	NC	D	10.000	RPD	SA	SYS	DT-M	NA		PSIG		TAV-10
	FUNCTION : *												
PSE-2419	E-6	NC	D	10.000	RPD	SA	SYS	DT-M	NA		PSIG		TAV-10
	FUNCTION : *												
PSV-2430	C-6	NC	C	2.000	RV	SA	C	CT-SP	Y5	83.000	PSIG		
	FUNCTION : *												
PSV-2474	C-3	NC	C	1.750	RV	SA	C	CT-SP	5Y	15.000	PSIG		
	FUNCTION : *												
SV-2410	D-3	NC	B	.250	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOL FOR CV-2410												
SV-2411	D-3	NC	B	.250	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : SOL FOR CV-2411												
SV-2435	B-5	NC	B	.250	3WY	SO	ND	BTO	OP		PF		
	FUNCTION : *												
V-24-008	D-7	NC	C	10.000	SCK	MSA	C/LO	AT-03 CT-CC CT-CO	RR CS OP	10000.000	SCCM PF PF	VR-037 CSJ-08	TAV-06
	FUNCTION : RCIC - STEAM SIDE												
V-24-009	B-3	NC	C	1.250	CK	SA	SYS	CT-CC CT-CO CT-PC CT-PO	RR RR OP OP		PF PF PF PF	VR-051 VR-051	
	FUNCTION : *												
V-24-010	C-4	NC	C	1.250	CK	SA	SYS	CT-CC	RR		PF	VR-051	

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INSERVICE TESTING PLAM - VALVES

APPENDIX B
VALVE LISTIWG

DRAWING : M-124
DRAWING TITLE : REACTOR CORE ISOLATION COOLING (RCIC), STEAM SIDE

VALVE NUMBER	DWG CGOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NGRMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTOOWN	TECHNICAL POSITION
V-24-010	C-4	NC	C	1.250	CK	SA	SYS	CT-CO	RR		PF	VR-051	
								CT-PC	OP		PF		
								CT-PO	OP		PF		
	FUNCTION : *												
V-24-012	C-5	NC	C	2.000	CK	SA	SYS	CT-CC	S2		PF	VR-051	
								CT-CO	S2		PF	VR-051	
								CT-PC	OP		PF		
								CT-PO	OP		PF		
	FUNCTION : RCIC - STEAM SIOE												
V-24-023	D-7	NC	C	10.000	CK	SA	SYS	AT-03	RR	10000.000	SCCM	VR-037	TAV-06
								CT-CC	CS		PF	CSJ-07	
								CT-CO	OP		PF		
	FUNCTION : RCIC - STEAM SIOE												
V-24-046	D-7	NC	C	3.000	CK	SA	SYS	AT-03	RR	3000.000	SCCM	VR-037	
								CT-CC	CS		PF	CSJ-10	
								CT-CO	S1		PF	VR-051	
								CT-PO	CS		PF		
	FUNCTION : RCIC - STEAM SIOE												
V-24-047	0-7	2	C	3.000	CK	SA	SYS	AT-03	RR	3000.000	SCCM	VR-037	
								CT-CC	CS		PF	CSJ-10	
								CT-CO	S1		PF	VR-051	
								CT-PO	CS		PF		
	FUNCTION : RCIC - STEAM SIDE												
XFV-2443A	F-6	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : RCIC - STEAM SIOE												
XFV-2443B	F-6	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : RCIC - STEAM SIDE												

APPENDIX B
VALVE LISTING

DRAWING : M-124
DRAWING TITLE : REACTOR CORE ISOLATION COOLING (RCIC), STEAM SIDE

VALVE NUMBER	OWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
XFV-2443C	F-6	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : RCIC - STEAM SIDE												
XFV-2443D	F-6	2	A/C	1.000	XFC	SA	SYS	AT-02	RR		PF	VR-008	
								CT-CC	RR		PF	VR-008	
								PIT	Y2		PF		
	FUNCTION : RCIC - STEAM SIDE												

