Columbia Generating Station

Inservice Testing Program Plan
(Pumps & Valves)

3rd Interval
(13 DEC 2005 – 12 DEC 2014)
Revision 0

ENERGY NORTHWEST
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INSERVICE TESTING PROGRAM PLAN

THIRD TEN-YEAR INSPECTION INTERVAL

ENERGY NORTHWEST

COLUMBIA GENERATING STATION

USNRC DOCKET NO. 50-397

FACILITY OPERATING LICENSE NO. NPF-21

COMMERCIAL OPERATION DATE: DECEMBER 13, 1984

ENERGY NORTHWEST
Columbia Generating Station

INSERVICE TESTING PROGRAM PLAN
Third Ten-Year Interval
(13 DEC 2005 through 12 DEC 2014)
Revision 0

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1.0 INTRODUCTION

This Inservice Testing (IST) Program Plan is applicable to Columbia Generating Station. A single unit Boiling Water Reactor (BWR), the power plant is located 11 miles north of Richland, Washington, on the Hanford Reservation. The Plant employs a General Electric (GE) supplied nuclear steam supply system designated as BWR/5. The reactor is contained within an over-under drywell/wetwell containment vessel designated Mark II. The Plant rated electrical output is 1,230 MWe.

This program plan is referenced in the Columbia Generating Station Final Safety Analysis Report (FSAR), Section 3.9.6, and has been prepared as the controlling document governing Pump and Valve Inservice Testing at Columbia Generating Station. This IST Program Plan complies with the requirements of 10 CFR Part 50.55a(b)(3) and Part 50.55a(f). The 2001 edition and the 2002 and 2003 Addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) was incorporated by reference into Paragraph 50.55a(b) by rulemaking effective on November 1, 2004. This code edition and addenda have been approved for use by the NRC for the IST of pumps and valves subject to certain limitations and modifications. The scope of this plan encompasses the testing of certain safety-related ASME Section III Nuclear Code Class 1, 2 and 3 pumps and valves. The plant safe-shutdown condition is cold shutdown. Where conformance with certain Code requirements is impractical, relief requests are included in each section with supporting information and proposed alternatives. This is consistent with FSAR commitments and with federal requirements for component testing as stated in 10 CFR Part 50.55a(f).

This Program Plan is comprised of two subprograms -- the Pump Inservice Testing Program and the Valve Inservice Testing Program. The detailed description of the scope, implementation, and administration of these two programs is detailed in subsequent Sections (4.0 and 5.0).

1.1 Program Administration

Responsibilities for development, maintenance, and implementation of the IST Program Plan are detailed in Energy Northwest procedures.

Changes to the IST Program Plan involving a relief request from impractical Code requirements will be accomplished consistent with 10 CFR 50.55a.

Components failing to meet test requirements will be dispositioned by the Plant's Corrective Action program. Specific responsibilities are defined in the Plant procedures.

1.1.1 Code Errata/Editorial changes are defined by ASME as follows:

Most editions of the ASME Code as published contain a number of editorial changes and perhaps some errata. Errata may include but, are not limited to the following:

- Typographical errors or misspelling
- Grammatical errors
- Incorrect publication of approved items, omission by staff of approved items, printer errors, or incorrect publication of an item that was not approved.
- Neglecting to update table for consistency with revision to corresponding text.

The changes described in Errata apply retroactively.

Generally, editorial changes are non-substantive and do not change the Code requirements in any way. At the Columbia Generating Station, editorial changes/errata are incorporated as applicable as soon as they have been approved by the ASME OM Code committee as being editorial/errata. Errata is also able to be incorporated retroactively.

1.1.2 Regulatory Limitations

Regulatory Limitations are additional requirements or conditions that are imposed by the NRC in addition to, or in lieu of, those listed or endorsed in the ASME OM Code. Regulatory limitations may also be specific Code requirements which are NOT endorsed by the NRC, and which are required to be satisfied in order to fully implement regulatory requirements to the satisfaction of the NRC. The NRC may also impose additional or alternate methodology or requirements for IST Programs which are listed in 10 CFR 50.55a.

The Columbia Generating Station has fully implemented all applicable regulatory limitations in the update to the 3rd Ten Year Interval IST Program. The specific Regulatory Limitations applicable to the Columbia Generating Station IST Program and, which have been incorporated into the 3rd Ten Year Interval IST Program are listed below:

a. Motor Operated Valve Testing complies with the provisions for testing motor-operated valves in OM Code ISTC-3500, as applicable and a program (conforming to the requirements of Generic Letter 96-05) has been established to ensure that motor operated valves continue to be capable of performing their design basis safety functions.
b. Manual valves in the IST Program will be exercised on a 2-year interval rather than the 5-year interval specified in paragraph ISTC-3540 of the OM Code, provided that adverse conditions do not require more frequent testing.

1.2 Program Database

The IST Program Plan for the third ten year interval was developed based on a review of pumps and valves at Columbia Generating Station and the applicable Code inservice testing requirements. To provide added assurance that the IST Program described herein accurately reflected the current requirements, design basis, and licensing commitments, the existing IST Program database was reviewed again. The review utilized MEL (Master Equipment List), a database with information on components installed at Columbia Generating Station. The total MEL population of pumps and valves was reduced to about 10,000 by eliminating pumps and valves that were not ASME Code Class 1, 2 or 3. Each pump and valve thus identified by these reviews were evaluated for inclusion in the IST Program. This evaluation addressed the identification of active and passive safety functions, categorization per Code requirements, required testing and test frequencies. Where compliance with specified test requirements were deemed impractical, relief from such requirements is requested.

The administrative process for design and configuration management requires changes be reviewed for impact on the IST Program. This will assure that potential changes affecting the commitments described herein are identified in a timely manner and allow for the associated database to be updated accordingly.

1.3 References

1.3.1 10 CFR 50.55a, Codes and Standards

1.3.2 Columbia Generating Station Technical Specifications Section 5.5.6

1.3.3 FSAR Section 3.9.6

1.3.4 10 CFR 50, Appendix J, Columbia Generating Station Primary Containment Leakage RateTesting Program

1.3.5 ASME OM Code-2001, Code for Operations and Maintenance of Nuclear Power Plants

1.3.6 ASME OMa Code-2002 Addenda to ASME OM Code-2001, Code for Operations and Maintenance of Nuclear Power Plants

1.3.7 ASME OMb Code-2003 Addenda to ASME OM Code-2001, Code for Operations and Maintenance of Nuclear Power Plants

1.3.8 Generic Letter No. 89-04, Guidance on Developing Acceptable Inservice Testing Program, April 1989

1.3.9 NUREG-1482 Rev 1, Guidelines for Inservice Testing at Nuclear Power Plants, January 2005

1.3.10 Safety Evaluation of WNP-2 Pump and Valve Inservice Testing Program by NRC dated May 7, 1991 (TAC NO. 60493) and September 30, 1993 (TAC NO. M84553)

1.3.11 Safety Evaluation of Inservice Program Relief Requests for Pumps and Valves - Washington Public Power Supply System (WPPSS) Nuclear Project NO. 2 (WNP-2) by NRC dated November 27, 1995 (TAC NO. M91159) and March 25, 1999 (TAC NO. MA3813)

1.3.12 Columbia Generating Station Final Safety Analysis Report

1.3.13 SWP-IST-01, ASME Inservice Testing

1.3.14 NEI White Paper Revision 1, Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, June 2004

2.0 QUALITY ASSURANCE PROGRAM

The Columbia Generating Station Pump and Valve Inservice Test Program activities will be conducted in accordance with the Energy Northwest's Operational Quality Assurance Program description (OQAPD).

3.0 PIPING AND INSTRUMENT DIAGRAMS

The Piping and Instrument Diagrams used to generate this Program are listed below. Subsequent changes to system design shall be evaluated for impact on the IST Program Plan and new revisions to this Program shall be issued accordingly.

Title	Ref. No.
Main & Exhaust Steam System	M502
Control & Service Air	M510
Diesel Oil & Misc. Systems	M512
Demineralized Water	M517
Reactor Core Isolation Cooling	M519
High/Low Pressure Core Spray	M520
Residual Heat Removal	M521
Standby Liquid Control	M522
Reactor Water Cleanup	M523
Standby Service Water	M524
Reactor Closed Cooling	M525
Fuel Pool Cooling	M526
Control Rod Drive	M528
Main Steam and Reactor Feedwater	M529

Title	Ref. No.
Reactor Recirculation Cooling	M530
Equipment Drain Radioactive	M537
Floor Drain Radioactive	M539
Containment Cooling & Purge	M543
Standby Gas Treatment	M544
Reactor Building HVAC	M545
Containment Atmosphere Control	M554
Containment Instrument Air	M556
Main Steam Leakage Control	M557
Undervessel Neutron Monitoring System	M604
Class I Air System for Containment Vacuum Breaker Valves	M619 Sh 161
Emergency Chilled Water	M775
Post Accident Sampling	M896

4.0 PUMP INSERVICE TESTING PROGRAM

4.1 Introduction

Highly reliable safety related equipment is a vital consideration in the operation of a nuclear generating station. To help assure operability, the Columbia Generating Station Pump Inservice Testing Program has been developed. The program establishes the requirements for preservice and inservice testing to assess the operational readiness of safety related pumps. The Program is based on the requirements of the ASME OM Code-2001 and 2002 and 2003 Addenda subsection ISTB, "Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants". The Program complies with the specifications of the approved Codes and Regulations. This program includes those ASME pumps which are provided with an emergency power source and perform a specific function in shutting down a reactor to the cold shutdown condition, maintaining the cold shutdown condition, or in mitigating the consequences of an accident.

The Program Plan establishes test intervals, parameters to be measured and evaluated, acceptance criteria, corrective actions, and records requirements. Where conformance with certain Code requirements is impractical, relief requests are included in Section 4.8 with supporting information and proposed alternatives.

4.2 Program Implementation

4.2.1 Exclusions (ISTB-1200)

The following are excluded from this Subsection:

a. drivers, except where the pump and driver form an integral unit and the pump bearings are in the driver;
b. pumps that are supplied with emergency power solely for operating convenience; and
c. skid-mounted pumps that are tested as part of the major component and are justified by the Owner to be adequately tested.

4.2.2 Pump Categories (ISTB-1300)

All pumps in the IST program shall be categorized as either a Group A or Group B pump. A pump that meets both Group A and Group B definitions shall be categorized as a Group A pump. Pump categorization is included in the Pump Inservice Test Table, section 4.4.

Group A pumps: pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations.

Group B pumps: pumps in standby systems that are not operated routinely except for testing.

4.2.3 Preservice Testing (ISTB-3100)

During the preservice test period or before implementing inservice testing, an initial set of reference values shall be established for each pump. These tests shall be conducted under conditions as near as practicable to those expected during subsequent inservice testing. Except as specified in section 4.2.7, only one preservice test is required for each pump. A set of reference values shall be established in accordance with section 4.2.7 for each pump required to be tested by this Subsection. Preservice testing shall be performed in accordance with the requirements of the following paragraphs:

a. centrifugal pump tests (except vertical line shaft centrifugal pumps) in accordance with ISTB-5110;
b. vertical line shaft centrifugal pump tests in accordance with ISTB-5210; and
c. reciprocating positive displacement pump tests in accordance with ISTB-5310.

4.2.4 Inservice Testing (ISTB-3200)

The Columbia Generating Station Pump Inservice Testing Program is implemented as Part of the Technical Specification required surveillance testing program. Inservice testing of a pump in accordance with Subsection ISTB-3200 shall commence when the pump is required to be operable. Inservice testing shall be performed in accordance with the requirements of the following paragraphs:

a. centrifugal pump tests (except vertical line shaft centrifugal pumps) in accordance with ISTB-5120;
b. vertical line shaft centrifugal pump tests in accordance with ISTB-5220; and
c. reciprocating positive displacement pump tests in accordance with ISTB-5320.

4.2.5 Frequency of Inservice Tests (ISTB-3400)

An inservice test shall be run on each pump as specified in Table ISTB-3400-1.

TABLE ISTB-3400-1 INSERVICE TEST FREQUENCY

Pump Group	Group A Test	Group B Test	Comprehensive Test
Group A	Quarterly	N/A	Biennially
Group B	N/A	Quarterly	Biennially

GENERAL NOTE: N/A –Not Applicable

4.2.6 Pumps in Systems Out-of-Service (ISTB-3420)

For a pump in a system declared inoperable or not required to be operable, the test schedule need not be followed. Within 3 months before the system is placed in an operable status, the pump shall be tested and the test schedule resumed. Pumps that can only be tested during plant operation shall be tested within 1 week following plant startup. NUREG-1482 Rev 1, Section 5.1.2 provides additional guidance.

4.2.7 Reference Values (ISTB-3300)

Reference values are established and maintained in accordance with ISTB-3300 and measured in accordance with ISTB-3500. In most cases, test parameters are measured with permanently installed Plant instrumentation. This approach simplifies the test program and promotes timely completion of surveillance testing. Where permanently installed instrumentation is not available, portable instrumentation is used to record the required parameters.

4.2.8 Instrumentation Accuracy (ISTB-3510(a))

Instrumentation accuracy shall be within the limits of Table ISTB-3500-1. If a parameter is determined by analytical methods instead of measurement, then the determination shall meet the parameter accuracy requirement of Table ISTB-3500-1 (e.g., flow rate determination shall be accurate to within +/- 2% of actual). For individual analog instruments, the required accuracy is percent of full scale. For digital instruments, the required accuracy is over the calibrated range. For a combination of instruments, the required accuracy is loop accuracy. For further clarification see ASME OM Code Interpretation 01-09. The Columbia Generating Station instruments used for pump testing meet these requirements except where written relief has been requested.

TABLE ISTB-3500-1 REQUIRED INSTRUMENT ACCURACY

Quantity	Group A and Group B Test, %	Comprehensive and Preservice Tests, %
Pressure	±2	±½
Flow rate	±2	±2
Speed	±2	±2
Vibration	±5	±5
Differential pressure	±2	±½

4.2.9 Inservice Test Parameters (ISTB-3500)

Speed (N) - Pump speed is only measured for variable speed pumps.

Differential Pressure (ΔP) - Differential pressure is calculated from suction and discharge pressure or obtained by direct differential pressure measurement.

Discharge Pressure (P) - Discharge pressure is measured for positive displacement pumps.

Flow Rate (Q) - Flow rate is measured using a rate or quantity meter installed in the pump test circuit. If a meter does not indicate the flow rate directly, the record shall include the method used to reduce the data. Internal recirculated flow is not required to be measured. External recirculated flow is not required to be measured if it is not practical to isolate, has a fixed resistance, and has been evaluated by the Owner to not have a substantial effect on the results of the test.

Vibration (V) - Vibration measurements for centrifugal pumps, vertical line shaft pumps, and reciprocating pumps shall be taken at the locations specified in ISTB-3540. If a portable vibration indicator is used, the measurement points shall be clearly identified on the pump to permit subsequent duplication in both location and plane.

TABLE ISTB-3000-1 INSERVICE TEST PARAMETERS

Quantity	Preservice Test	Group A Test	Group B Test	Compre-hensive Test	Remarks
Speed, N	X	X	X	X	If variable speed
Differential Pressure, ΔP	X	X	X(Note (1))	X	Centrifugal pumps, including vertical line shaft pumps
Discharge Pressure, P	X	X	......	X	Positive displacement pumps
Flow Rate, Q	X	X	X(Note (1))	X	.....
Vibration	X	X	......	X	Measure either V_d or V_v
Displacement, V_d	......	......	......	......	Peak-to-peak
Velocity, V_v	......	......	......	......	Peak

NOTE:
(1) For positive displacement pumps, flow rate shall be measured or determined; for all other pumps, differential pressure or flow rate shall be measured or determined.

4.2.10 Allowable Ranges For Test Parameters

ISTB Subsection Table-5100-1, Table-5200-1 and Table-5300-2 provide the allowable ranges for pump testing parameters. When the allowable range is more restrictive in the Technical Specifications, or other design basis document, the more restrictive ranges are used.

4.2.11 Testing Methods

During an inservice test, flow rate is normally selected as the independent test parameter and is set to match the reference flow rate. Then other hydraulic and mechanical test parameters are measured in accordance with ISTB-3500. All deviations from the appropriate reference values shall be compared with the appropriate ranges and corrective action taken as specified in ISTB-6200.

All pumps at Columbia Generating Station are capable of being tested at full design flow.

4.2.12 Test Procedure

Each pump in the Pump Testing Program is tested according to detailed test procedures. The procedure includes, as a minimum:

a. Statement of Test Purpose. Identification of test objectives, references applicable Technical Specifications and may note the operating modes for which the test is appropriate.

b. Prerequisites for Testing. System valve alignment, equipment for proper pump operation (cooling water, ventilation, etc.) and additional instrumentation (e.g., test gauges, portable temperature or vibration monitors) is noted. Identification numbers, range and calibration verification of instrumentation are recorded.

c. Test Instructions. Directions are sufficiently detailed to assure completeness and uniformity of testing. Instructions include provisions for returning system to its normal standby configuration following testing. Proposed flow paths are illustrated in Section 4.5.

d. Acceptance Criteria. The ranges within which test data is considered acceptable is established by the Energy Northwest and included in the test procedure. The method for determining test parameter values that are not directly measured by instruments is specified in the procedure. In the event that the data falls outside the acceptable ranges, corrective actions are taken in accordance with ISTB-6200,

e. Test Instruments. A description of instruments used.

f. Reference Values.

4.2.13 Trending (ISTB-6100)

Test parameters shown in Table ISTB-3000-1, except for fixed values, shall be trended.

Finally, it is recognized that the Pump Inservice Testing Program sets forth minimum testing requirements. Additional testing will be performed, as required, after pump maintenance or as determined necessary by the Plant Staff.

4.3 Pump Reference List

This list gives a brief description of each pump identified in the Pump Inservice Test Table, Section 4.4.

DO-P-1A, 1B, 2

These pumps transfer diesel generator fuel oil from the subterranean storage tanks to the diesel's day Tanks. Pump 2 is dedicated to the HPCS Diesel. The discharge lines of Pump 1A and 1B are cross tied, and each pump can supply fuel to either Diesel 1A or 1B.

FPC-P-1A, 1B

The Fuel Pool Cooling (FPC) pumps take suction on the spent fuel pool and discharge through the FPC heat exchangers and, during normal operation, through the Fuel Pool Filter/Demineralizers.

HPCS-P-1

The High Pressure Core Spray pump provides emergency cooling spray to the reactor core. It is capable of injecting coolant at pressures above normal reactor operating pressures. The pump can take suction from the Condensate Storage Tank or from the suppression pool.

HPCS-P-2

This motor driven pump is dedicated to providing cooling water to the HPCS Emergency Diesel Generator, the standby power source for the High Pressure Core Spray System. HPCS-P-2 is located in the Service Water Pump House and takes suction from the spray pond.

LPCS-P-1

A high capacity, low head pump, the Low Pressure Core Spray pump provides cooling spray to the reactor core. LPCS-P-1 takes suction from the suppression pool.

RCIC-P-1

The turbine driven Reactor Core Isolation Cooling pump supplies coolant to the core in the event of reactor vessel isolation. It can take suction from either the Condensate Storage Tank or from the suppression pool.

RHR-P-2A, 2B, 2C

The Residual Heat Removal pumps are high capacity, low head pumps which have multiple uses during normal and emergency Plant conditions.