APPENDIX B
VALVE LISTING

DRAWING : M-125
DRAWING TITLE : REACTOR CORE ISOLATION COOLING (RCIC), WATER SIDE

VALVE NUMBER	DNG CGOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2500	F-4	NC	B	6.000	GA	MO	O	BTC	OP	41.000	SECS		
								PIT	Y2		PF		
E51-F010	FUNCTION : RCIC PUMP SUCT CST												
MO-2510	C-4	NC	B	2.000	GL	MO	C	BTO	OP	5.000	SECS		
								PIT	Y2		PF		
E51-F019	FUNCTION : RCIC MINFLOW TORUS												
MO-2511	D-5	NC	B	4.000	GA	MO	O	BTO	OP	15.000	SECS		
								PIT	Y2		PF		
E51-F012	FUNCTION : RCIC PUMP OISCH												
MO-2512	D-6	1	A	4.000	GA	MO	C	AT-01	RR	24000.000	SCCM	VR-037	TAV-06
								BTC	OP	15.000	SECS		
								BTO	OP	15.000	SECS		
								PIT	Y2		PF		
E51-F013	FUNCTION : RCIC PUMP DISCH												
MO-2515	E-5	NC	B	4.000	GL	MO	C	BTC	OP	24.000	SECS		
								PIT	Y2		PF		
E51-F019	FUNCTION : RCIC TEST RETURN												
MO-2516	A-5	NC	B	6.000	GA	MO	C	BTC	OP	34.000	SECS		
								BTO	OP	34.000	SECS		
								PIT	Y2		PF		
E51-F031	FUNCTION : RCIC PUMP SUCT TORUS												
MO-2517	F-4	NC	B	6.000	GA	MO	C	BTC	OP	41.000	SECS		
								BTO	OP	41.000	SECS		
								PIT	Y2		PF		
E51-F029	FUNCTION : RCIC PUMP SUCT TORUS												
PSV-2501	E-4	NC	C	1.000	RV	SA	C	CT-SP	5Y	99999.000	PSIG		
	FUNCTION : RCIC - NATER SIDE												
V-25-001	A-5	NC	C	6.000	CK	SA	SYS	CT-CC	RR		PF	VR-021	
								CT-CO	RR		PF	VR-021	

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-125
DRAWING TITLE : REACTOR CORE ISOLATION COOLING (RCIC), WATER SIDE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : RCIC - WATER SIDE												
V-25-006	C-4	NC	C	2.000	CK	SA	SYS	CT-CO	S3			VR-051	
	FUNCTION : RCIC - WATER SIDE												
V-25-D36 E51-F014	D-6	1	C	4.000	CK	SAT	SYS	CT-CO	OP		FTLB	CSJ#13	
	FUNCTION : RCIC - WATER SIDE												

APPENDIX B
VALVE LISTING

DRAWING : M-126
DRAWING TITLE : STAND-BY LIQUID CONTROL (SBLC) SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTUATOR	NORMAL POSITION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
PSV-2607	E-5	NC	C	2.000	RV	SA	SYS	CT-SP	5Y	1400.0DD			
	FUNCTION : STANDBY LIQUID CONTR												
PSV-2609	B-5	NC	C	2.000	RV	SA	SYS	CT-SP	5Y	140D.00D			
	FUNCTION : STDBY LIQUID CONTR												
V-26-004	C-5	NC	C	1.500	CK	SA	SYS	CT-CO	OP				
	FUNCTION : STANDBY LIQUID CONTR												
V-26-006	C-5	NC	C	1.500	CK	SA	SYS	CT-CO	OP				
	FUNCTION : STANDBY LIQUID CONTR												
V-26-00B	F-7	1	A/C	1.500	CK	SA	SYS	AT-01	RR	6250.000	SCCM	VR-037	
								CT-CC	RR			VR-020	
								CT-CO	RR			VR-020	
	FUNCTION : STANDBY LIQUIO CONTR												
V-26-009	D-8	1	A/C	1.500	CK	SA	SYS	AT-01	RR	6250.000	SCCM	VR-037	
								CT-CC	RR			VR-020	
								CT-CO	RR			VR-020	
	FUNCTION : STANDBY LIQUID CONTR												
XS-2618A	F-6	NC	D	1.500	GA	EXP	C/KL	DT-E	2S		PF		
	FUNCTION : STANDBY LIQUID CONTR												
XS-2618B	E-6	NC	D	1.500	GA	EXP	C/KL	OT-E	2S		PF		
	FUNCTION : STANDBY LIQUID CONTR												

APPENDIX B
VALVE LISTING

DRAWING : M-127
DRAWING TITLE : REACTOR WATER CLEAM-UP (RWCU) SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-2700	F-8	1	A	4.000	GA	MO	O	AT-01	RR	4000.000	SCCM	VR-037	
								BTC	OP	20.000	SECS		
								PIT	Y2		PF		
G31-F001	FUNCTION : RWCU ISOLATION-INBD												
MO-2701	F-7	1	A	4.000	GA	MO	O	AT-01	RR	4000.000	SCCM	VR-037	
								BTC	OP	20.000	SECS		
								PIT	Y2		PF		
G31-F004	FUNCTION : RWCU ISOLATION-OUTBD												
MO-2740	G-4	1	A	4.000	GL	MO	O	AT-01	RR	24000.000	SCCM	VR-037	TAV-06
								BTC	OP	10.000	SECS		
								PIT	Y2		PF		
G31-F042	FUNCTION : RWCU SYS ISOL-OUTBD												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-129
DRAWING TITLE : RIVER WATER SUPPLY - INTAKE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
AV-2909A	D-7	NC	C	3.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-2909B	D-6	NC	C	3.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-29D9C	D-5	NC	C	3.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-2909D	D-4	NC	C	3.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-2909E	G-5	NC	C	3.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-2909F	F-5	NC	C	3.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
V-29-001	D-6	3	C	18.000	CK	SA	SYS	CT-CC CT-CO	OP OP				
	FUNCTION : RIVER WTR SUPPLY												
V-29-003	D-5	3	C	18.000	CK	SA	SYS	CT-CC CT-CO	OP OP				
	FUMCTION : RIVER WATER SUPPLY												
V-29-005	D-5	3	C	18.000	CK	SA	SYS	CT-CC CT-CO	OP OP				
	FUNCTION : RIVER NATER SUPPLY												
V-29-007	0-4	3	C	18.000	CK	SA	SYS	CT-CC CT-CO	OP OP				
	FUNCTION : RIVER WATER SUPPLY												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-130-1
DRAWING TITLE : CONPRESSED AIR

VALVE NUMBER	ONG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-30-287	C-4	NC	A	1.000	GA	M	C/LC	AT-01	RR	1000.00D	SCCM	VR-037	
	FUNCTION : RWCU												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-132
DRAWING TITLE : DIESEL GENERATOR SYSTEMS

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTUATOR	NORMAL POSITION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
PSV-3221A	F-7	NC	C	.DD1	RV	SA	C	CT-SP	5Y	250.000	PSIG	VR-D05	
	FUNCTION : RECEIVER TANK RELIEF VALVE												
PSV-3221B	C-7	NC	C	.001	RV	SA	C	CT-SP	5Y	250.000	PSIG	VR-005	
	FUNCTION : RECEIVER TANK RELIEF VALVE												
PSV-3222A	F-7	NC	C	.001	RV	SA	C	CT-SP	5Y	250.000	PSIG	VR-005	
	FUNCTION : RECEIVER TANK RELIEF VALVE												
PSV-3222B	C-7	NC	C	.001	RV	SA	C	CT-SP	5Y	250.000	PSIG	VR-005	
	FUNCTION : RECEIVER TANK RELIEF VALVE												
PSV-3223A	F-7	NC	C	.001	RV	SA	C	CT-SP	5Y	250.000	PSIG	VR-005	
	FUNCTION : RECEIVER TANK RELIEF VALVE												
PSV-3223B	C-7	NC	C	.001	RV	SA	C	CT-SP	5Y	250.000	PSIG	VR-005	
	FUNCTION : RECEIVER TANK RELIEF VALVE												
SV-3261A	Z-99	NC	B	1.500	2WY	SO	C	BTC	OP		PF	VR-007	
								BTO	OP		PF	VR-007	
	FUNCTION : DIESEL START SOLENOID												
SV-3261B	Z-99	NC	B	1.500	2WY	SO	C	BTC	OP		PF	VR-007	
								BTO	OP		PF	VR-007	
	FUNCTION : DIESEL START SOLENOID												
SV-3262A	Z-99	NC	B	1.500	2WY	SO	C	BTC	OP		PF	VR-007	
								BTO	OP		PF	VR-007	
	FUNCTION : DIESEL START SOLENOID												
SV-3262B	Z-99	NC	B	1.500	2WY	SO	C	BTC	OP		PF	VR-007	
								BTO	OP		PF	VR-007	
	FUNCTION : DIESEL START SOLENOID												
V-32-005	B-3	NC	C	1.500	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : DIESEL GENERATOR SYS												
V-32-010	B-2	NC	C	1.500	CK	SA	SYS	CT-CO	OP		PF		

DUANE ARNOLD ENERGY CENTER
IMSERVICE TESTIMG PLAN - VALVES

APPENDIX B
VALVE LISTINO

DRAWING : M-132
DRAWING TITLE : DIESEL GENERATOR SYSTENS

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
FUNCTION : DIESEL GENERATOR SYS													
V-32-019	C-4	NC	C	1.500	CK	SA	SYS	CT-CC CT-CO	OP OP		PF PF		
FUNCTION : FUEL PUMP CHECK													
V-32-021	F-4	NC	C	1.500	CK	SA	SYS	CT-CC CT-CO	OP OP		PF PF		
FUNCTION : FUEL PUNP CHECK													
V-32-032	G-7	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	OP OP	5000.000	SCCM PF		
FUNCTION : DIESEL GENERATOR SYS													
V-32-034	D-7	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	OP OP	5000.000	SCCM PF		
FUNCTION : DIESEL GENERATOR SYS													
V-32-036	E-7	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	OP OP	.667	PSIM PF		
FUNCTION : DIESEL GENERATOR SYS													
V-32-039	E-7	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	OP OP	.667	PSIM PF		
FUNCTION : DIESEL GENERATOR SYS													
V-32-043	F-7	NC	C	2.000	CK	SA	SYS	CT-CO	OP		PF		
FUNCTION : RECEIVER TANK CHECK													
V-32-045	F-7	NC	C	2.000	CK	SA	SYS	CT-CO	OP		PF		
FUNCTION : RECEIVER TANK CHECK													
V-32-047	B-7	NC	C	.750	CK	SA	SYS	AT-06 CT-CC	OP OP	.667	PSIM PF		
FUNCTION : DIESEL GENERATOR SYS													
V-32-048	B-7	NC	C	.750	CK	SA	SYS	AT-06	OP	.667	PSIM		