- In conjunction with other systems, restores and maintains reactor coolant inventory in the event of a LOCA (Pumps 2A, 2B, 2C)
- Removes decay heat after shutdown (Pumps 2A, 2B)
- Cools the suppression pool (Pumps 2A, 2B)
- Can provide cooling spray to upper and lower drywell and to the wetwell (Pumps 2A, 2B)
- Can assist in fuel pool cooling (Pump 2B)
- Can provide a condensing spray to the reactor head (Pump 2B)

Pumps take suction from the suppression pool in the standby operating mode.

SLC-P-1A, 1B

The Standby Liquid Control pumps are used to inject negative reactivity (sodium pentaborate) into the reactor core independently of the control rod system. Suction is obtained from a storage tank containing the sodium pentaborate solution.

SW-P-1A, 1B

The Standby Service Water pumps supply cooling water to separate trains of safety related equipment. The pumps take suction on their respective spray ponds but discharge to the opposite pond. The two spray ponds constitute the ultimate heat sink.

4.4 Pump Inservice Test Table

The pumps included in the Columbia Generating Station IST Program are listed in the Test Table. The information contained in this table identifies those pumps required to be tested to the requirements of OM Code Subsection ISTB, the testing parameters and frequency of testing, and associated relief requests.

Legend

Q = Quarterly (92 day interval) test

2Y = Biennially (2 Year interval) test

CPT = Comprehensive Pump test

N/A = Not applicable. See Relief Requests

NR = Not required by Code

A = Group A Pump

B = Group B Pump

Pump Inservice Test Table

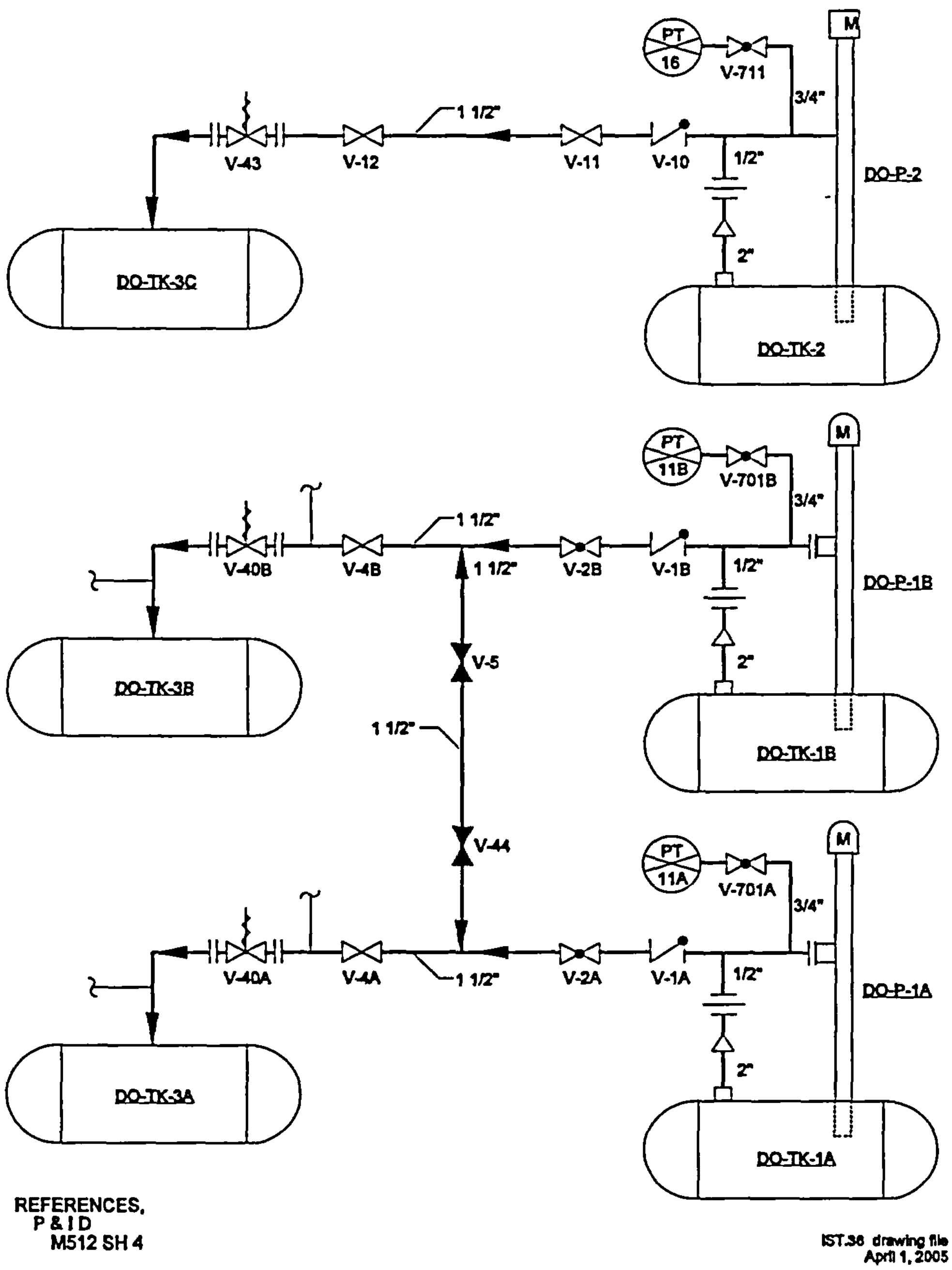
Pump Ident	Pump Group	Flow Diagram & Coord	ASME Code Class	Pump Type	Inlet Press Pi Q	Inlet Press Pi CPT	Disch Press P Q	Disch Press P CPT	Diff Press ΔP Q	Diff Press ΔP CPT	Flow Rate Q	Flow Rate CPT	Vib Vel Q	Vib Vel CPT	Pump Speed	Relief Requests & Technical Positions
DO-P-1A*	B	M512-4 B10	3	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	NR	2Y	NR	2Y	NR	2,7,8,TP01
DO-P-1B*	B	M512-4 G10	3	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	NR	2Y	NR	2Y	NR	2,7,8,TP01
DO-P-2*	B	M512-4 C2	3	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	NR	2Y	NR	2Y	NR	2,7,8,TP01
FPC-P-1A	A	M526-1 E13	3	Centrifugal	Q	2Y	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	7
FPC-P-1B	A	M526-1 C13	3	Centrifugal	Q	2Y	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	7
HPCS-P-1	B	M520 B6	2	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	2Y	NR	4,5,7
HPCS-P-2	A	M524-1 G5	3	Vertical Line Shaft	N/A		Q	2Y	N/A		Q	2Y	Q	2Y	NR	1,3,7
LPCS-P-1	B	M520 B12	2	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	2Y	NR	4,7
RCIC-P-1	B	M519 D12	2	Centrifugal	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	2Y	Q/2Y	4,7
RHR-P-2A	A	M521-1 B11	2	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	4,5,7
RHR-P-2B	A	M521-2 D6	2	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	4,5,7
RHR-P-2C	A	M521-3 C5	2	Vertical Line Shaft	Q	2Y	Q	2Y	Q	2Y	Q	2Y	Q	2Y	NR	4,5,7
SLC-P-1A	B	M522 F6	2	Reciprocating Positive Disp.	NR		Q	2Y	NR		Q	2Y	NR	2Y	NR	6,7
SLC-P-1B	B	M522 D6	2	Reciprocating Positive Disp.	NR		Q	2Y	NR		Q	2Y	NR	2Y	NR	6,7
SW-P-1A	A	M524-1 G4	3	Vertical Line Shaft	N/A		Q	2Y	N/A		Q	2Y	Q	2Y	NR	1,3,7
SW-P-1B	A	M524-2 F5	3	Vertical Line Shaft	N/A		Q	2Y	N/A		Q	2Y	Q	2Y	NR	1,3,7

* These are fixed resistance systems.

4.5 Proposed Pump Test Flow Paths

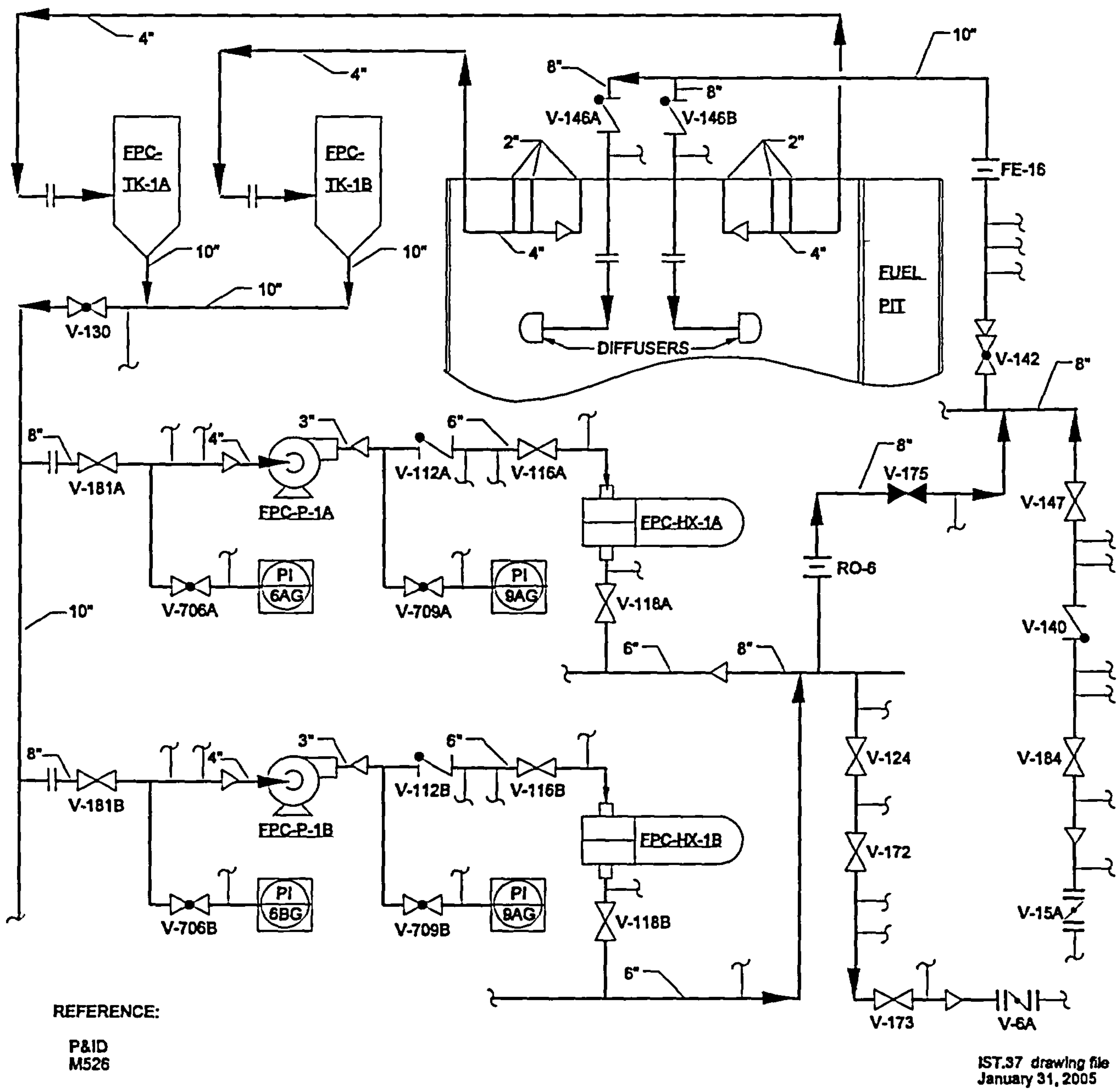
These flow paths are proposed for use during pump and valve testing. Surveillance Procedures define actual system lineup for testing pumps and valves.

DO-P-1A, DO-P-1B, & DO-P-2
PUMP TEST FLOW PATH



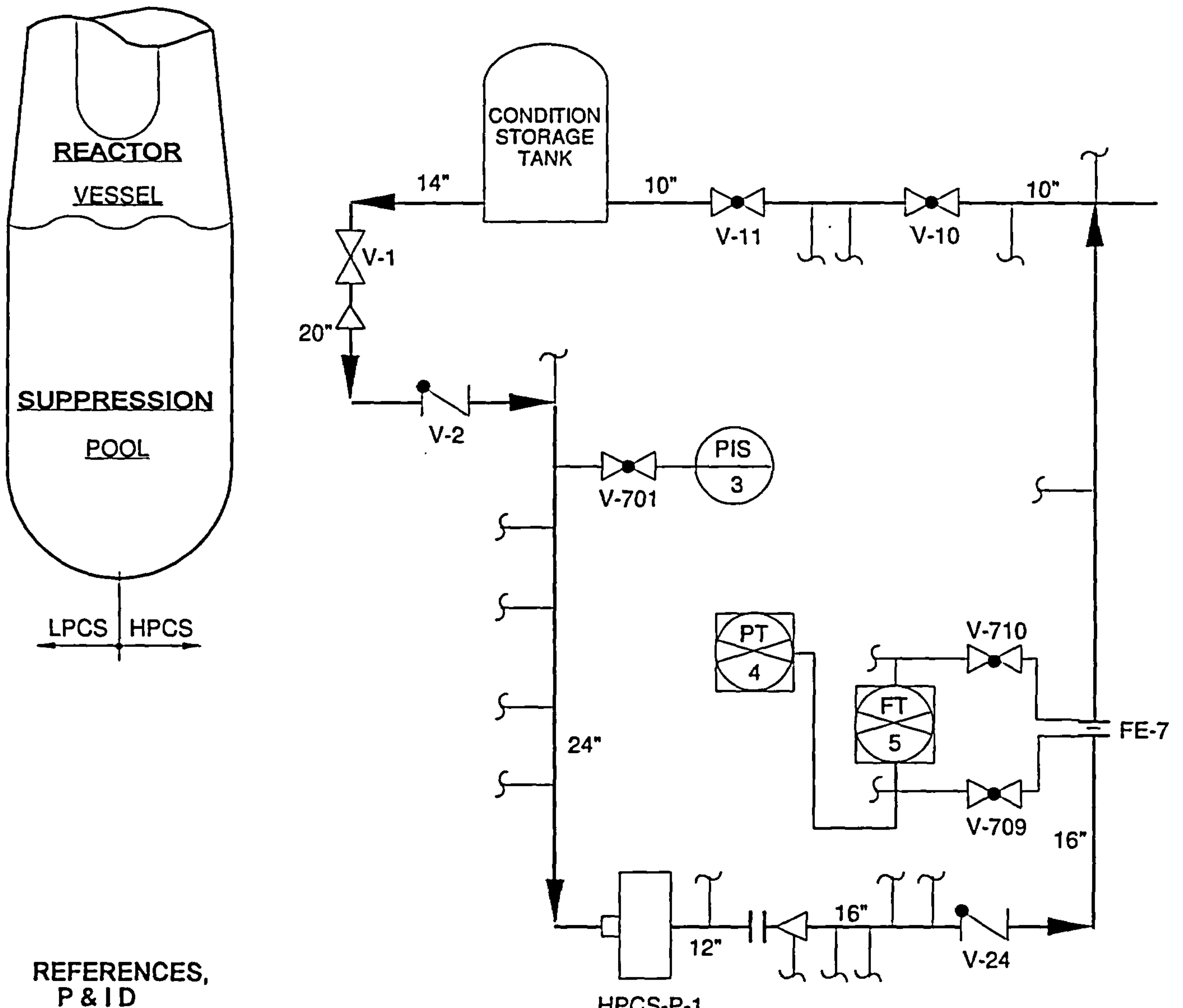
DIESEL FUEL OIL

FPC-P-1A and FPC-P-1B
PUMP TEST FLOW PATH



FUEL POOL COOLING

HPCS-P-1 PUMP TEST FLOW PATH

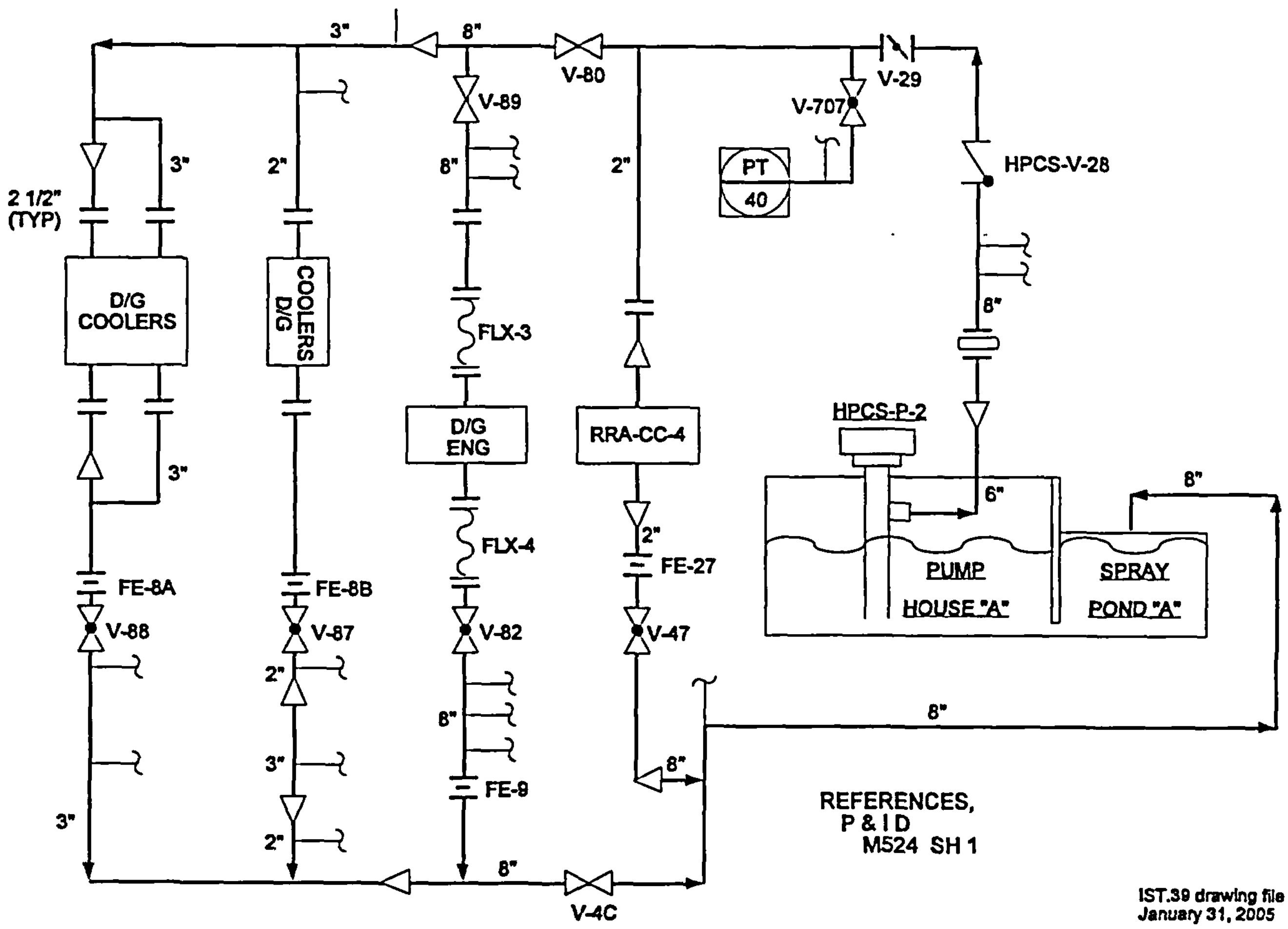


REFERENCES,
P & I D
M520

IST.38 drawing file
April 1, 2005

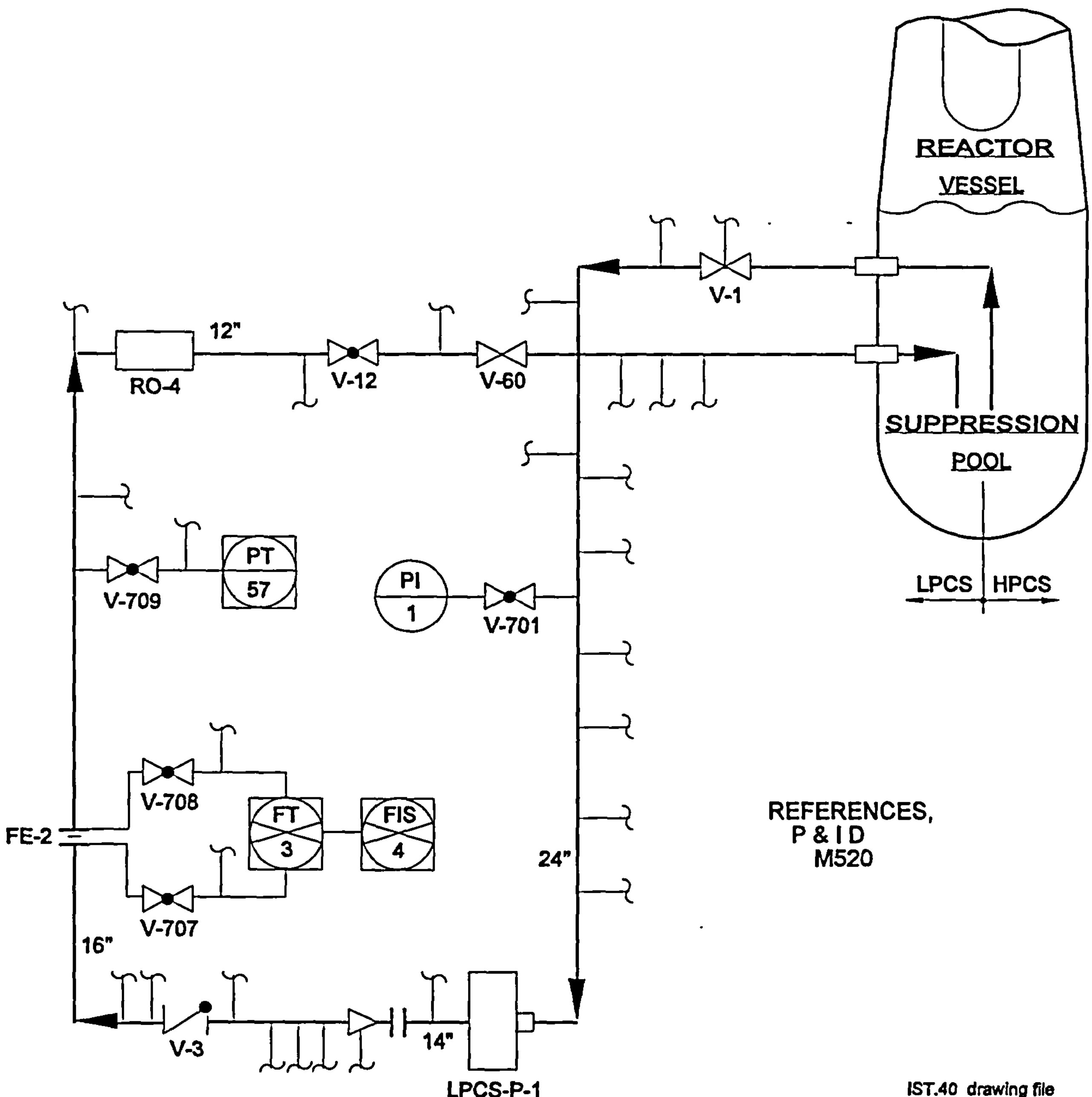
HIGH PRESSURE CORE SPRAY

HPCS-P-2 PUMP TEST FLOW PATH



HPCS SERVICE WATER

LPCS-P-1 PUMP TEST FLOW PATH

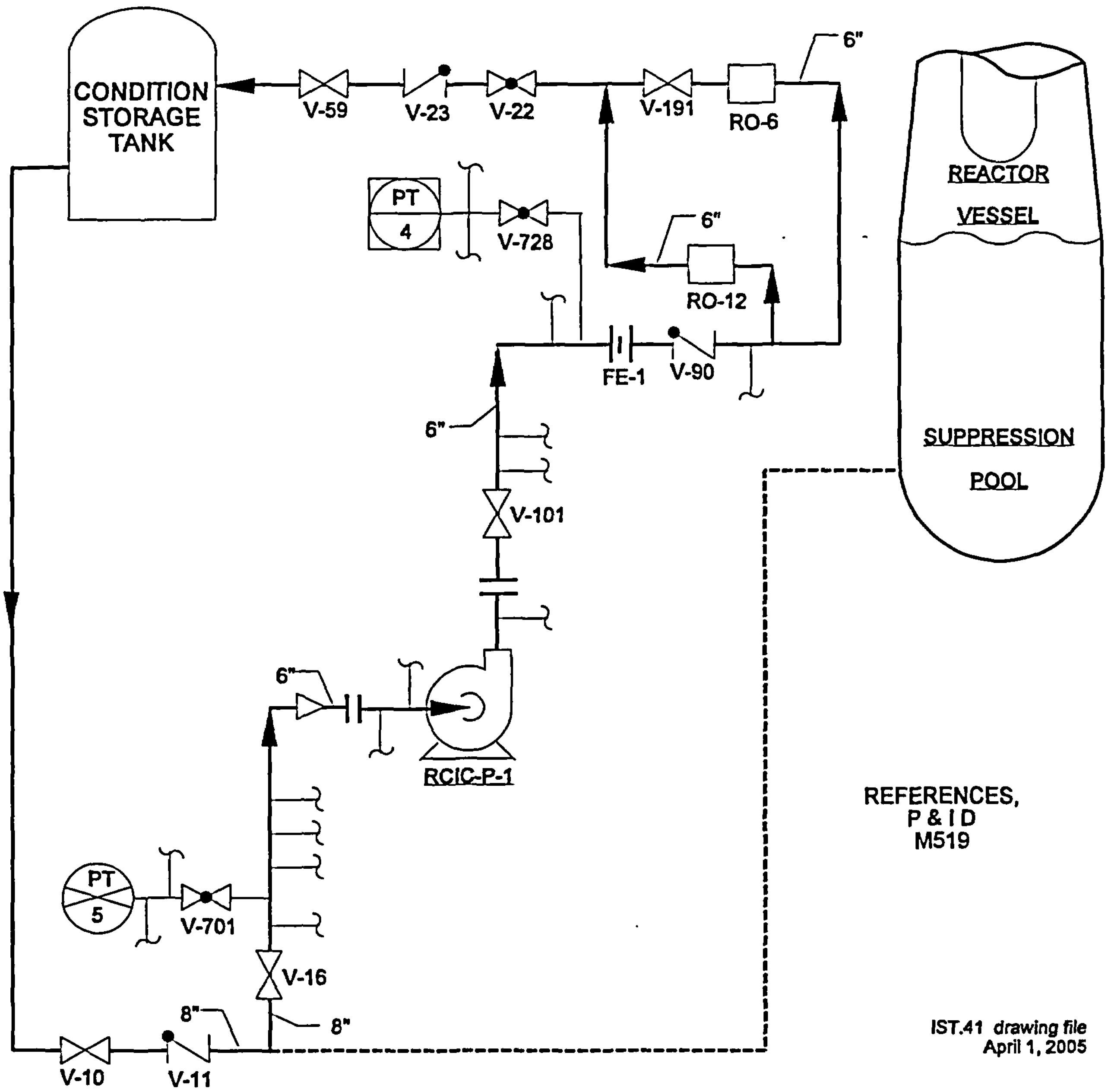


REFERENCES,
P & I D
M520

IST.40 drawing file
January 31, 2005

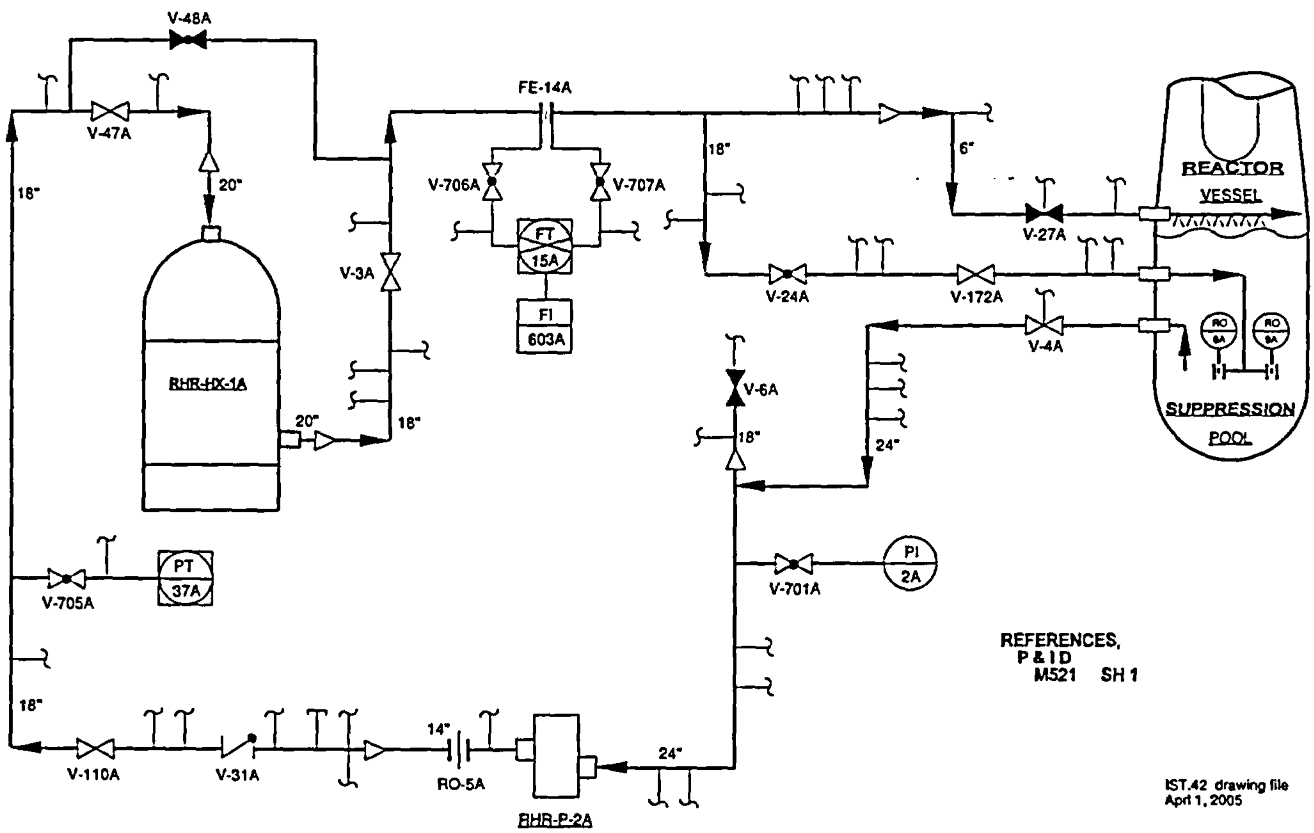
LOW PRESSURE CORE SPRAY

RCIC-P-1 PUMP TEST FLOW PATH



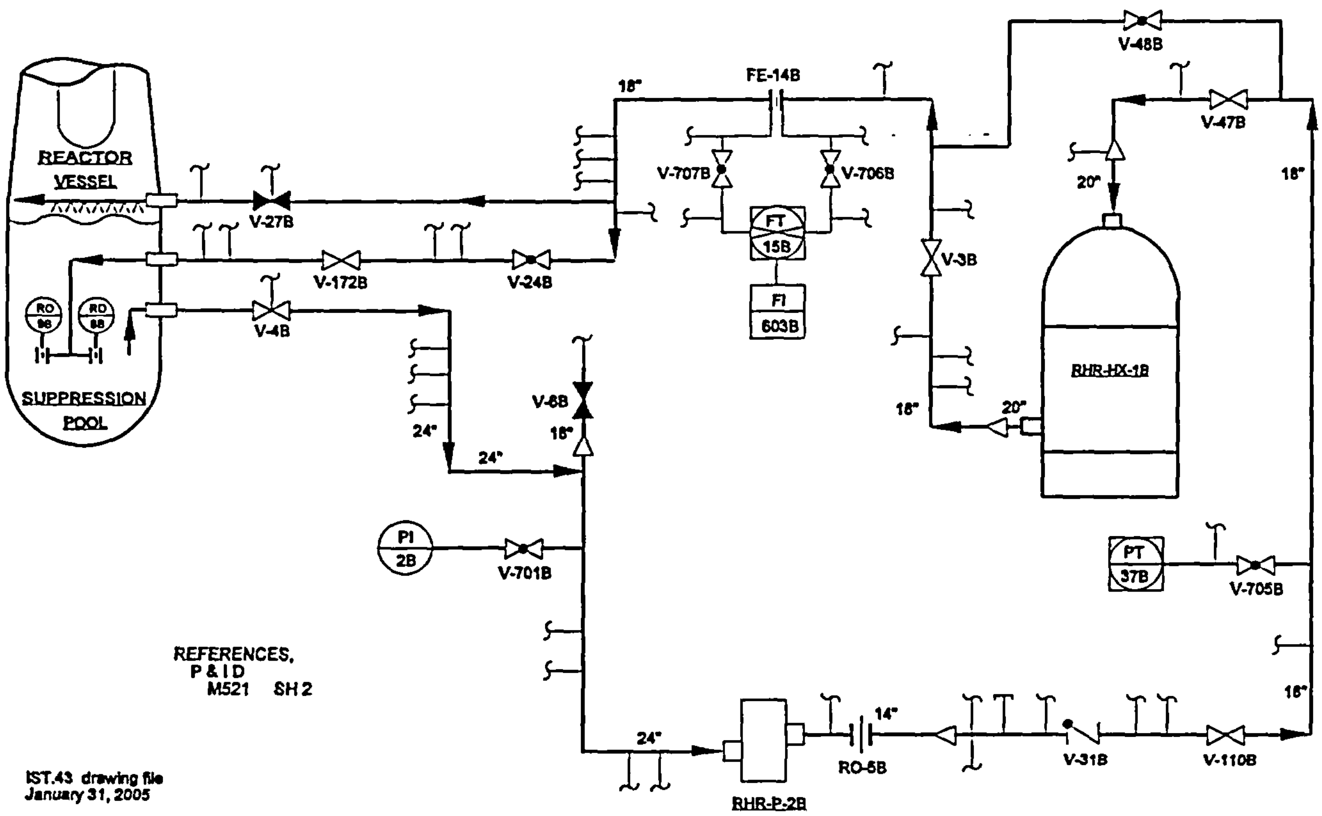
REACTOR CORE ISOLATION COOLING

RHR-P-2A PUMP TEST FLOW PATH



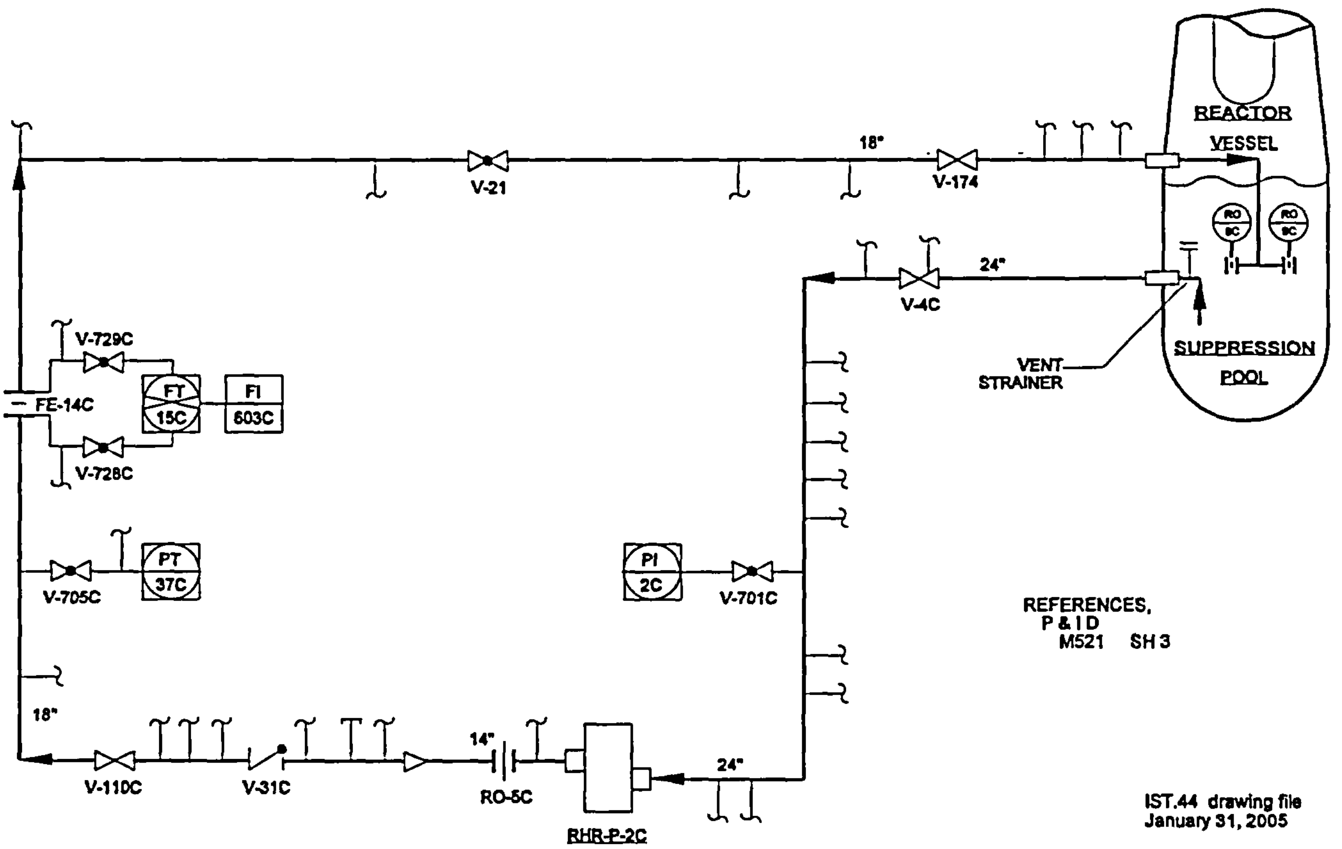
RESIDUAL HEAT REMOVAL

RHR-P-2B PUMP TEST FLOW PATH



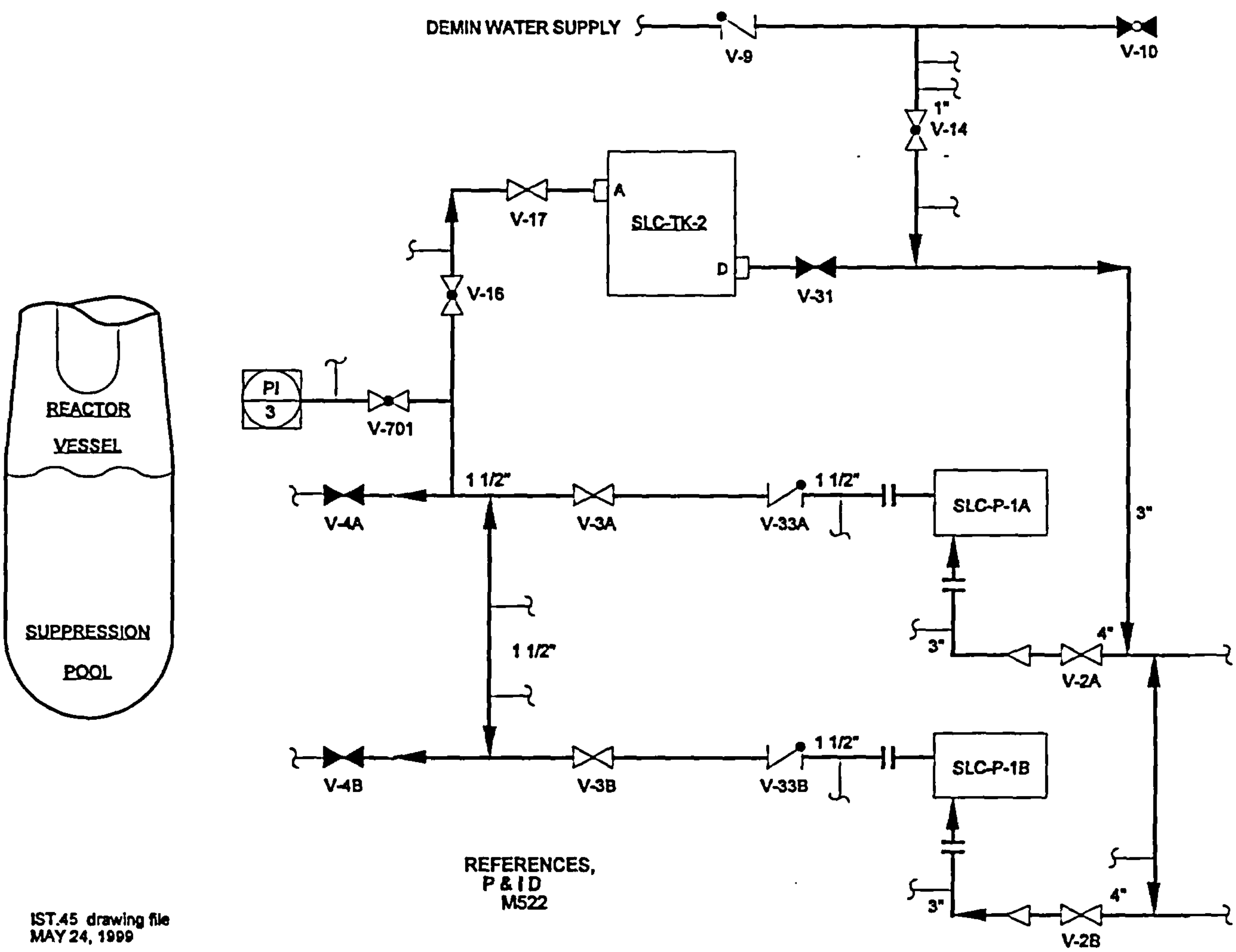
RESIDUAL HEAT REMOVAL

RHR-P-2C PUMP TEST FLOW PATH



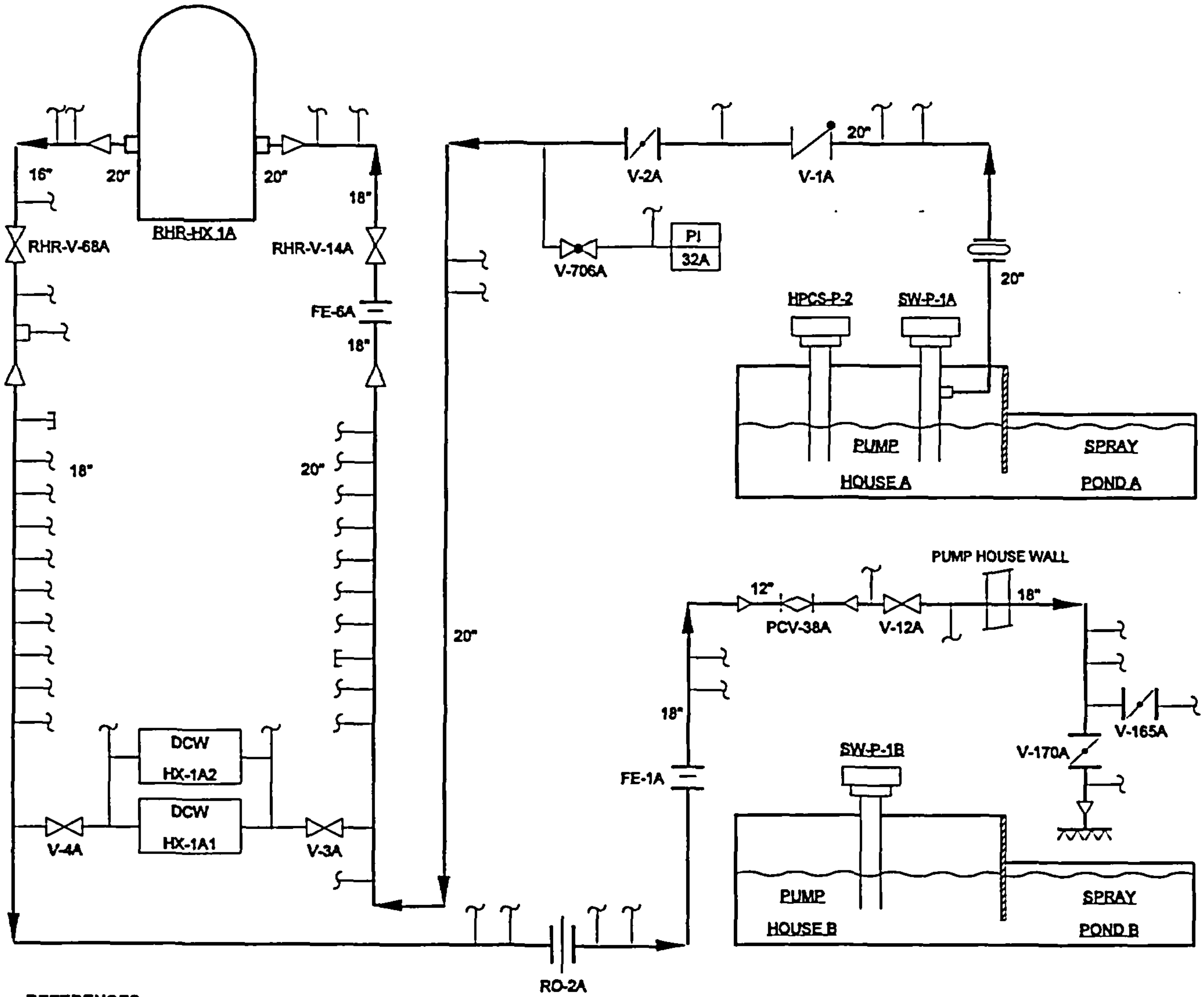
RESIDUAL HEAT REMOVAL

SLC-P-1A & SLC-P-1B
PUMP TEST FLOW PATH



STANDBY LIQUID CONTROL

SW-P-1A PUMP TEST FLOW PATH

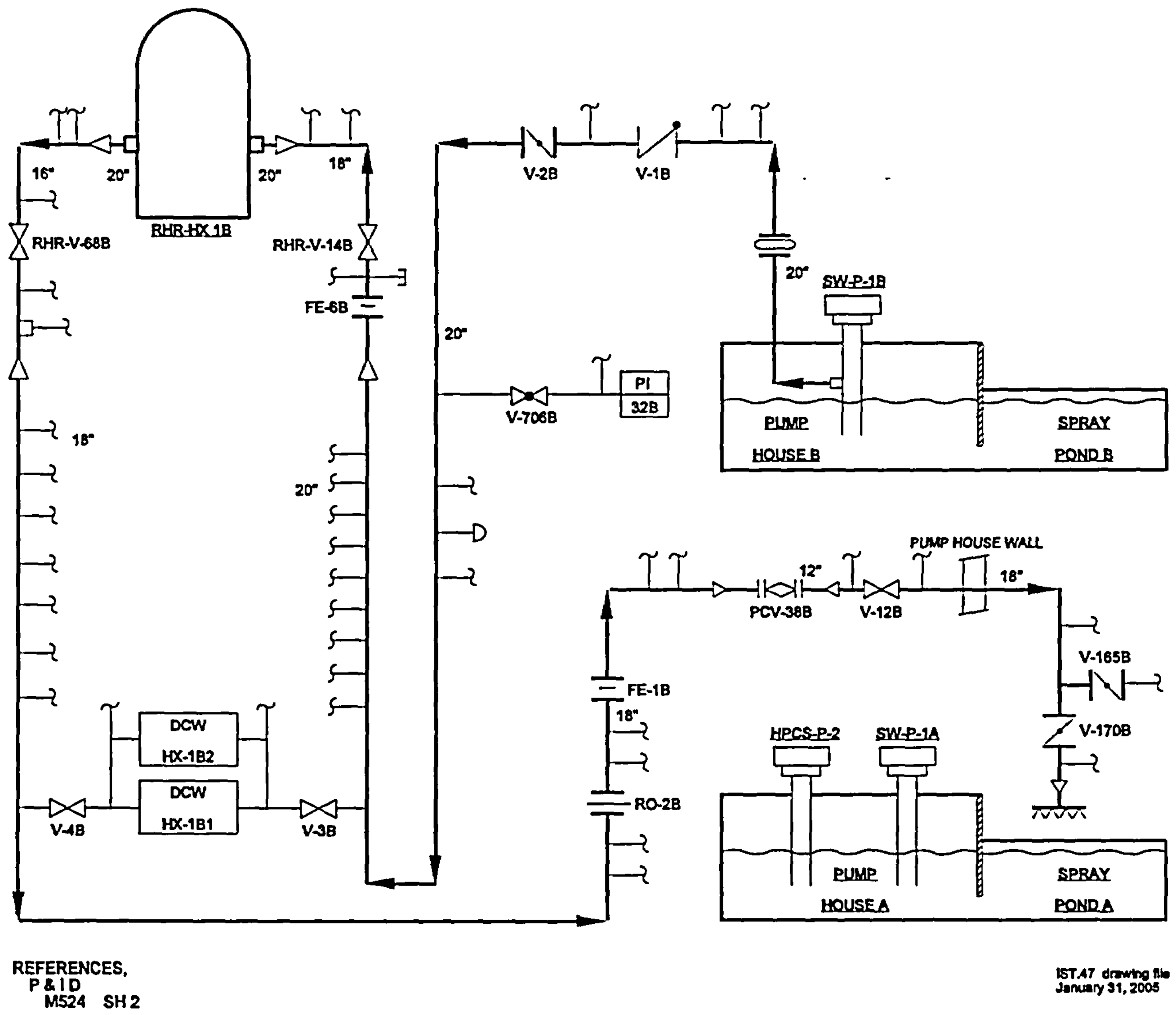


REFERENCES,
P & I D
M524 SH 1

IST.46 drawing file
January 31, 2005

SERVICE WATER

SW-P-1B PUMP TEST FLOW PATH



SERVICE WATER

4.6 Records and Reports of Pumps

Records and reports of pumps in the Program will be maintained in accordance with OM Code Subsection ISTB, Paragraph ISTB-9000. The files will contain the following:

4.6.1 Pump records will be maintained in accordance with Paragraph ISTB-9100.

4.6.2 Inservice test plans include pump surveillance test procedures. The inservice testing records for pumps in the Program will be maintained in accordance with Paragraph ISTB-9200.

4.6.3 Records of tests for pumps in the Program will be maintained in accordance with Paragraph ISTB-9300. Completed surveillance test procedures are retained per Plant Administrative Procedures.

4.6.4 Records of corrective actions for pumps in the Program will be maintained in accordance with Paragraph ISTB-9400. Corrective actions are documented on Work Orders (WO) and/or Condition Reports (CRs).