APPENDIX B
VALVE LISTING

DRAWING : M-132
DRAWING TITLE : DIESEL GENERATOR SYSTEMS

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-32-D48	B-7	NC	C	.75D	CK	SA	SYS	CT-CC	OP		PF		
	FUNCTION : DIESEL GENERATOR SYS												
V-32-052	C-7	NC	C	2.D00	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : RECEIVER TANK CHECK												
V-32-054	C-7	NC	C	2.000	CK	SA	SYS	CT-CO	OP		PF		
	FUNCTION : RECEIVER TANK CHECK												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-137
DRAWING TITLE : RADWASTE SUMP SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-3704	H-7	NC	A	3.000	GA	AO	O/FC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	4.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
G11-F003	FUNCTION : DRWL FLOOR DRN ISOL.												
CV-3705	H-7	NC	A	3.000	GA	AO	O/FC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	4.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
G11-F004	FUNCTION : DRWL FLGOR DRN ISOL.												
CV-3728	D-6	NC	A	3.000	GA	AO	O/FC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	4.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
G11-FD19	FUNCTION : DRWL EQUIP DRN ISOL.												
CV-3729	D-6	NC	A	3.000	GA	AO	O/FC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	4.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
G11-F020	FUNCTION : DRWL EQUIP DRN ISOL.												
SV-3704	G-7	NC	B	1.000	3WY	SO	NE	BTO	OP		PF	VR-002	
	FUNCTION : RADWASTE SUMP												
SV-3705	G-7	NC	B	1.000	3WY	SO	NE	BTO	OP		PF	VR-002	
	FUNCTION : RADWASTE SUMP												
SV-3728	C-6	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : RADWASTE SUMP												
SV-3729	C-6	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : RADWASTE SUMP												

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-4300	C-7	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	TAV-06
								AT-07	OP	10.000	PSIM		
								BTC	OP	5.000	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONTAINMENT ATMOSPHE										
CV-4301	C-8	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	TAV-06
								AT-07	OP	10.000	PSIM		
								BTC	OP	5.000	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONTAINMENT ATMOSPHE										
CV-4302	D-7	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	TAV-06
								AT-07	OP	25.000	PSIM		
								BTC	OP	5.000	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4303	D-7	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	TAV-06
								AT-07	OP	25.000	PSIM		
								BTC	OP	5.000	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4304	B-7	NC	A	20.000	BTF	AO	C/FO	AT-01	RR	7500.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000	SECS		
								BTO	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4305	B-7	NC	A	20.000	BTF	AO	C/FO	AT-01	RR	7500.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000	SECS		

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-4305	B-7	NC	A	20.000	BTF	AO	C/FO	BTO	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
CV-4306	E-1	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	150D0.0D0	SCCM	VR-037	TAV-D6
								AT-07	OP	7.000	PSIM		
								BTC	OP	5.000	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : VACUUM BREAKER												
CV-4307	E-3	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	TAV-06
								AT-07	OP	7.000	PSIM		
								BTC	OP	5.0D0	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
CV-4308	E-3	NC	A	18.000	BTF	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	TAV-06
								AT-07	OP	7.000	PSIM		
								BTC	OP	5.000	SECS		TAV-08
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
CV-4309	C-7	NC	A	2.000	GA	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSHPERE CTL												
CV-4310	C-7	NC	A	2.000	GA	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSHPERE CTL												

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-4311	F-3	NC	A	6.00D	GA	AO	C/FC	AT-01	RR	1500D.D00	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4312	F-3	NC	A	6.000	GA	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4313	4-3	NC	A	6.000	GA	AO	C/FC	AT-01	RR	15000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4327A	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.009	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-050	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	
			FUNCTION : CONT ATMOSPHERE CTL										
CV-4327B	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.009	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-050	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	
			FUNCTION : CONT ATMOSHPERE										
CV-4327C	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.009	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-050	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	

APPENDIX B
VALVE LISTIWG

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BOOY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : CONT ATMOSPHERE												
CV-4327D	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.D09	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-D50	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	
	FUNCTION : CONT ATMOSPHERE												
CV-4327F	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.009	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-050	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	
	FUNCTION : CONT ATMOSPHERE												
CV-4327G	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.009	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-050	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	
	FUNCTION : CONT ATMOSPHERE												
CV-4327H	C-7	NC	A/C	18.000	CK	SAT	SYS	AT-04	RR	.009	PSIM	VR-011	TAV-09
								CT-CC	OP		PF	VR-050	
								CT-CO	OP		PF	VR-050	
								CTCME	RR		FTLB	VR-050	
								CTOME	RR		FTLB	VR-050	
	FUNCTION : CONT ATMOSPHERE												
CV-4371A	E-5	NC	A	2.000	GA	AO	O/FC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
CV-4371C	E-5	NC	A	2.000	GA	AO	O/FC	AT-01	RR	3000.000	SCCM	VR-037	