The Pump Inservice Test Program, associated surveillance test procedures and results, and corrective actions are retained per Plant Administrative Procedures. For informational purposes, a sample pump test data sheet is provided.

SAMPLE DATA SHEET - Group A Test
PUMP OPERABILITY DATA SHEET FOR RHR-P-2A

Test Parameters	Units	Refer Value	Action Lo (+1)	Alert Lo (+1)	Measured Value	Action Hi (+1)
Driver Lubrication	N/A	SAT	N/A	N/A		UNSAT
Upper Thrust Bearing Temperature per W139	°F	152	N/A	N/A		N/A
Lower Guide Bearing Temperature per W140	°F	109	N/A	N/A		N/A
Pump Lubrication	N/A	SAT	N/A	N/A		UNSAT
SW Flow per SW-FI-17A2	GPM	7	N/A	N/A		N/A
Suction Pressure at Test Flow per Test Gauge	PSIG	15.3	9.2	N/A		N/A
Discharge Pressure per TDAS X155	PSIG	135.87	(+5)	N/A		N/A
Diff. Press (Disch. Press. - Suction Press. per Test Gauge)	PSID	120.57	(+2)	(+3)		(+2)
Indicated Flowrate per TDAS X163	GPM (+4)	7500	#7493	N/A		N/A
Fluid Temperature per CMS-TR-5 or TR-6, PT220	°F	70	N/A	N/A		N/A
Motor Voltage per SM7 Volts	VAC	4140	N/A	N/A		N/A
Motor Current per RHR-P-2A Meter	AMP	89	N/A	N/A		N/A

(+1) For measured values beyond the Alert Value or Action Value refer to Precaution and Limitations 4.5 or 4.6, respectively.

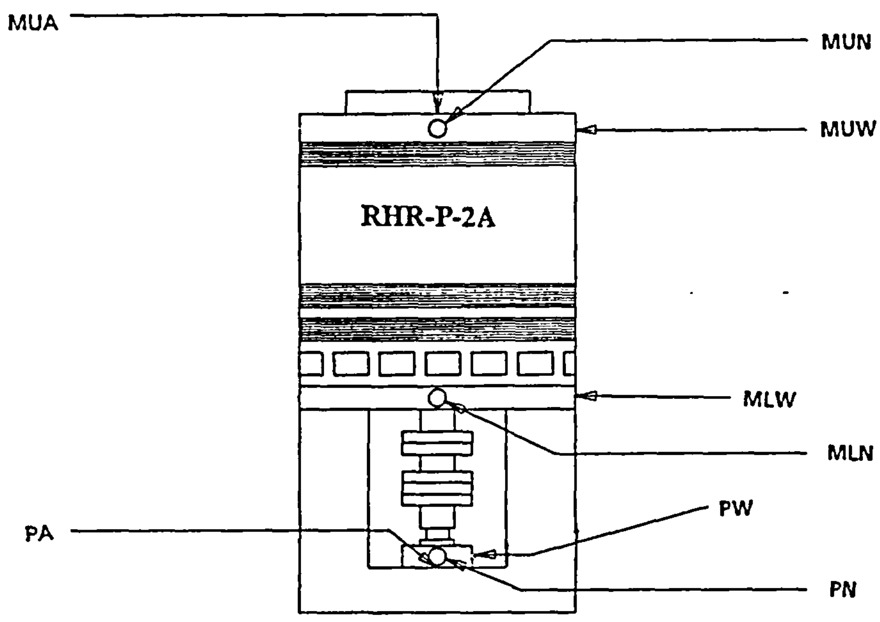
(+2) The ACTION RANGE is defined as outside the area described by points 1, 2, 3 and 4 on Attachment 9.4.

(+3) The ALERT RANGE is defined as inside the area described by points 3, 4, 5 and 6 on Attachment 9.4.

(+4) Indicated flow GE 7493 gpm provides actual flow GT 7450 gpm (Tech. Spec. Limit) for fluid temperature GE 40°F.

(+5) Discharge pressure is required to be GE the corrected discharge pressure for the flow listed in Attachment 9.6

SAMPLE DATA SHEET
VIBRATION DATA SHEET FOR RHR-P-2A

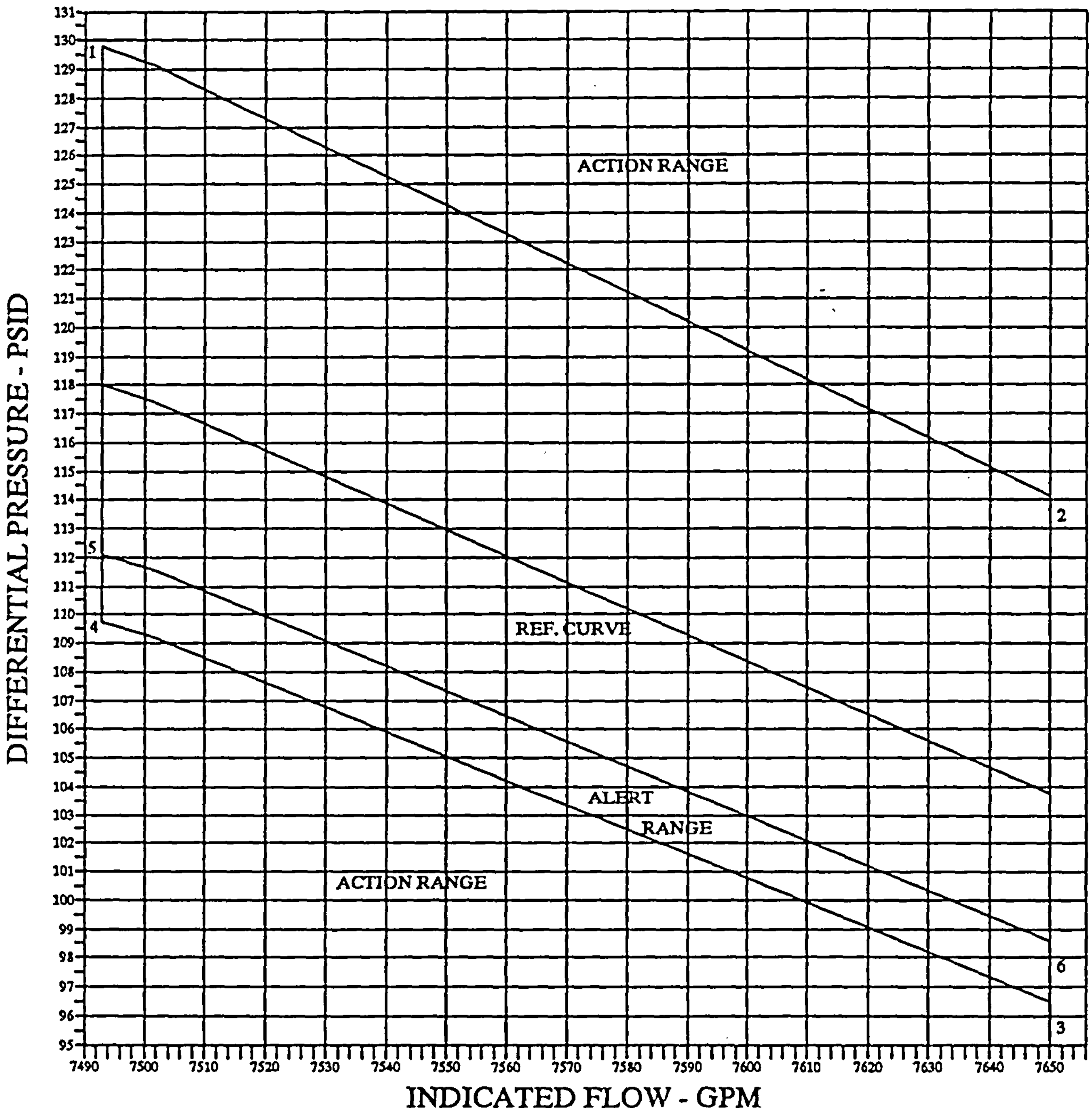


View Looking South

	PROBE LOCATION	VIBRATION VELOCITY (IN/SEC) REFER VALUE	MEASURED VALUE	ALERT HI (+1)	ACTION HI (+1)
ASME	MUA	0.071		0.178	0.426
	MUN	0.152		0.325	0.700
	MUW	0.082		0.205	0.492
NON-ASME	MLN	0.048		N/A	N/A
	MLW	0.042		N/A	N/A
	PA	0.155		N/A	N/A
	PN	0.082		N/A	N/A
	PW	0.037		N/A	N/A

(+1) For measured values beyond the Alert Value or Action Value refer to Precaution and Limitations 4.5 or 4.6, respectively.

SAMPLE DATA SHEET - Group A Test
RHR-P-2A ACCEPTANCE CRITERIA



ALERT RANGE = Area Inside 3-4-5-6

ACTION RANGE = Area Outside 1-2-3-4

4.7 Technical Positions

Technical Position -- **TP01**

Pump	Code Class	P&ID Dwg. Number	System(s)
DO-P-1A	3	M512, SH 4	Diesel Fuel Oil Transfer
DO-P-1B	3	M512, SH 4	
DO-P-2	3	M512, SH 4	

Title
Use of tank level to calculate differential pressure of pumps DO-P-1A, DO-P-1B and DO-P-2.

Issue Discussion
ISTB-3520(b) states that the differential pressure is the difference between the pressure at a point in the inlet pipe and the pressure at a point in the discharge pipe. NUREG-1482 Rev. 1, Section 5.5.3 states that when inlet pressure gauges are not installed in the inlet of a vertical line shaft pump, it is impractical to directly measure inlet pressure for use in determining differential pressure for the pump. The NRC staff recommends use of tank level to determine the suction pressure of vertical line shaft pumps and a relief request is not required. The method is in accordance with a determination of differential pressure allowed by the Code.

Position
Suction pressure is determined by measuring storage tank level before pump start. Storage tank level changes when the pump is running, so accurate suction pressure measurements cannot be determined while the pump is running. Suction pressure is calculated based on the height of the fluid level above pump suction and the reading scale for measuring the level and the calculational method yield Code required accuracy of ±2% for group A and B tests and ±1/2% for comprehensive pump test. This method yields the information needed for monitoring the hydraulic condition of the pumps without the need to install suction (inlet) pressure gauges which are not practical due to design limitations.

4.8 Relief Requests From Certain Subsection ISTB Requirements

Relief Requests either provide alternative to Code requirements in accordance with 10CFR 50.55a(a)(3)(i) or 10CFR 50.55a(a)(3)(ii) or relief from impractical Code requirements in accordance with 10CFR 50.55a(f)(5)(iii). They provide technical justification and propose alternate testing to be performed in lieu of the Code required testing.

Relief Request -- **RP01**

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

--Alternative Provides Acceptable Level of Quality and Safety--

ASME Code Components Affected

Pump	Code Class	Pump Group	P & ID Dwg. No.	System(s)
SW-P-1A	3	A	M524, SH 1	Standby Service Water
SW-P-1B	3	A	M524, SH 2	Standby Service Water
HPCS-P-2	3	A	M524, SH 1	Standby Service Water, HPCS

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Measure pump differential pressure, ΔP. Vertical line shaft centrifugal pumps preservice and inservice testing (ISTB-5210, ISTB-5220, Table ISTB-3000-1). Relief is required for Group A, Group B and comprehensive and preservice tests.

Reason for Request

There are no inlet pressure gauges installed in the inlet of these vertical line shaft centrifugal pumps, making it impractical to directly measure inlet pressure for use in determining differential pressure for the pump.

Proposed Alternative and Basis for Use

Pump discharge pressure will be recorded during the testing of these pumps. Code Acceptance Criteria will be based on discharge pressure instead of differential pressure as specified in the Code Table ISTB-5200-1. The effect of setting the Code Acceptance Criteria on discharge pressure instead of differential pressure as specified in the Code will have no negative impact on detecting pump degradation.

1. SW-P-1A, 1B, and HPCS-P-2 are vertical line shaft centrifugal pumps which are immersed in their water source. They have no suction line which can be instrumented.

2. Technical Specification SR 3.7.1.1 states minimum allowable spray pond level to assure adequate NPSH and ultimate heat sink capability.

Relief Request -- **RP01** (Contd.)

3. The difference between allowable minimum and overflow pond level is only 21 inches of water or 0.8 psi. This small difference will not be significant to the Test Program and suction pressure will be considered constant. Administratively, the pond level is controlled within a nine (9) inch band.

4. Acceptable flowrate and discharge pressure will suffice as proof of adequate suction pressure.

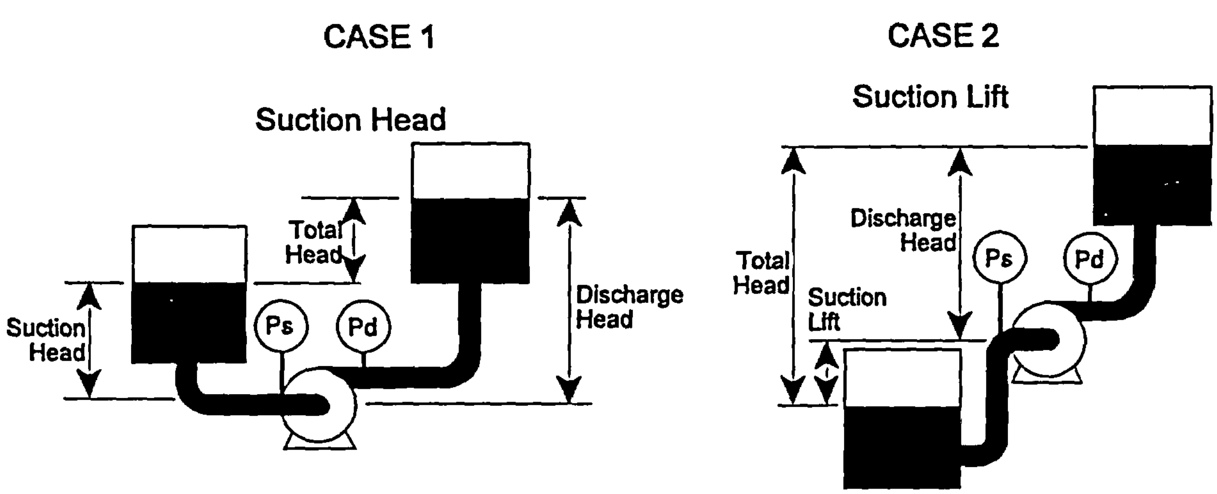
5. These pumps operate with a suction lift. Maximum elevation of spray pond level is 434 feet 6 inches and minimum elevation of discharge piping for these pumps is 442 feet 5/8 inches. Thus discharge pressure for these pumps will always be lower than the calculated differential pressure for the entire range of suction pressures. Thus acceptance criteria based on discharge pressure is conservative. This is further illustrated below.

   Differential pressure is defined as discharge pressure minus suction pressure. In the case of a pump with suction lift the suction pressure is negative, thus:

$$\Delta P = P_d - (-P_s)$$

$$\Delta P = P_d + P_s$$

   This concept is more easily understood when head is used instead of pressure.



IST.RP01 drawing file
Jan 7, 2005

Relief Request -- **RP01** (Contd.)

The ASME Code uses the term differential pressure instead of total head since differential pressure is required to be measured. However, most literature on pumps deals with hydraulic parameters in terms of head and flow. In case 1:

Total Head = Discharge Head - Suction Head

But in Case 2 (Service Water Pumps)

Total Head = Discharge Head + Suction Lift

When one converts head to pressure, the equivalent formula for differential pressure would be:

$$\Delta P = P_d + 0.431(EL_{pump} - EL_{water\ level})$$

Since pump discharge pipe elevation for these pumps is always more than spray pond water level, discharge pressure is always less than the calculated differential pressure.

Quality/Safety Impact

The effect of setting the Code Acceptance Criteria on discharge pressure instead of differential pressure as specified in the Code provides a more conservative test methodology.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159) and Supplement to SER letter dated March 25, 1999 (TAC No. MA3813), Relief Request No. RP-01.

Relief Request -- RP02

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(ii)

-- Hardship or Unusual Difficulty
without Compensating Increase in Level of Quality or Safety --

ASME Code Components Affected

Pump	Code Class	Pump Group	P&ID Dwg. No.	System(s)
DO-P-1A	3	B	M512, SH 4	Diesel Fuel Oil Transfer
DO-P-1B	3	B	M512, SH 4	
DO-P-2	3	B	M512, SH 4	

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Subsection ISTB-3550. Flow rate shall be measured using a rate or quantity meter installed in the pump test circuit.

Subsection ISTB-5200 (a). For the Group A test and the comprehensive test, after pump conditions are as stable as the system permits, each pump shall be run at least 2 minutes. At the end of this time at least one measurement or determination of each of the quantities required by Table ISTB-3000-1 shall be made and recorded.

Relief is required for Group A, Group B and comprehensive and preservice tests.

Reason for Request

A rate or quantity meter is not installed in the test circuit. To have one installed would be costly and time consuming with few compensating benefits.

As a result of a rate or quantity meter not being installed in the test circuit, it is impractical to directly measure the flow rate for the Diesel Fuel Oil Transfer Pumps. Therefore, the requirement for allowing a 2 minute "hold" time for Pump tests is an unnecessary burden which would provide no additional assurance of determining pump operational readiness.

Proposed Alternative and Basis for Use

NUREG-1482, Rev 1 Section 5.5.2 states, "requiring licensees to install a flow meter to measure the flow rate and to guarantee the test tank size, such that the pump flow rate will stabilize in 2 minutes before

Relief Request -- **RP02** (Contd.)

recording the data would be a burden because of the design and installation changes to be made to the existing system. Therefore, compliance with the Code requirements would be a hardship".

Pump flow rate will be determined by measuring the volume of fluid pumped and dividing by the corresponding pump run time. The volume of fluid pumped will be determined by the difference in fluid level in the day tank at the beginning and end of the pump run (day tank fluid level corresponds to volume of fluid in the tank). The pump flow rate calculation methodology meets the accuracy requirements of OM Code, Table ISTB-3500-1. The pump flow rate calculation is identified on the record of test and ensures that the method for the flow rate calculation yields an acceptable means for the detection and monitoring of potential degradation of the Diesel Fuel Oil Transfer Pumps and therefore, satisfies the intent of the OM Code Subsection ISTB.

In this type of testing, the requirement to maintain a 2 minute hold time after stabilization of the system is unnecessary and provides no additional increase of the ability of determining pump condition.

Quality/Safety Impact

The day tanks are horizontal cylindrical tanks with elliptical ends. The tank fluid volume is approximately 3,200 gallons. The average calculated flow rate is 28 gpm. The accuracy of the level reading is +/-1/8 inch. The accuracy of volume change is +/- 1/4 inch (1/8 inch at initial level and 1/8 inch at final level). 1/4 inch corresponds to approximately 11 gallons in the range of the day tank level used during the performance of the pump surveillance test. The pump is required to be run a minimum of 25 minutes. This is to ensure that the Code required accuracy for flow rate measurement of +/- 2 percent is satisfied. The test methodology used to calculate pump flow rate will provide results consistent with Code requirements. This will provide adequate assurance of acceptable pump performance.

Calculation methods are specified in the surveillance procedures for the Diesel Fuel Oil Transfer Pumps, and meet the quality assurance requirements of the Columbia Generating Station.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159) and Supplement to SER letter dated March 25, 1999 (TAC No. MA3813), Relief Request No. RP-02.

Relief Request -- **RP03**

Relief Request
in Accordance with 10CFR 50.55a(f)(5)(iii)

-- Inservice Testing Impracticality --

ASME Code Components Affected

Pump	Code Class	Pump Group	P&ID Dwg. Number	System(s)
SW-P-1A	3	A	M524, SH 1	Standby Service Water
SW-P-1B	3	A	M524, SH 2	Standby Service Water
HPCS-P-2	3	A	M524, SH 1	Standby Service Water, HPCS

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Subsection ISTB-5221(b) and ISTB-5223(b). The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to the reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

Relief is required for Group A, Group B and comprehensive and preservice tests.

Impracticality of Compliance

The establishment of specific reference values is impractical for these vertical line shaft centrifugal pumps.

Burden Caused by Compliance

1. Service Water systems are designed such that the total pump flow cannot be adjusted to one finite value for the purpose of testing without adversely affecting the system flow balance and Technical Specification operability requirements. Thus, these pumps must be tested in a manner that the Service Water loop remains properly flow balanced during and after the testing and each supplied load remains fully operable to maintain the required level of Plant safety.

2. The Service Water system loops are not designed with a full flow test line with a single throttle valve. Thus the flow cannot be throttled to a fixed reference value. Total pump flow rate can only be measured using the total system flow indication installed on the common return header. There are no valves in any of the loops, either on the common supply or return lines, available for the purpose of throttling total system flow. Only the flows of the served components can be

Relief Request -- RP03 (Contd.)

individually throttled. Each main loop of service water supplies 17-18 safety related loads, all piped in parallel with each other. The HPCS-P-2 pump loop supplies four loads, each in parallel. Each pump is independent from the others (i.e., no loads are common between the pumps). Each load is throttled to a FSAR required flow range which must be satisfied for the loads to be operable. All loads are aligned in parallel, and all receive service water flow when the associated service water pump is running, regardless of whether the served component itself is in service. During power operation, all loops of service water are required to be operable per Technical Specifications. A loop of service water cannot be taken out of service for testing without entering an Action Statement for a Limiting Condition for Operation (LCO). Individual component flows outside of the FSAR mandated flow ranges also induce their own Technical Specification action statements that in turn can induce Plant shutdown in as little as two hours, depending on the load in question.

3. Each loop of Service Water is flow balanced before exiting each refueling outage to ensure that all loads are adequately supplied. A flow range is specified for each load. Once properly flow balanced, very little flow adjustment can be made for any one particular load without adversely impacting the operability of the remaining loads (increasing flow for one load reduces flow for all the others). Each time the system is flow balanced, proper individual component flows are produced, but this in turn does not necessarily result in one specific value for total flow. Because each load has an acceptable flow range, overall system full flow (the sum of the individual loads) also has a range. Total system flow can conceivably be in the ranges of approximately 9,200 - 10,100 gpm for SW-P-1A and SW-P-1B pumps and approximately 1,050 - 1,160 gpm for HPCS-P-2 pump. Consequently, the requirement to quarterly adjust service water loop flow to one specific flow value for the performance of inservice testing conflicts with system design and component operability requirements (i.e., flow balance) as required by Technical Specification.

<u>Proposed Alternative and Basis for Use</u>

As discussed above, it is impractical to return to a specific value of flow rate or discharge pressure for testing of these pumps. As stated in NUREG-1482 Rev 1 Section 5.2, some system designs do not allow for testing at a single reference point or a set of reference points. In such cases, it may be necessary to plot pump curves to use as the basis for variable reference points. Code Case OMN-9,"Use of Pump Curves for Testing," is included in RG 1.192,"Operations and Maintenance Code Case Acceptabilty, ASME OM Code." Flow rate and discharge pressure are measured during inservice testing and compared to an established reference curve. Discharge pressure instead of differential pressure is used to determine pump operational readiness as described in Relief Request RP01. The following elements are used in developing and implementing the reference pump curves. These elements follow the guidance of Code Case OMN-9. This Code Case has been accepted by the NRC staff with the condition that (1) when the repair, replacement, or routine servicing of a pump may have affected a reference curve, the licensee must determine a new reference curve, or reconfirm an existing reference curve, in accordance with Section 3 of Code Case OMN-9; and(2) if it is necessary or desirable, for some reason other than that

Relief Request -- **RP03** (Contd.)

stated in Section 4 of Code Case OMN-9,to establish an additional reference curve or set of curves, the licensee must determine the new curves in accordance with Section 3 of Code Case OMN-9.

1. A reference pump curve (flow rate vs discharge pressure) has been established for SW-P-1A and SW-P-1B from data taken on these pumps when they were known to be operating acceptably. These pump curves represent pump performance almost identical to preoperational test data.

2. Pump curves are based on seven or more test points beyond the flat portion of the curve (at flow rate greater than 4800 gpm). Rated capacity of these pumps is 12,000 gpm. Three or more test data points were at flow rate greater than 9,000 gpm. The pumps are being tested at or near full design flow rate.

3. To reduce the uncertainty associated with the pump curves and the adequacy of the acceptance criteria, special test gauges (± 0.5% full scale accuracy) were installed to take test data in addition to Plant installed gauges and Transient Data Acquisition System (TDAS). All instruments used either met or exceeded the Code required accuracy.

4. For HPCS-P-2 pump, the reference pump curve is based on the manufacturer's pump curve as modified by preoperational test data.

5. Review of the pump hydraulic data trend plots indicates close correlation with the established pump reference curves, thus further validating the accuracy and adequacy of the pump curves to assess pump operational readiness.

6. The reference pump curves are based on flow rate vs discharge pressure. Acceptance criteria curves are based on differential pressure limits given in Table ISTB-5200-1 for applicable test type. Setting the Code Acceptance Criteria on discharge pressure using differential limits is slightly more conservative for these pump installations with suction lift (Relief Request RP01). See the attached sample SW-P-1A pump Acceptance Criteria sheet for Group A test. Area 1-2-5-6 is the acceptable range for pump performance. Area 3-4-5-6 defines the Alert Range, and the area outside 1-2-3-4 defines the required Action Range. These acceptance criteria limits do not conflict with Technical Specifications or FSAR criteria.

7. Similar reference curves will be used for comprehensive pump tests using the applicable acceptance criteria and instrument accuracy and range requirements.

8. Only a small portion of the established reference curve is being used to accommodate flow rate variance due to flow balancing of various system loads.

9. Review of vibration data trend plots indicates that the change in vibration readings over the narrow range of pump curves being used is insignificant and thus only one fixed reference value has been assigned for each vibration measurement location.

Relief Request -- RP03 (Contd.)

10. When the repair, replacement, or routine servicing of a pump may have affected a reference curve, a new reference curve shall be determined, or the existing reference curve reconfirmed, in accordance with Section 3 of Code Case OMN-9.

11. If it is necessary or desirable, for some reason other than that stated in Section 4 of Code Case OMN-9, to establish an additional reference curve or set of curves, the new curve(s) in accordance with Section 3 of Code Case OMN-9 must be determined.

Quality/Safety Impact

Design of the Columbia Generating Station Service Water system and the Technical Specification requirements make it impractical to adjust system flow to a fixed reference value for inservice testing without adversely affecting the system flow balance and Technical Specification operability requirements. Proposed alternate Testing using a reference pump curve for each pump provides adequate assurance and accuracy in monitoring pump condition to assess pump operational readiness and shall adequately detect pump degradation. Alternate testing will have no adverse impact on Plant and public safety.

Duration of Proposed Alternative

Third 10 year interval.