APPENDIX B
VALVE LISTINO

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG CGOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-4371C	E-5	NC	A	2.000	GA	AO	O/FC	BTC	OP	5.0D0	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
CV-4378A	E-5	NC	A	2.000	GA	AO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	5.D00	SECS		
								FST	OP		PF	VR-D17	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
CV-4378B	E-5	NC	A	2.000	GA	AO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
MO-4320A	C-3	NC	B	2.000	GA	MO	C	BTO	OP	12.000	SECS		
								PIT	Y2				
	FUNCTION : CONT ATMOSPHERE												
MO-4320B	C-4	NC	B	2.000	GA	MO	C	BTO	OP	12.000	SECS		
								PIT	Y2				
	FUNCTION : CONT ATMOSPHERE												
MO-4323A	B-3	NC	B	2.000	GL	MO	C	BTO	OP	40.000	SECS		
								PIT	Y2				
	FUNCTION : CONT ATMOSPHERE												
NO-4323B	B-4	NC	B	2.000	GL	MO	C	BTO	OP	40.000	SECS		
								PIT	Y2				
	FUNCTION : CONT ATMOSPHERE												
PSE-4338A	A-4	NC	D	.075	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : *												
PSE-4338B	A-4	NC	D	.075	RPD	SA	SYS	DT-M	NA				TAV-10

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : *												
PSE-4338C	A-4	NC	D	.075	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : *												
PSE-4338D	A-4	NC	O	.075	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : *												
PSE-4338E	A-4	NC	D	.075	RPD	SA	SYS	OT-M	NA				TAV-10
	FUNCTION : *												
PSE-4338F	A-4	NC	D	.075	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : *												
PSE-4338G	A-4	NC	D	.075	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : *												
PSE-4338H	A-4	NC	D	.075	RPD	SA	SYS	DT-M	NA				TAV-10
	FUNCTION : *												
PSV-4336	B-3	NC	C	2.000	RV	SA	SYS	CT-SP	Y5	2450.000	PSIG		
	FUNCTION : *												
SV-4300	C-7	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4301	C-8	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4302	D-7	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSHPERE												
SV-4303	D-7	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSHPERE												
SV-4304	B-7	NC	B	.750	3WY	SO	NE	BTD	OP		PF	VR-002	
								BTE	OP		PF	VR-002	

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : CONT ATMOSHPERE												
SV-4305	B-7	NC	B	.750	3WY	SO	NE	BTD	OP		PF	VR-002	
								BTE	OP		PF	VR-0D2	
	FUNCTION : CONT ATMOSPHERE												
SV-4306	E-1	NC	B	1.D00	3WY	SO	ND	BTD	OP		PF	VR-0D2	
	FUNCTION : CONT ATMOSPHERE												
SV-4307	E-3	NC	B	1.D00	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSHPERE CTL												
SV-4308	E-3	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4309	C-8	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4310	D-7	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4311	F-3	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4312	F-3	NC	B	1.000	3WY	SO	ND	8TD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4313	F-3	NC	B	1.000	3WY	SO	ND	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4331A	C-2	2	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.00D	SECS	VR-034	
								BTO	OP	2.D00	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4331B	C-2	NC	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-4331B	C-2	NC	A	2.000	GA	SO	C/KC	BTC	OP	2.000	SECS	VR-034	
								8TO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4332A	C-2	2	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4332B	C-2	NC	A	.500	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CNTL												
SV-4333A	C-2	2	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4333B	C-2	NC	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4334A	B-2	2	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4334B	B-2	NC	A	2.000	GA	SO	C/KC	AT-01	RR	3000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-4334B	B-2	NC	A	2.000	GA	SO	C/KC	BTO	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE CTL												
SV-4371A	E-5	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4371C	F-5	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4378A	E-5	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
SV-4378B	E-5	NC	B	1.000	3WY	SO	NE	BTD	OP		PF	VR-002	
	FUNCTION : CONT ATMOSPHERE												
V-43-032	B-6	NC	C	.500	CK	SA	SYS	AT-06	OP	240.000	SCCM		
								CT-CC	OP		PF		
	FUNCTION :									*			
V-43-035	B-8	NC	C	.500	CK	SA	SYS	AT-06	OP	240.000	SCCM		
								CT-CC	OP		PF		
	FUNCTION :									*			
V-43-082	C-3	NC	C	2.000	CK	SA	SYS	CT-CO	OP				
	FUNCTION : CONT ATMOSPHERE												
V-43-084	C-3	NC	C	2.000	CK	SA	SYS	CT-CO	OP				
	FUNCTION : CONT ATMOSPHERE												
V-43-086	C-3	NC	C	2.000	CK	SA	SYS	CT-CO	OP				
	FUNCTION : CONT ATMOSPHERE												
V-43-088	B-3	NC	C	2.000	CK	SA	SYS	CT-CO	OP				
	FUNCTION : CONT ATMOSPHERE												
V-43-168	A-7	NC	A/C	20.000	CK	SA	SYS	AT-01	RR	7500.000	SCCM	VR-037	TAV-06

APPENDIX B
VALVE LISTING

DRAWING : M-143
DRAWING TITLE : CONTAINMENT ATMOSPHERE CONTROL SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-43-168	A-7	NC	A/C	20.000	CK	SA	SYS	CT-CC	OP				
								CT-CO	OP				
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSHPERE CTL												
V-43-169	A-7	NC	A/C	20.000	CK	SA	SYS	AT-D1	RR	7500.000	SCCM	VR-037	TAV-06
								CT-CC	OP				
								CT-CO	OP				
								PIT	Y2		PF		
	FUNCTION : CONT ATMOSPHERE CTL												
V-43-214	F-4	NC	A/C	2.000	SCK	MSA	C/LO	AT-01	RR	3000.000	SCCM	VR-037	
								CT-CC	RR		PF	VR-025	
	FUNCTION : CONT ATMOSPHERE CTL												