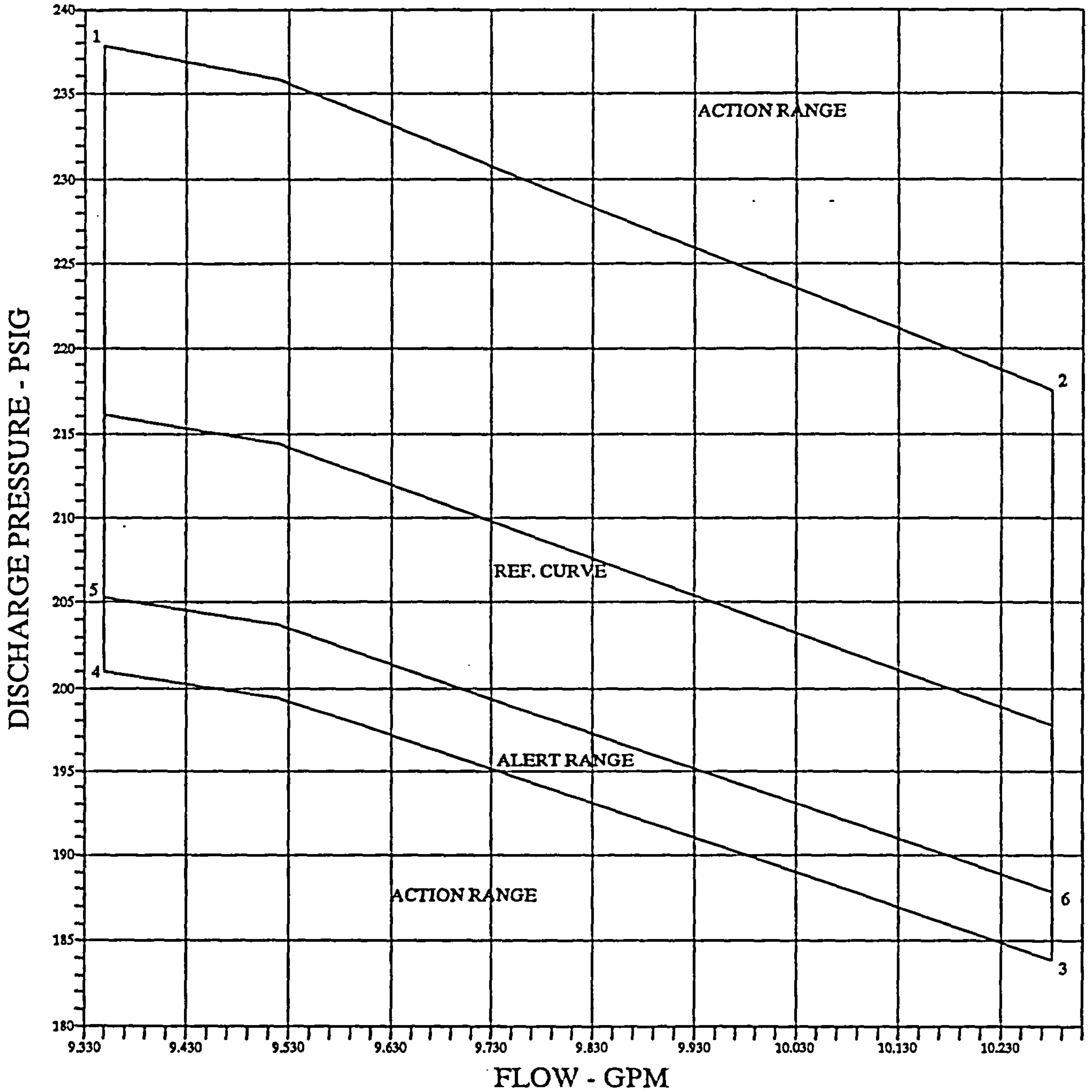
Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159), Relief Request No. RP-03.

Relief Request -- **RP03** (Contd.)

SAMPLE DATA SHEET - Group A Test
SW-P-1A ACCEPTANCE CRITERIA



ALERT RANGE = Area Inside 3-4-5-6

ACTION RANGE = Area Outside 1-2-3-4

Relief Request -- **RP04**

Relief Request
in Accordance with 10CFR 50.55a(f)(5)(iii)

-- Inservice Testing Impracticality --

<u>**ASME Code Components Affected**</u>

Pump	Code Class	Pump Group	P&ID Dwg. Number	System(s)
LPCS-P-1	2	B	M520	Low Pressure Core Spray
RHR-P-2A	2	A	M521, SH 1	Residual Heat Removal
RHR-P-2B	2	A	M521, SH 2	
RHR-P-2C	2	A	M521, SH 3	
HPCS-P-1	2	B	M520	High Pressure Core Spray
RCIC-P-1	2	B	M519	Reactor Core Isolation Cooling

<u>**Applicable Code Edition and Addenda**</u>

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

<u>**Applicable Code Requirement**</u>

<u>RCIC-P-1 (Centrifugal Pump):</u>

<u>Group B Test:</u> Subsection ISTB-5122(a), ISTB-5122(b) and ISTB-5122(c). The pump shall be operated at a speed adjusted to the reference point (+/- 1%) for variable speed drives. System resistance may be varied as necessary to achieve the reference point. The differential pressure or flow rate shall be determined and compared to its reference value.

<u>Comprehensive Test:</u> Subsection ISTB-5123(a) and ISTB-5123(b). The pump shall be operated at a speed adjusted to the reference point (+/- 1%) for variable speed drives. The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to the reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

<u>Other Pumps (Vertical line Shaft Centrifugal Pumps):</u>

<u>Group B Test:</u> Subsection ISTB-5222(b) and ISTB-5222(c). System resistance may be varied as necessary to achieve the reference point. The differential pressure or flow rate shall be determined and compared to its reference value.

<u>Group A and Comprehensive Test:</u> Subsection ISTB-5221(b) and ISTB-5223(b). The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to the reference value. Alternatively, the flow rate shall be varied until the

Relief Request -- **RP04** (Contd.)

differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

Impracticality of Compliance

The establishment of specific reference values is impractical for these pumps.

Burden Caused by Compliance

Reference values are defined as one or more fixed sets of values of quantities as measured or observed when the equipment is known to be operating acceptably. All subsequent test results are to be compared to these reference values. Based on operating experience, flow rate (independent variable during inservice testing) for these pumps cannot be readily duplicated with the existing flow control systems. Flow control for these systems can only be accomplished through the operation of relatively large motor operated globe valves as throttling valves. Because these valves are not equipped with position indicators which reflect percent open, the operator must repeatedly jog the motor operator to try to make even minor adjustments in flow rate. These efforts, to exactly duplicate the reference value, would require excessive valve manipulation which could ultimately result in damage to valves or motor operators.

Proposed Alternative and Basis for Use

As discussed above, it is impractical to return to a specific value of flow rate, or differential pressure for testing of these pumps. As stated in NUREG-1482 Rev 1 Section 5.2, some system designs do not allow for testing at a single reference point or a set of reference points. In such cases, it may be necessary to plot pump curves to use as the basis for variable reference points. Code Case OMN-9,"Use of Pump Curves for Testing," is included in RG 1.192,"Operations and Maintenance Code Case Acceptabilty, ASME OM Code."

Since the independent reference variable (flow rate) for these pumps is impractical to adjust to a fixed reference value and requires excessive valve manipulation, the maximum variance shall be limited to ± 2% of the reference value. Thus, flow rate shall be adjusted to be within ± 2% of the reference flow rate and the corresponding differential pressure shall be measured and compared to the reference differential pressure value determined from the pump reference curve established for this narrow range of flow rate. Slope of the pump reference curve is not flat even over this narrow range of flow rate. Assuming the flow rate to be fixed over this narrow range can result in additional error in calculating the deviation between the measured and reference differential pressure and at times this deviation can be non-conservative. Since the dependent variable (differential pressure) can be assumed to vary linearly with flow rate in this narrow range, establishing multiple reference points in this narrow range is similar to establishing a reference pump curve representing multiple reference points. This assumption of linearity between differential pressure and flow rate is supported by the manufacturer pump curves in the stable design flow rate region.

For RCIC-P-1 pump both flow rate and speed are adjusted to be within ± 2% of their respective reference values and the differential pressure is measured.

Relief Request -- **RP04** (Contd.)

The following elements are used in developing and implementing the reference pump curves. These elements follow the guidance of Code Case OMN-9. This Code Case has been accepted by the NRC staff with the condition that (1) when the repair, replacement, or routine servicing of a pump may have affected a reference curve, the licensee must determine a new reference curve, or reconfirm an existing reference curve, in accordance with Section 3 of Code Case OMN-9; and(2) if it is necessary or desirable, for some reason other than that stated in Section 4 of Code Case OMN-9,to establish an additional reference curve or set of curves, the licensee must determine the new curves in accordance with Section 3 of Code Case OMN-9.

1. A reference pump curve (flow rate vs differential pressure) has been established for RHR pumps from data taken on these pumps when they were known to be operating acceptably. These pump curves represent pump performance almost identical to manufacturer's test data.

2. For RCIC-P-1, a variable speed drive pump, flow rate is set within ± 2% of the reference flow rate and the reference curve is based on speed with acceptance criteria based on differential pressure. This is done because of the impracticality of setting speed to a specific reference value. Additionally, evaluation of the manufacturer pump data, preoperational and special test data used to establish the pump reference curve indicates insignificant change (0.25 psi/gpm) in differential pressure with small variation (± 12 gpm) in flow rate.

3. For HPCS-P-1 and LPCS-P-1 pumps, the reference pump curve is based on the manufacturer pump curve which was validated during the preoperational testing.

4. RHR and RCIC pump curves are based on seven or more test points beyond the flat portion of the curve. These ECCS pumps have minimum flow rate requirements specified in Technical Specifications and are being tested at or near full design flow rate.

5. To reduce the uncertainty associated with the pump curves and to ensure the adequacy of the acceptance criteria, special test gauges (± 0.5% full scale accuracy) were installed to take test data in addition to Plant installed gauges and Transient Data Acquisition System (TDAS). All instruments used either met or exceeded the Code required accuracy.

6. Review of the pump hydraulic data trend plots indicates close correlation with the established pump reference curves, thus further validating the accuracy and adequacy of the pump curves to assess pumps operational readiness.

7. Acceptance criteria curves are based on differential pressure limits given in applicable Table ISTB-5100-1 or Table ISTB-5200-1. See the attached sample RHR-P-2A pump Acceptance Criteria sheet for Group A test. Area 1-2-5-6 is the acceptable range for pump performance. Area 3-4-5-6 defines the Alert Range and the area outside 1-2-3-4 defines the required Action Range. A similar sample RCIC-P-1 pump Acceptance Criteria sheet for Group B test is also attached. The acceptance criteria limits do not conflict with Technical Specifications or FSAR operability criteria.

8. Similar reference curves will be used for comprehensive pump tests using the applicable acceptance criteria and instrument accuracy and range requirements.

Relief Request -- RP04 (Contd.)

9. Only a small portion of the established reference curve is being used to accommodate flow rate variance.

10. Review of vibration data trend plots indicates that the change in vibration readings over the narrow range of pump curves being used is insignificant and thus only one fixed reference value has been assigned for each vibration measurement location.

11. When the repair, replacement, or routine servicing of a pump may have affected a reference curve, a new reference curve shall be determined, or the existing reference curve reconfirmed, in accordance with Section 3 of Code Case OMN-9.

12. If it is necessary or desirable, for some reason other than that stated in Section 4 of Code Case OMN-9, to establish an additional reference curve or set of curves, the new curve(s) in accordance with Section 3 of Code Case OMN-9 must be determined.

Quality/Safety Impact

Due to impracticality of adjusting independent variables (flow rate, and speed for variable drive RCIC pump) to a fixed reference value for inservice testing without system modifications, alternate testing to vary the variables over a very narrow range (± 2% of reference values) and using pump reference curves for this narrow range is proposed. Alternate testing using a reference pump curve for each pump provides adequate assurance and accuracy in monitoring pump condition to assess pump operational readiness and will adequately detect pump degradation. Alternate testing will have no adverse impact on Plant and public safety.

Duration of Proposed Alternative

Third 10 year interval.

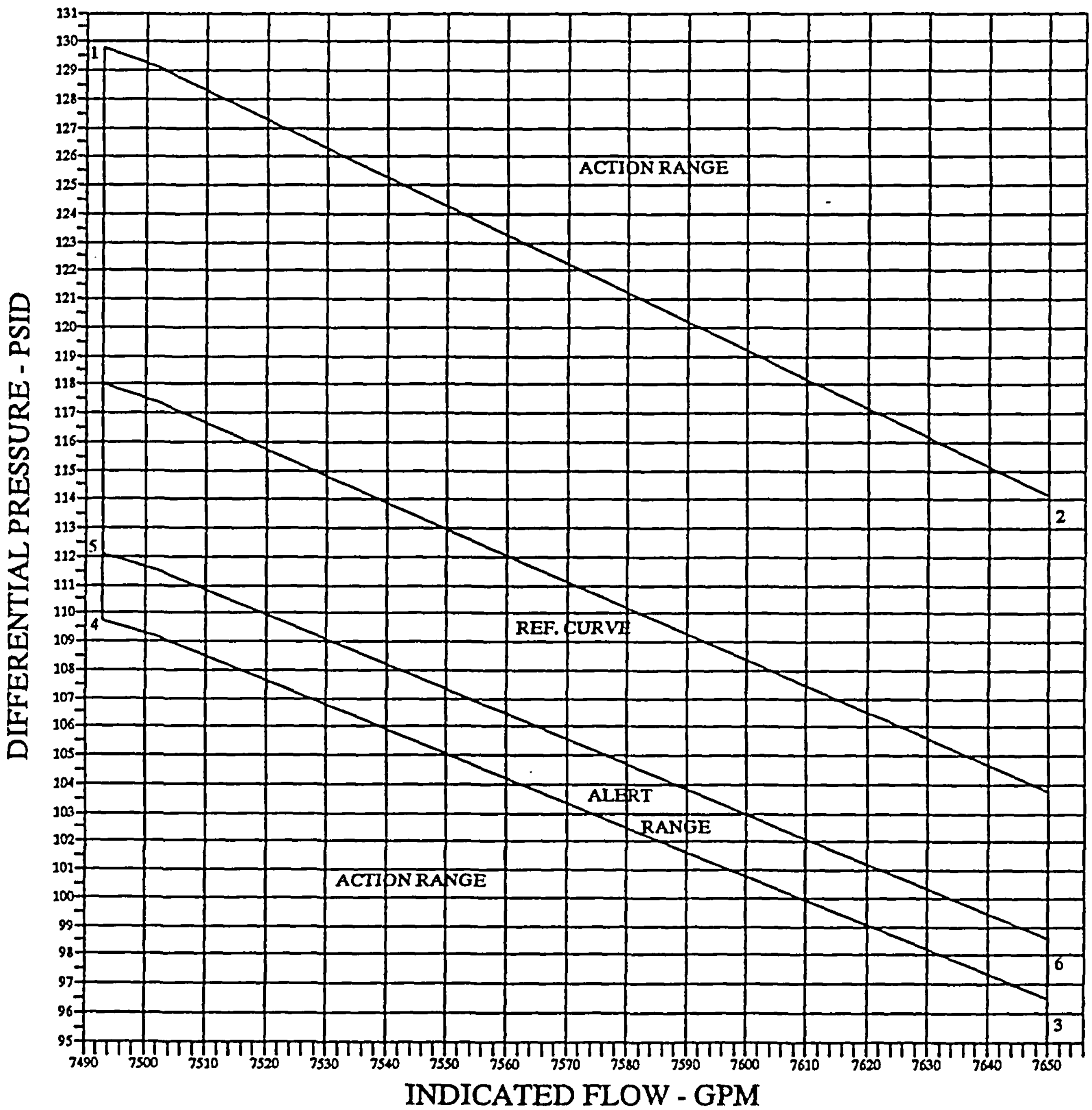
Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159), Relief Request No. RP04.

Relief Request -- RP04 (Contd.)

SAMPLE DATA SHEET - Group A Test
RHR-P-2A ACCEPTANCE CRITERIA

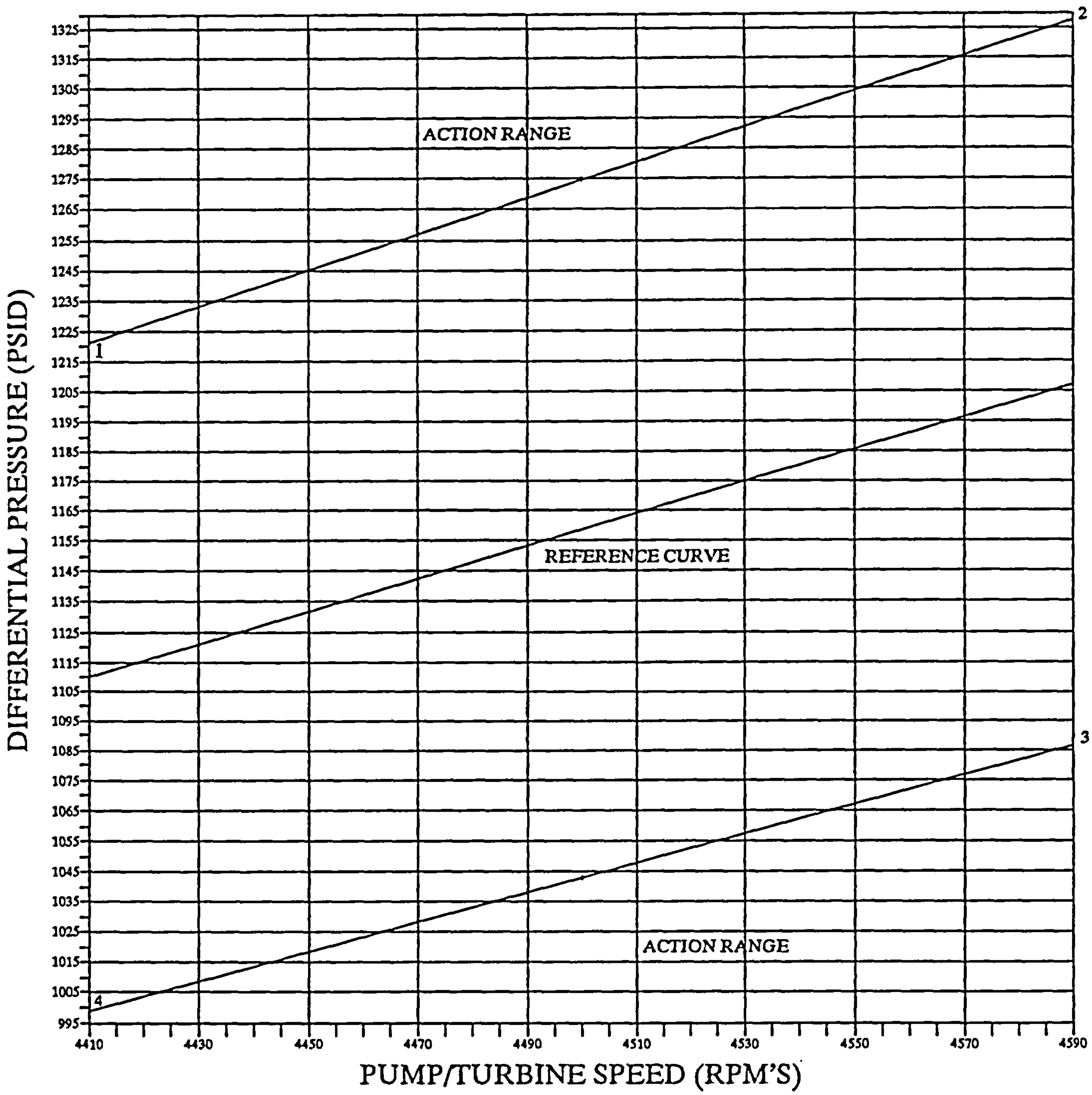


ALERT RANGE = Area Inside 3-4-5-6

ACTION RANGE = Area Outside 1-2-3-4

Relief Request -- **RP04** (Contd.)

SAMPLE DATA SHEET - Group B Test
RCIC-P-1 ACCEPTANCE CRITERIA



ACTION RANGE = Area Outside 1-2-3-4

Relief Request -- **RP05**

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

ASME Code Components Affected

Pump	Code Class	Pump Group	P&ID Dwg. Number	System(s)
RHR-P-2A	2	A	M521, SH 1	Residual Heat Removal
RHR-P-2B	2	A	M521, SH 2	
RHR-P-2C	2	A	M521, SH 3	
HPCS-P-1	2	B	M520	High Pressure Core Spray

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

ISTB-3510(b)(1) Range. The full- scale range of each analog instrument shall be not greater than three times the reference value. Residual Heat Removal (RHR) and High Pressure Core Spray (HPCS) Pumps discharge pressure instruments (RHR-PT-37A, RHR-PT-37B, RHR-PT-37C, and HPCS-PT-4), exceed or may exceed (dependent upon measured parameters), the Code allowable range limit of three times the reference value. Relief is required for Group A, Group B and preservice test only. Temporary test gauges meeting the Code requirements shall be used for comprehensive test.

Reason for Request

Installed test gauges used to measure the pump discharge pressure, which is used to determine differential pressure, do not meet the Code range requirements.

Proposed Alternative and Basis for Use

During Group A or Group B pump inservice testing, pump discharge pressure which is used to determine differential pressure shall be measured by respective Transient Data Acquisition Data (TDAS) points listed below for each pump. TDAS data averages 100 readings taken at an interval of each second.

1. ISTB-3510(a) and ISTB-3510(b)(1) specifies both accuracy and range requirements for each instrument used in measuring pump performance parameters. The purpose of instrument requirements is to ensure that pump test measurements are sufficiently accurate and repeatable to permit evaluation of pump condition and detection of degradation. Instrument accuracy limits the inaccuracy associated with the measured test data. Thus, higher instrument accuracy lowers the uncertainty associated with the measured data. The purpose of the Code range requirement is to ensure reading accuracy and repeatability of test data.

Relief Request -- RP05 (Contd.)

2. Since the TDAS data is being obtained to an accuracy of ± 1% of full scale, it consistently yields measurements more accurate than would be provided by instruments meeting the Code instrument accuracy requirement of ± 2% of full scale and range requirement of three times the reference value. Equivalent Code accuracy being obtained by TDAS measurements is calculated below.

Pump	Test Parameter	Instrument I.D.	Range (PSIG)	*Ref. Value (PSIG)	Instrument Loop Accuracy	Equivalent Code Accuracy
RHR-P-2A	Discharge Pressure	RHR-PT-37A TDAS PT 155	0-600	136	± 1%, ± 6 psig	[6/(3x136)]x100 =1.47%
RHR-P-2B	Discharge Pressure	RHR-PT-37B TDAS PT 076	0-600	132	±·1%, ± 6 psig	[6/(3x132)]x100 =1.52%
RHR-P-2C	Discharge Pressure	RHR-PT-37C TDAS PT 091	0-600	143	± 1%, ± 6 psig	[6/(3x143)]x100 =1.40%
HPCS-P-1	Discharge Pressure	HPCS-PT-4 TDAS PT 107	0-1500	430	± 1%, ± 15 psig	[15/(3x430)]x100 =1.16%

* Reference values are specified in the implementing procedures. This table will not be updated to reflect small changes in reference values.

Thus, the range and accuracy of TDAS instruments being used to measure pump discharge pressure result in data measurements of higher accuracy than that required by the Code and thus will provide reasonable assurance of pump operational readiness. It should also be noted that the TDAS system averages many readings, therefore giving a significantly more accurate reading than would be obtained by visual observation of a gauge.

3. The range of the pressure transmitters (PTs) used for these applications were selected to bound the expected pump discharge pressure range during all normal and emergency operating conditions (the maximum expected discharge pressure for the RHR and HPCS pumps is approximately 450 psig and 1400 psig respectively). However, during inservice testing the pumps are tested at full flow, resulting in lower discharge pressures than the elevated discharge pressure that can occur during some operating conditions. For this reason the pump reference value is significantly below the maximum expected operational discharge pressure. A reduction of the range of the PTs to three times the reference value would, in these cases, no longer bound the expected discharge pressure range for these pumps, and therefore is not practicable. If a PT were to fail, a like replacement would have to be used due to the above identified reasons of replacing a PT with one not suited for all pump flow conditions. However, this is not a concern because the existing instrumentation provides pump discharge pressure indication of higher accuracy and better resolution than that required by the Code for evaluating pump condition and detecting degradation.

4. NUREG 1482, Revision 1, Section 5.5.1 states that when the range of a permanently installed analog instrument is greater than three times the reference value, but the accuracy of the instrument is more conservative than that required by the Code, the staff may grant relief when the combination of the range and accuracy yields a reading that is at least equivalent to that achieved using instruments that meet the Code requirements (i.e. up to +/-6 percent for Group A and B tests, and +/-1.5 percent for pressure and differential pressure instruments for Preservice and Comprehensive tests).

Relief Request -- **RP05** (Contd.)

Quality/Safety Impact

TDAS data will consistently provide acceptable accuracy to ensure that the pumps are performing at the flow and pressure conditions to fulfill their design function. TDAS data is sufficiently accurate for evaluating pump condition and in detecting pump degradation. The effect of granting this relief request will have no adverse impact on Plant and public safety. Test quality will be enhanced by getting slightly better, more repeatable data.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159) and Supplement to SER letter dated March 25, 1999 (TAC No. MA3813), Relief Request No. RP05.

Relief Request -- RP06

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(ii)

-- Hardship or Unusual Difficulty
without Compensating Increase in Level of Quality or Safety –

ASME Code Components Affected

Pump	Code Class	Pump Group	P&ID Dwg. No.	System(s)
SLC-P-1A	2	B	M522	Standby Liquid Control
SLC-P-1B	2	B	M522	

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Subsection ISTB-3550. Flow rate shall be measured using a rate or quantity meter installed in the pump test circuit.

Subsection ISTB-5200 (a). For the Group A test and the comprehensive test, after pump conditions are as stable as the system permits, each pump shall be run at least 2 minutes. At the end of this time at least one measurement or determination of each of the quantities required by Table ISTB-3000-1 shall be made and recorded.

Relief is required for Group A, Group B and comprehensive and preservice tests.

Reason for Request

A rate or quantity meter is not installed in the test circuit. To have one installed would be costly and time consuming with few compensating benefits.

As a result of a rate or quantity meter not being installed in the test circuit, it is impractical to directly measure the flow rate for the Standby Liquid Control pumps. Therefore, the requirement for allowing a 2 minute "hold" time for Pump tests is an unnecessary burden which would provide no additional assurance of determining pump operational readiness.

Relief Request -- **RP06** (Contd.)

Proposed Alternative and Basis for Use

NUREG 1482, Rev 1, Section 5.5.2 states, "requiring licensees to install a flow meter to measure the flow rate and to guarantee the test tank size, such that the pump flow rate will stabilize in 2 minutes before recording the data would be a burden because of the design and installation changes to be made to the existing system. Therefore, compliance with the Code requirements would be a hardship".

Pump flow rate will be determined by measuring the volume of fluid pumped and dividing corresponding pump run time. The volume of fluid pumped will be determined by the difference in fluid level in the test tank at the beginning and end of the pump run (test tank fluid level corresponds to volume of fluid in the tank). The pump flow rate calculation methodology meets the accuracy requirements of OM Code, Table ISTB-3500-1. The pump flow rate calculation is identified on the record of test and ensures that the method for the flow rate calculation yields an acceptable means for the detection and monitoring of potential degradation of the Standby Liquid Control Pumps and therefore, satisfies the intent of the OM Code Subsection ISTB.

In this type of testing, the requirement to maintain a 2 minute hold time after stabilization of the system is unnecessary and provides no additional increase of the ability of determining pump condition.

Quality/Safety Impact

The test tank is a horizontal flat bottomed rectangular tank. The tank fluid volume is approximately 216 gallons. The average calculated flow rate is 42.2 gpm. The accuracy of the level reading is +/- 1/8 inch. The accuracy of volume change is +/- 1/4 inch (1/8 inch at initial level and 1/8 inch at final level). 1/4 inch corresponds to 1.23 gallons in the range of the test tank level used during the performance of the pump surveillance test. The pump is required to be run for a minimum time to ensure that an 18 inch change of test tank level has occurred. This is to ensure that the Code required accuracy for flow rate measurement of +/-2 percent is satisfied. The test methodology used to calculate pump flow rate will provide results consistent with Code requirements. This will provide adequate assurance of acceptable pump performance.

Calculation methods are specified in the surveillance procedures for the Standby Liquid Control Pumps, and meet the quality assurance requirements for the Columbia Generating Station.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

A similar relief request RP02, was granted for the Diesel Fuel Oil Transfer pumps for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159) and Supplement to SER letter dated March 25, 1999 (TAC No. MA3813), Relief Request No. RP-02.

Relief Request -- RP07

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

--Alternative Provides Acceptable Level of Quality and Safety–

ASME Code Components Affected

All digital (as applicable) Instrumentation used for pumps in the IST Program.

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Subsection ISTB-3510(b)(2) Range. Digital Instruments shall be selected such that the reference value does not exceed 70% of the calibrated range of the instrument.

Reason for Request

The ASME OMN-6 Code Case provides alternative range requirements to those specified in ISTB-3510(b)(2). However, the applicability of the OMN-6 Code Case is stated to be "ASME OM Code-1990 Edition through ASME OM Code-1997 Addenda". The Columbia Generating Station IST Program is being revised to include the OM Code 2001 Edition through the 2003 Addenda.

Proposed Alternative and Basis for Use

When digital instruments are used for the measurements of parameters required by ASME OM Code Table ISTB-3000-1, the alternative range requirements of OMN-6 Code Case (the reference value does not exceed 90% of the calibrated range of the instrument) will be met.

In addition, in NUREG-1482, Rev 1 Section 5.5 in part; "The NRC has accepted Code Case OMN-6 as specified in RG 1.192, which allows each digital instrument to be such that the reference values do not exceed 90 percent of the calibrated range of the instrument."

The primary reason for this relief is to provide approval for the Columbia Generating Station to use the ASME OM Code Case OMN-6 for the third ten year interval IST Program. The IST Program for the third ten year interval will use the 2001 edition through the 2003 addenda of the ASME OM Code.

Quality/Safety Impact

The use of the OMN-6 Code, approved by the NRC in RG 1.192, will provide at least equivalent instrumentation accuracy requirements for the required parameters to be measured in the IST Program and will provide results consistent with Code requirements. This will provide adequate assurance of acceptable pump performance.

Relief Request -- **RP07** (Contd.)

Duration of Proposed Alternative

Third 10 year interval.

Precedents

The ASME OMN-6 Code Case for Alternative Rules for Digital Instruments has been accepted for use in Regulatory Guide 1.192 and discussed as acceptable for use in NUREG 1482 Revision 1, Section 5.5.

Relief Request – RP08

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

ASME Code Components Affected

Pump	Code Class	Pump Group	P&ID Dwg. No.	System(s)
DO-P-1A	3	B	M512, SH 4	Diesel Fuel Oil Transfer
DO-P-1B	3	B	M512, SH 4	
DO-P-2	3	B	M512, SH 4	

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Subsection ISTB-5223 (e), and Table ISTB-5200-1, for Comprehensive Pump Testing acceptance criteria. All deviations from the reference values shall be compared with the ranges of Table ISTB-5200-1 and corrective action taken as specified in ISTB-6200.

At the Columbia Generating Station the Diesel Fuel Oil Transfer pumps are tested using a "fixed resistance" flow path as permitted per OM Code Subsection ISTB-5223 (c) for comprehensive pump testing. This requires that the flow rate and the differential pressure be measured or determined, and compared to the respective reference values for the pumps.

Table ISTB-5200-1 for the Comprehensive Test for pumps list the "Acceptable Range" as 0.95 to 1.03 times the reference flow rate (Q) or the reference differential pressure (DP) for vertical line shaft centrifugal pumps.

Also, the "Required Action Range High" for the Comprehensive Test is listed as greater than 1.03 times the reference flow and/or differential pressure (as applicable).

Reason for Request

The Diesel Fuel Oil Transfer pumps are Vertical Line Shaft centrifugal pumps installed to transfer diesel fuel oil from the subterranean storage tanks to the diesel's day tanks.

As delineated in relief request RP-02 for the Diesel Fuel Oil Transfer pumps, the flow rate of the pumps will be determined by calculating a flow rate from the Diesel Fuel Oil Storage Tanks to the Diesel Fuel Oil Day Tanks using a change in level of the Diesel Fuel Oil Day Tanks over a period of time.

Relief Request -- RP08 (Contd.)

As a result of the Diesel Fuel Oil Transfer Pumps being designed such that a suction pressure gauge is unable to be installed on the suction side of the Diesel Fuel Oil Transfer pumps, a determination of differential pressure will be made as allowed by ISTB-3520(b), which allows that the differential pressure may be determined by using the pressure at a point in the inlet and the pressure at a point in the discharge pipe.

NUREG 1482, Rev 1, Section 5.5.3, states that when the inlet pressure gauges are not installed in the inlet of a vertical line shaft pump, it is impractical to directly measure inlet pressure for determining differential pressure for the pump. The NRC staff recommends use of tank level to determine the suction pressure of vertical line shaft pumps and a relief request is not required. The recommended method is in accordance with a determination of differential pressure allowed by the Code as stated above.

Suction Pressure is determined by measuring the Diesel Fuel Oil Storage Tank level before the pump is started. Diesel Fuel Oil Storage Tank level changes when the pump is running, so accurate suction pressure indication cannot be determined while the pump is running. The calculational method specified in the surveillance procedure for testing the pumps satisfies the Code required accuracy for Group B and Comprehensive pump testing. This methodology provides the required information for determining and monitoring the hydraulic condition of the pumps without the need to install suction (inlet) pressure gauges which would not be practical to install due to design limitations.

A rate or quantity meter is not installed in the test circuit. To have one installed would be costly and time consuming with few compensating benefits.

As a result of the low reference values for the differential pressure and flow rate of the Diesel Fuel Oil transfer pumps, it is extremely difficult to meet the upper acceptance limit of 3 percent for differential pressure and flow rate, now required by the ASME OM Code acceptance criteria for Comprehensive Pump testing.

Proposed Alternative and Basis for Use

It is proposed that the Comprehensive Pump testing for the Diesel Generator Fuel Oil Transfer Pumps listed above be allowed to have an extended upper acceptance criteria limit of +10 percent for differential pressure and flow rate measurements, in lieu of the Code required +3 percent as stated on Table ISTB-5200-1, for Pump Acceptance Criteria for Vertical Line Shaft pumps for the Comprehensive Pump testing.

Relief Request -- **RP08** (Contd.)

A comparison of recent tests is shown below for the Diesel Fuel Oil Transfer Pumps to illustrate the reason for the relief requested for the flow rate and differential pressure upper acceptable limit.

DO-P-1A

Reference pump flow rate for DO-P-1A is 27.57 GPM.
Reference pump differential pressure for DO-P-1A is 14.57 PSID.

Date	Tank Level (Inches)	Suct Press (PSIG)	Disch Press (PSIG)	Diff Press (PSID)	Flow Rate (GPM)
06/16/05	132.2	0.67	14.00	14.67	27.72
03/31/05	132.4	0.66	14.00	14.66	28.11
12/30/04	132.1	0.67	14.00	14.67	28.07
10/07/04	130.7	0.72	13.75	14.47	28.14
07/15/04	132.3	0.67	13.75	14.42	27.97
04/22/04	132.0	0.68	14.00	14.68	27.97
01/30/04	131.0	0.71	14.00	14.71	28.23
11/07/03	130.8	0.71	13.80	14.51	27.61

DO-P-1B

Reference pump flow rate for DO-P-1B is 30.58 GPM.
Reference pump differential pressure for DO-P-1B is 17.47 PSID.

Date	Tank Level (Inches)	Suction Press (PSIG)	Discharge Press (PSIG)	Diff Press (PSID)	Flow Rate (GPM)
07/04/05	132.4	0.66	17.2	17.86	29.50
04/07/05	130.6	0.72	17.5	18.22	29.66
01/13/05	130.7	0.72	17.5	18.22	29.86
10/21/04	134.6	0.60	17.3	17.9	29.58
07/29/04	131.1	0.70	17.3	18.00	29.58
05/06/04	130.6	0.72	17.5	18.22	29.77
02/13/04	132.2	0.67	17.25	17.92	29.97
11/22/03	130.1	0.73	17.25	17.98	29.58

Relief Request -- RP08 (Contd.)

DO-P-2

Reference pump flow rate for DO-P-2 is 28.22 GPM.
Reference pump differential pressure for DO-P-2 is 10.40 PSID.

Date	Tank Level (Inches)	Suction Press (PSIG)	Discharge Press (PSIG)	Diff Press (PSID)	Flow Rate (GPM)
06/25/05	133.0	0.65	9.75	10.40	30.75
03/24/05	133.0	0.65	9.80	10.45	29.17
01/05/05	132.7	0.65	10.00	10.65	28.39
10/14/04	133.2	0.64	10.00	10.64	28.43
07/22/04	132.8	0.65	10.00	10.65	28.53
04/28/04	133.1	0.64	10.00	10.64	28.74
02/04/04	134.5	0.60	10.00	10.60	29.00
11/13/03	131.2	0.70	9.90	10.60	28.57

As can be seen the differential pressure for the Diesel Fuel Oil Transfer pumps is a very low value. Complying with the Code and using an average of the most recent test results for differential pressure of 14.60 PSID (DO-P-1A), 18.04 PSID (DO-P-1B), and 10.58 PSID (DO-P-2), the upper limit of 3 percent of reference value as presently required by the OM Code would result in the pumps being declared inoperable at greater than 15.00 PSID (DO-P-1A), 17.99 PSID (DO-P-1B), and 10.71 PSID (DO-P-2), respectively. Complying with the Code and using an average of the most recent test results for flow rate of 27.98 GPM (DO-P-1A), 29.69 GPM (DO-P-1B), and 28.95 GPM (DO-P-2), the upper limit of 3 percent of reference value as presently required by the OM Code would result in the pumps being declared inoperable at greater than 28.40 GPM (DO-P-1A), 31.50 GPM (DO-P-1B), and 29.07 GPM (DO-P-2), respectively. This is a very small acceptance band for these pumps, on the order of "Tenths" and in some cases "hundredths" of psi or gpm. As can be seen the imposition of this requirement would be a burden and would NOT result in any "improved" operational readiness determination.

It must be pointed out, that, although on rare occasions the pump upper limit has been used to identify degradation of specific pump hydraulic parameters, the primary reason for the upper limit is for the determination of either instrumentation drift or inaccuracy and, the determination of an incorrect reference value or test flow path.

As a result of the method of the determination of the differential pressure used at the Columbia Generating Station, it is extremely unlikely that either instrument drift or improper determination of reference values or flow path would be a cause of the upper limit being approached. Also, as these pumps do not "improve" with degradation, it is reasonable to assume that the allowance of an additional 7 percent margin being added to the upper limit would not impair the ability for the Columbia Generating Station to make a determination of degradation of the Diesel Fuel Oil transfer pumps.