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-146
DRAWING TITLE : SERVICE WATER PUMPHOUSE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
AV-4926E	C-7	3	C	2.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-4926F	C-5	3	C	2.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-4929C	D-6	3	C	2.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
AV-4929D	D-6	3	C	2.000	AV	SA	SYS	CT-CC	OP		PF		
	FUNCTION : *												
CV-4909	H-6	3	B	24.000	BTF	AO	C/FC	BTC	OP	20.000			
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : SERVICE WTR PUMP												
CV-4914	F-6	3	B	20.000	BTF	AO	O/FO	BTO	OP	9.999	SECS		
								FST	Y2		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : *												
CV-4915	F-7	3	B	20.000	BTF	AO	O/FO	BTO	OP	9.999	SECS		
								FST	Y2		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : *												
SV-4909	H-6	NC	B	1.000	3WY	SO	NE	BTD	OP		PF		
								FST	OP		PF	VR-017	
	FUNCTION : SERVICE WTR PUMP												
SV-4934	G-8	NC	B	.250	3WY	SO	NE	BTD	OP		PF		
	FUNCTION : *												
SV-4935	F-8	NC	B	.250	3WY	SO	NE	BTO	OP		PF		
	FUNCTION : *												
V-46-011	B-5	3	C	12.000	CK	SA	SYS	CT-CC	OP				

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-146
DRAWING TITLE : SERVICE WATER PUMPHOUSE

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
V-46-011	B-5	3	C	12.000	CK	SA	SYS	CT-CO	OP				
	FUNCTION : SERVICE WTR PUMP												
V-46-013	B-5	3	C	12.000	CK	SA	SYS	CT-CC	OP				
								CT-CO	OP				
	FUNCTION : SERVICE WTR PUMP												
V-46-018	C-6	3	C	8.000	CK	SA	SYS	CT-CC	RR			VR-039	
								CT-CO	OP				
								CT-PC	OP				
	FUNCTION : SERVICE WTR PUMP												
V-46-021	C-6	3	C	8.000	CK	SA	SYS	CT-CC	RR			VR-039	
								CT-CO	OP				
								CT-PC	OP				
	FUNCTION : SERVICE WTR PUMP HSE												
V-46-026	B-7	3	C	12.000	CK	SA	SYS	CT-CC	OP				
								CT-CO	OP				
	FUNCTION : SERVICE WTR PUMP HSE												
V-46-030	B-7	3	C	12.000	CK	SA	SYS	CT-CC	OP				
								CT-CO	OP				
	FUNCTION : SERVICE WTR PUMP HSE												

APPENDIX B
VALVE LISTING

DRAWING : M-157
DRAWING TITLE : DRYWELL COOLING WATER SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
CV-5704A	H-6	NC	A	4.000	GL	AO	O/FO	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : DRYWELL CGOLING WTR												
CV-5704B	H-6	NC	A	4.000	GL	AO	O/FO	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : DRYWELL COOLING												
CV-5718A	B-8	NC	A	4.000	GL	AO	O/FO	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : DRYWELL COOLING WTR												
CV-5718B	A-8	NC	A	4.000	GL	AO	O/FO	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
								BTC	OP	5.000	SECS		
								FST	OP		PF	VR-017	
								PIT	Y2		PF		
	FUNCTION : DRYWELL COOLING												
SV-5704A	H-6	NC	B	1.000	3WY	SO	ND	BTE	OP		PF	VR-002	
	FUNCTION : DRYWELL COOLING WTR												
SV-5704B	H-6	NC	B	1.000	3WY	SO	ND	BTE	OP		PF	VR-002	
	FUNCTION : ORYWELL COOLING WTR												
SV-5718A	B-8	NC	B	1.000	3WY	SO	ND	BTE	OP		PF	VR-002	
	FUNCTION : DRYWELL COOLING NTR												
SV-5718B	A-8	NC	B	1.00D	3WY	SO	ND	8TE	OP		PF	VR-002	
	FUNCTION : ORYWELL COOLING WTR												
V-57-075	G-7	NC	A	3.000	GL	M	C/LC	AT-01	RR	4000.000	SCCM	VR-037	TAV-06

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-157
DRAWING TITLE : DRYWELL COOLING WATER SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
	FUNCTION : DRYWELL COOLING												
V-57-076	F-7	NC	A	3.000	GL	M	C/LC	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
	FUNCTION : DRYWELL COOLING												
V-57-077	8-7	NC	A	3.000	GL	M	C/LC	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
	FUNCTION : DRYWELL COOLING												
V-57-078	A-7	NC	A	3.000	GL	M	C/LC	AT-01	RR	4000.000	SCCM	VR-037	TAV-06
	FUNCTION : DRYWELL COOLING												

APPENDIX B
VALVE LISTING

DRAWING : M-181
DRAWING TITLE : CONTAINMENT ATMOSPHERE MONITORING SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEOORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-8101A	F-5	NC	A/C	1.000	GL	SO	O/FC	AT-D1	RR	1000.000	SCCM	VR-D37	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8101B	F-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8102A	F-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8102B	F-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8103A	E-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8103B	E-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8104A	E-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	

APPENDIX B
VALVE LISTING

DRAWING : M-181
DRAWING TITLE : CONTAINMENT ATMOSPHERE MONITORING SYSTEM

VALVE NUMBER	DNG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-8104A	E-5	NC	A/C	1.000	GL	SO	O/FC	BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTIUN : CONT ATMOSPHERE MON.												
SV-8104B	E-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8105A	E-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8105B	E-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8106A	E-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8106B	E-6	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
	FUNCTION : CONT ATMOSPHERE MON.												
SV-8107A	0-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	

APPENDIX B
VALVE LISTING

DRAWING : M-181
DRAWING TITLE : CONTAINMENT ATMOSPHERE MONITORING SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-8107A	D-5	NC	A/C	1.0D0	GL	SO	O/FC	BTO	OP		PF	VR-032	
								FST	OP		PF	VR-D17	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8107B	D-4	NC	A/C	1.0D0	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8108A	D-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8108B	D-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								BTO	OP		PF	VR-032	
								FST	OP		PF	VR-017	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8109A	D-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								FST	OP		PF	VR-017	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8109B	D-4	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-D32	
								FST	OP		PF	VR-017	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8110A	D-5	NC	A/C	1.000	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP		PF	VR-032	
								FST	OP		PF	VR-017	
FUNCTION : CONT ATMOSPHERE MON.													
SV-8110B	D-4	NC	A/C	1.00D	GL	SO	O/FC	AT-01	RR	1000.000	SCCM	VR-037	

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-181
DRAWING TITLE : CONTAINMENT ATMOSPHERE MONITORING SYSTEM

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
SV-8110B	D-4	NC	A/C	1.000	GL	SO	O/FC	BTC	OP		PF	VR-032	
								FST	OP		PF	VR-017	

FUNCTION : CONT ATMOSPHERE MON.

APPENDIX B
VALVE LISTING

DRAWING : M-184
DRAWING TITLE : MAIN STEAM ISOLATION VALVE (NSIV) LEAKAGE CONTROL

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-8401A	F-3	1	A	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : NSIV LEAKAGE CONTROL													
MO-8401B	F-3	1	A	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8401C	F-3	1	A	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8401D	F-3	1	A	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8402A	F-3	NC	B	1.000	GA	MO	C	BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8402B	F-3	NC	B	1.000	GA	MO	C	BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8402C	F-3	NC	B	1.000	GA	MO	C	BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8402D	F-3	NC	B	1.000	GA	MO	C	BTO	OP	20.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8403A	F-4	NC	B	1.000	GA	MO	C	BTC	OP	10.000	SECS		

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-184
DRAWING TITLE : MAIN STEAN ISOLATION VALVE (MSIV) LEAKAGE CONTROL

VALVE NUMBER	DWG COOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NORMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTDOWN	TECHNICAL POSITION
MO-8403A	F-4	NC	B	1.000	GA	MO	C	BTO	OP	10.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8403B	F-4	NC	B	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	10.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8403C	F-4	NC	B	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	10.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													
MO-8403D	F-4	NC	B	1.000	GA	MO	C	BTC	OP	10.000	SECS		
								BTO	OP	10.000	SECS		
								PIT	Y2				
FUNCTION : MSIV LEAKAGE CONTROL													

DUANE ARNOLD ENERGY CENTER
INSERVICE TESTING PLAN - VALVES

APPENDIX B
VALVE LISTING

DRAWING : M-187
DRAWING TITLE : POST ACCIDENT SANPLING

VALVE NUMBER	DWG CGOR	IST CLASS	FUNCTION CATEGORY	SIZE (INCH)	BODY STYLE	ACTU-ATOR	NGRMAL POSI-TION	TEST TYPE	TEST FREQ	MAXIMUM LIMIT	TEST UNIT	RELIEF REQUEST OR COLD SHUTOOWN	TECHNICAL POSITION
SV-8772A	B-8	NC	A	1.000	GL	SO	C/FC	AT-01	RR	1000.0D0	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : POST ACCIDENT SAMPLI												
SV-8772B	B-B	NC	A	1.000	GL	SO	C/FC	AT-01	RR	1000.000	SCCM	VR-037	
								BTC	OP	2.000	SECS	VR-034	
								FST	OP		PF	VR-017	
								PIT	Y2				
	FUNCTION : POST ACCIDENT SAMPLI												

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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

APPENDIX D: COLD SHUTDOWN TEST JUSTIFICATIONS

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-14-0003 - Reactor Feedwater Inboard Containment Isolation Valve

   During plant operation at power, reactor feedwater is supplied through this valve and V-14-0001 to maintain reactor coolant inventory in the reactor vessel and maintain reactor vessel water level. Closing V-14-0003 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 shut down.

7. V-22-0016 - HPCI Turbine Exhaust Check Valve
V-22-0023 - 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-22-0017 - HPCI Turbine Exhaust Stop-Check Valve
V-24-0008 - RCIC Turbine Exhaust Stop-Check Valve

During plant operation these valves must be capable fo opening to allow turbine exhaust steam to exit into 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-22-0021 - HPCI Condensate Drain Valve
V-22-0022 - 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-22-0022 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-22-0063 and V-22-0064 - HPCI Exhaust Line Vacuum Breakers
V-24-0046 and V-24-0047 - 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-23-0049 - 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.

13. V-25-0036 - RCIC Injection Check Valve

This valve is the RCIC system injection line check valve. This valve cannot be cycled during reactor operation without placing the RCIC system inoperable or actually injecting water into the reactor vessel. This valve will be tested during cold shutdown.

14. CV-4428 - Reactor Head Vent Valve
CV-4429 - Reactor Head Vent Valve

These valves are the reactor vessel head vents. These valves cannot be cycled during reactor operation. To do so would cause an unnecessary reactor transient which would affect continued reactor operation. These valves will be cycled during cold shutdown.

APPENDIX E: TECHNICAL APPROACHES AND POSITIONS

1. TAV-01

There are 89 CRD Hydraulic Control Units (CRD HCUs). Each CRD HCU contains one of these valves. The valve number listed in Appendix A, "Valve Listing" is typical of 89. All 89 valves will be tested as specified for the typical valve.

2. TAV-02

Valve number V-18-0118 is a typical valve number from a group of 89 valves. The complete set of valve numbers is V-18-0228 through V-18-0206. All 89 valves will be tested as specified for the typical valve.

3. TAV-03

Valve number V-18-0919 is a typical valve number from a group of 89 valves. The complete set of valve numbers is V-18-0919 through V-18-1007. All 89 valves will be tested as specified for the typical valve.

4. TAV-04

Valve number V-18-1453 is a typical valve number from a group of 89 valves. The complete set of valve numbers is V-18-1453 through V-18-1541. All 89 valves will be tested as specified for the typical valve.

5. TAV-05

The 10CFR50, Appendix J, Type C Local Leak Rate Test (LLRT) of this valve is performed in the reverse direction. Testing in the reverse direction is justified in the Appendix J Program.

6. TAV-06: Reverse Testing of Containment Isolation Valves

The 10CFR50, Appendix J, Type C Local Leak Rate Tests (LLRT) of these valves do not yield valve specific seat leakage measurements (i.e., the valves are tested as a group). The leakage limit assigned to these valves is the limit for the entire group of valves at the penetration. This test method is justified in the Appendix J Program.

7. TAV-07: Testing of Containment Isolation Valves in Groups

The TIP shear valves cannot be seat leak tested due to their design/operating characteristics. The assembly would have to be replaced if the TIP shear valve was fired to perform a seat leak test. This position is justified in the Appendix J Program.

8. TAV-08: Limited Rotation of Purge/Vent Valves

The "full" stroke of these valves is restricted by physical modifications that limit the rotation of these 1/4 turn butterfly valves. Rotation is restricted to the range from closed (0°) to partial open (30°).
Reference: Generic Item B-24
Branch Technical Position (BTP) CSB 6-4

9. TAV-09: Drywell/Wetwell Vacuum Breakers

Individual leak rates for valves with TEST_TYPE AT-04 are not obtainable. Therefore, the 0.009 PSI/minute limit applies to all CV-4327A through CV-4327H valves.
Reference: Tech. Spec. 4.7.A.4.d
UFSAR 6.2.6.3.5.3

10. TAV-10: Rupture Diaphragms

Rupture diaphragms tagged with this Technical Approach and Position are non-testable. Therefore, they will not be tested as part of the IST program as allowed by the Code reference noted below. For valve PSV-1848, also see Technical Approach and Position TAV-01.
Reference: IWV-3620

DESCRIPTION OF MODIFICATIONS

1. The piping for the diesel fuel oil transfer system must be modified to permit full-flow testing of the diesel fuel oil transfer pump discharge check valves. This modification will provide instrument taps downstream of the check valves to permit flow measurement through the check valves. This modification will be completed by July 5, 1991.

2. Piping in the Residual Heat Removal (RHR) system will be modified to isolate it from the High Pressure Coolant Injection (HPCI) system. An isolation valve between the RHR system and the HPCI system forms a high pressure-low pressure interface and is a Pressure Isolation Valve (PIV). The piping connection between these systems is used only in the Steam Condensing Mode of the RHR system; that mode is not required to mitigate any accidents at the DAEC. This modification, which effectively eliminates the use of that mode, is needed because there is presently no practical way to conduct the required seat leakage tests for the isolation valve described above. This modification will be completed by July 5, 1991.

3. The valve control logic for two solenoid valves (SV-4934 and SV-4935) in the River Water Supply system must be modified so that the valves can be individually stroke tested, as required, without temporarily disabling the valve logic. This modification will be completed by July 5, 1991.