Relief Request -- **RP08** (Contd.)

This method does not result in any potential increase of pump degradation going undetected and provides a reasonable alternative to the Code required upper acceptable limits. Imposition of the upper limit of 3 percent for flow rate and differential pressure in this instance is unnecessary and provides no additional increase of the ability of determining pump condition.

Quality/Safety Impact

The added increase to the acceptable range of the pumps as stated above does not lessen the ability of the Columbia Generating Station to detect degradation of the Diesel Fuel Oil Transfer pumps and does not "compromise" the ability of the station to provide reasonable assurance of pump operational readiness. The test methodology used to calculate differential pressure and determine flowrate for the Diesel Fuel Oil transfer pumps will provide results consistent with Code requirements. This will provide adequate assurance of acceptable pump performance.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This is a new relief request for the 3rd ten year interval.

5.0 VALVE INSERVICE TESTING PROGRAM

5.1 Introduction

ASME OM Code requires periodic testing of certain safety related valves in order to verify their operational readiness and leak tight integrity. The Columbia Generating Station Valve Inservice Testing Program satisfies these requirements and conforms to FSAR commitments and Technical Specifications for ASME valve testing. The program establishes the requirements for preservice and inservice testing to assess the operational readiness of safety related valves. The Program is based on the requirements of the ASME OM Code-2001 and 2002 and 2003 Addenda Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants". The Program complies with the specifications of the approved Codes and Regulations. This program includes those ASME valves which are required in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition, or mitigating the consequences of an accident.

The Program Plan establishes tests and test intervals, acceptance criteria, corrective actions, and records requirements. Where conformance with certain Code requirements is impractical, relief requests are included in Section 5.9 with supporting information and proposed alternatives.

5.2 Program Implementation

5.2.1 Exemptions (ISTC-1200)

The following are excluded from this Subsection, provided that the valves are not required to perform a specific function as described in ISTA-1100:

a. valves used only for operating convenience such as vent, drain, instrument, and test valves;
b. valves used only for system control, such as pressure regulating valves; and
c. valves used only for system or component maintenance.

Skid-mounted valves are excluded from this Subsection, provided they are tested as part of the major component and are justified by the Owner to be adequately tested.

External control and protection systems responsible for sensing plant conditions and providing signals for valve operation are excluded from the requirements of this Subsection.

Category A and Category B safety and relief valves are excluded from the requirements of ISTC-3700, Valve Position Verification and ISTC-3500, Valve Testing Requirements.

Nonreclosing pressure relief devices (rupture disks) used in BWR Scram Accumulators are excluded from the requirements of this Subsection.

5.2.2 Valve Categories (ISTC-1300)

Valves within the scope of this Subsection shall be placed in one or more of the following categories. When more than one distinguishing category characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary.

a. Category A: valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their required function(s), as specified in ISTA-1100;
b. Category B: valves for which seat leakage in the closed position is inconsequential for fulfillment of the required function(s), as specified in ISTA-1100;
c. Category C: valves that are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves) for fulfillment of the required function(s), as specified in ISTA-1100;
d. Category D: valves that are actuated by an energy source capable of only one operation, such as rupture disks or explosively actuated valves.

5.2.3 Preservice Testing (ISTC-3100)

Each valve shall be tested during the preservice test period. These tests shall be conducted under conditions as near as practicable to those expected during subsequent inservice testing. Only one preservice test of each valve is required with these exceptions.

a. Any valve that has undergone maintenance that could affect its performance after the preservice test shall be tested in accordance with ISTC-3310.
b. Safety and relief valves and nonreclosing pressure relief devices shall meet the preservice requirements of Mandatory Appendix I.

5.2.4 Inservice Testing (ISTC-3200)

Inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). Surveillance testing is performed for each valve listed in the program, nominally every 3 months. For valves in systems out of service (declared inoperable or not required to be operable), the test is performed prior to placing the system in an operable status and the test schedule resumed. The Columbia Generating Station Valve Inservice Testing Program is implemented as Part of the technical surveillance testing program. Active and passive valves in Categories A, B, C, and D are tested in accordance with the requirements specified in Table ISTC-3500-1.

5.2.5 Reference Values (ISTC-3300)

Reference values are determined from the results of preservice testing or from the results of inservice testing. These tests are performed under conditions as near as practicable to those expected during subsequent inservice testing. Reference values are established only when the valve is known to be operating acceptably. Baseline data for stroke times has been obtained from initial Valve Operability Tests. The limiting value(s) of full-stroke time of each power-operated valve is listed in the test procedures. Reference values are obtained from baseline tests or post maintenance tests. Many times the reference values are more accurately determined by an average of stroke times. This practice is in accordance with position 5 of GL 89-04.

5.2.6 Valve Testing Requirements (ISTC-3500)

Active and passive valves in the categories defined in ISTC-1300 shall be tested in accordance with the paragraphs specified in Table ISTC-3500-1 and the applicable requirements of ISTC-5100 and ISTC-5200.

TABLE ISTC-3500-1 INSERVICE TEST REQUIREMENTS

Category (See ISTC-1300	Valve Function	Leakage Test Procedure & Frequency	Exercise Test Procedure & Frequency	Special Test Procedure [Note (1)]	Position Indication Verification & Frequency
A	Active	See ISTC-3600	See ISTC-3510	None	See ISTC-3700
A	Passive	See ISTC-3600	None	None	See ISTC-3700
B	Active	None	See ISTC-3510	None	See ISTC-3700
B	Passive	None	None	None	See ISTC-3700
C (Safety and relief) [Note(3)]	Active	None [Notes(2),(3)]	See ISTC-5230, ISTC-5240	None	See ISTC-3700
C (Check) [Note (4)]	Active	None [Note (3)]	See ISTC-3510	None	See ISTC-3700
D	Active	None [Note (3)]	None	See ISTC-5250,ISTC-5260	None

NOTES:

(1) Note additional requirements for fail-safe valves, ISTC-3500
(2) Leak test as required for Appendix I
(3) When more than one distinguishing category characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary.
(4) If a check valve used for a pressure relief device is capacity certified, then it shall be classified as a pressure or vacuum relief device. If a check valve used to limit pressure is not capacity certified, then it shall be classified as a check valve.

5.2.7 Exercising Test Frequency (ISTC-3510)

Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222.

5.2.8 Valve Obturator Movement (ISTC-3530)

The necessary valve obturator movement shall be determined by exercising the valve while observing an appropriate indicator, such as indicating lights that signal the required changes of obturator position, or by observing other evidence, such as changes in system pressure, flow rate, level, or temperature, that reflects change of obturator position.

5.2.9 Manual Valves (ISTC-3540)

Manual valves shall be full-stroke exercised at least once every 2 years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness. Any increased testing frequency shall be specified by the Owner. The valve shall exhibit the required change of obturator position. Valves equipped with remote position indication shall be tested in accordance with ISTC-3700. A two year test frequency is required by the 10CFR50.55a(b)(3)(vi) modification.

5.2.10 Fail-Safe Valves (ISTC-3560)

Valves with fail-safe actuators shall be tested by observing the operation of the actuator upon loss of valve actuating power in accordance with the exercising frequency of ISTC-3510. Fail-safe testing is required only for those valves for which a fail-safe feature is a required safety function of the valve. Fail safe valves, as identified by the valve test tables, are tested by observing the operation of the actuator upon loss of valve electrical, pneumatic or hydraulic actuating power. In most cases, loss of electrical power causes loss of actuating fluid, and can be accomplished using normal control circuits. MSIVs are close stroke timed to satisfy fail-safe testing with the non-safety related instrument air supply isolated.

5.2.11 Valves in Systems Out of Service (ISTC-3570)

For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months before placing the system in an operable status, the valves shall be exercised and the schedule followed in accordance with requirements of this Subsection.

5.2.12 Valve Seat Leakage Rate Test (ISTC-3600)

The category A valves identified in this program are seat leakage tested in accordance with the requirements of ISTC-3600. See Technical Position TV02.

5.2.13 Position Verification Testing (ISTC-3700)

Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flowmeters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation.

5.2.14 Instrumentation (ISTC-3800)

Instrumentation accuracy shall be considered when establishing valve test acceptance criteria.

5.2.15 Specific Testing Requirements (ISTC-5000)

Following subsections provide specific valve testing requirements, acceptance criteria and corrective action for various types of valves in addition to valve testing requirements specified in subsection ISTC-3500.

a. Motor-Operated Valves (ISTC-5120)

In addition to testing motor-operated valves in accordance with the requirements of ISTC-3500, 10CFR50.55a(b)(3)(ii) requires licensees to establish a program to ensure that motor-operated valves continue to be capable of performing their design basis safety functions. This is accomplished through implementation of the GL-96-05 MOV Periodic Verification Program.

b. Pneumatically Operated Valves (ISTC-5130)

c. Hydraulically Operated Valves (ISTC-5140)

d. Solenoid Operated Valves (ISTC-5150)

e. Manually Operated Valves (ISTC-5210)

f. Check Valves (ISTC-5220)

The necessary valve obturator movement during exercise testing shall be demonstrated by performing both an open and a close test.

5.2.16 Check Valve Condition Monitoring Program Implementation

The purpose of the Check Valve Condition Monitoring Program is to both (a) improve check valve performance and to (b) optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select group of check valves. Columbia may implement this program on a valve or a group of similar valves.

Examples of candidates for (a) improved valve performance are check valves that:

- have an unusually high failure rate during inservice testing or operations
- cannot be exercised under normal operating conditions or during shutdown
- exhibit unusual, abnormal, or unexpected behavior during exercising or operation
- the Owner elects to monitor for improved valve performance

Examples of candidates for (b) optimization of testing, examination, and preventive maintenance activities are check valves with documented acceptable performance that:

- have had their performance improved under the Condition Monitoring Program
- cannot be exercised or are not readily exercised during normal operating conditions or during shutdowns
- can only be disassembled and examined
- the Owner elects to optimize all the associated activities of the valve or valve group in a consolidated program

The program shall be implemented in accordance with Appendix II, Check Valve Condition Monitoring Program, of ASME OMb Code-2003.

NOTE: If the Appendix II condition monitoring program for a valve or valve group is discontinued then the requirements of ISTC-3510, ISTC-3520, ISTC-3550, and ISTC-5221 shall be implemented for the applicable check valves.

5.2.17 Vacuum Breaker Valves (ISTC-5230)

Vacuum breakers shall meet the applicable inservice test requirements of ISTC-5220 and Mandatory Appendix I.

5.2.18 Safety and Relief Valve Tests (ISTC-5240)

Safety and relief valves shall meet the inservice test requirements of Mandatory Appendix I.

5.2.19 Rupture Disks (ISTC-5250)

Rupture disks shall meet the requirements for noreclosing pressure relief devices of Mandatory Appendix I.

5.2.20 Explosively Actuated Valves

Explosively actuated valves shall be tested in accordance with the requirements of ISTC-5260.

5.2.21 Test Procedure

Valves in the Valve Testing Program are tested according to detailed procedures. The procedures include, as a minimum:

a. Statement of Test Purpose. This section identifies test objectives, references applicable Technical Specifications and notes the operating modes for which the test is appropriate.

b. Prerequisites for Testing. System valve alignment and additional instrumentation (e.g., stop watch) is noted. Identification numbers, range and calibration verification of additional instrumentation is recorded.

c. Test Instructions. Directions are sufficiently detailed to assure completeness and uniformity of testing. Instructions include provisions for returning the system to its normal standby configuration following testing.

d. Acceptance Criteria. The ranges within which test data is considered acceptable are established per Code requirements for applicable valve type and included in the test procedure. In the event that the test data falls outside the acceptable ranges, corrective actions are taken in accordance with Code requirements.

e. Reference Values.

5.2.22 Trending

Stroke times of power-operated valves are trended.

Finally, it is recognized that the Valve Inservice Testing Program sets forth minimum testing requirements. Additional testing will be performed, as required, after valve maintenance, or as determined necessary by the Plant staff.

5.3 Valve Test Tables

The Valve Test Tables provide a concise description of the station's Valve Program for compliance with valve IST requirements. The tables include active valves which are required to operate in order to safely shutdown the reactor to the cold shutdown condition, maintain it in the cold shutdown condition, or mitigate the consequences of an accident. Additionally, passive valves which require leak rate testing or valve position verification are also included. The tables reflect the positions taken in support of the relief requests.

To aid in the interpretation of the tables, brief explanations of the table headings and abbreviations are provided.

(1) VALVE - Each valve in the Plant has a unique "tag" number. This is divided into three parts. The first identifies the system to which the valve belongs (i.e., RHR, HPCS, ...), the second Part identifies type of valve (flow control valve = FCV, relief valve = RV, rupture disc = RD, etc.), and the third Part is serialized to insure each valve number is unique. A brief functional description of the valve is also provided.

CMP - Check Valves which are included in the Check Valve Condition Monitoring Program are designated as CMP. These valves will be tested and examined as required by the specified Condition Monitoring Plan.

(2) DWG & COORD - The flow diagram drawing is identified along with the coordinates indicating where on the drawing the valve is located.

(3a) CLASS - ASME Code Class per Section III of the ASME Boiler and Pressure Vessel Code.

1, 2 or 3	= ASME Class 1, 2 or 3
D	= Non-ASME

(3b) CAT - Valve categories A, B, C, and D are defined in accordance with subsection ISTC-1300 requirements. Each valve has specific testing requirements which are determined by the category to which it belongs.

(4a) ACTUATOR Type - The following abbreviations are used to describe actuator types. Valves may be actuated in more than one way.

AO	=	Air operated
HO	=	Hydraulic operated
MA	=	Manually operated
MO	=	Motor operated
SA	=	Self-actuated
SO	=	Solenoid operated

(4b) VALVE Type - The following abbreviations are used to describe valve type:

BA	=	Ball Valve	RD	=	Rupture Disc
BF	=	Butterfly Valve	RV	=	Relief Valve
CK	=	Check Valve	SC	=	Stopcheck Valve
DI	=	Diaphragm Valve	SR	=	Safety/Relief Valve
EX	=	Explosive Valve	SV	=	Solenoid Valve
GB	=	Globe Valve	3W	=	Three Way Valve
GT	=	Gate Valve			

(4c) SIZE - Nominal pipe diameter to which the valve connects is given in inches.

(5a) SAFETY Position - Safety position identifies the position(s) the valve must assume to fulfill its safety function(s).

C	=	Closed
NA	=	Not Applicable (i.e., overpressure protection devices, valves included at the Owner's discretion, or valves with no required safety position)
O	=	Open
O/C	=	Both Open and Closed

(5b) FAILED Position - Failed position identifies the position the valve assumes upon loss of actuating power.

FAI	=	Fail As Is
FC	=	Failed Close
FO	=	Failed Open
NA	=	Not Applicable

(5c) NORMAL Position - Normal position identifies the valve position during normal power operation.

LC	=	Locked Close
LO	=	Locked Open
NC	=	Normally Closed
NO	=	Normally Open
NT	=	Normally Throttled

(6a) TESTS - This column lists a code corresponding to the test requirements applicable to that valve.

Di	Disassembly and Inspection
G	ISTC-3700 -- Verify the accuracy of remote position indicators.
H	ISTC-3510 -- Full stroke exercise the valve to its required position to fulfill its function.
Hx	Stroke exercise to satisfy bidirectional functionality in accordance with Condition Monitoring Plan.
J	ISTC-5121, ISTC-5131, ISTC-5141 and ISTC-5151-- Measure the stroke time of power operated valves.
K	ISTC-3560 -- Testing valves with fail-safe actuators (fail-safe testing is required only for those valves for which the fail-safe feature is a required safety function of the valve).
L	ISTC-3600 -- Valve seat leakage rate test.
Nit	Non-intrusive Testing
P	ISTC-5240 -- Safety and relief valve test per OM Code Mandatory Appendix I requirements.
S	OM Code Mandatory Appendix I -- Vacuum Relief Setpoint Test
V	ISTC-5260 -- Explosively actuated valve test.
W	ISTC-5250 -- Rupture discs shall meet the requirements for nonreclosing pressure relief devices of OM Code Mandatory Appendix I.

(6b) FREQUENCY - This column identifies the required testing frequency.

Legend	Meaning
CMP	Test performed in accordance with Condition Monitoring Plan.
CS	Test performed during cold shutdowns but not more frequently than once every 92 days. Valve testing shall commence within 48 hours after cold shutdown is achieved and continue until complete or until the Plant is ready to return to power.

EX	Test explosive valve per ISTC-5260 schedule.
J	Leakage Test per Primary Containment Leakage Rate Testing Program (10 CFR 50 Appendix J, Option B)
N	Not Applicable.
Q	Test performed once every 92 days.
RD	Test rupture disc per OM Code Mandatory Appendix I schedule.
RF	Test performed each refueling outage.
RV	Test relief valve per OM Code Mandatory Appendix I schedule.
TS	Test performed per Technical Specification or Licensee Controlled Specification.
2Y, 4Y, 6Y etc.	Test performed once during specified number of years i.e 2, 4, 6 etc.
12M	Test performed annually

(6c) PPM - This identifies the implementing procedure. This field is for information only and may be changed without formal amendment to the valve tables.

(7) TESTING EXCEPTIONS - This field is used to identify any applicable Relief Requests (RVs), Refueling Outage Justifications (ROJs) or Cold Shutdown Justifications (CSJs).

(8) REMARK - This field is used to provide reference to explanatory notes or Technical Positions located at the end of the Valve Test Tables. Passive valves are annotated as passive, all other valves are active. Minor changes to the program via change notices may also be identified in this field.

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CAC-FCV-1A	M554 H11	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV FROM PENETRATION X99 (CIV)							
CAC-FCV-1B	M554 H6	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV FROM PENETRATION X97 (CIV)							
CAC-FCV-2A	M554 G10	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV TO PENETRATION X96 (CIV)							
CAC-FCV-2B	M554 G6	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV TO PENETRATION X98 (CIV)							
CAC-FCV-3A	M554 D10	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV FROM PENETRATION X105 (CIV)							
CAC-FCV-3B	M554 D6	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV FROM PENETRATION X104 (CIV)							
CAC-FCV-4A	M554 E10	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV TO PENETRATION X102 (CIV)							
CAC-FCV-4B	M554 E6	2 A	HO GB 2.50	C FC NC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC FCV TO PENETRATION X103 (CIV)							
CAC-RV-63A	M554 E12	2 C	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: SW TO CAC-EV-1A RV							
CAC-RV-63B	M554 E4	2 C	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: SW TO CAC-EV-1B RV							
CAC-RV-65A	M554 D14	2 C	SA RV 1.5 X 3	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: CAC-EV-1A DISCH RV							
CAC-RV-65B	M554 D4	2 C	SA RV 1.5 X 3	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: CAC-EV-1B DISCH RV							
CAC-V-2	M554 G10	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC ISO TO PENETRATION X-96 (CIV)							
CAC-V-4	M554 E10	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC ISO TO PENETRATION X-102 (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CAC-V-6	M554 H10	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
	DESCRIPTION: CAC ISO FROM PENETRATION X-99 (CIV)						
CAC-V-8	M554 D10	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
	DESCRIPTION: CAC ISO FROM PENETRATION X-105 (CIV)						
CAC-V-11	M554 G7	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
	DESCRIPTION: CAC ISO TO PENETRATION X-98 (CIV)						
CAC-V-13	M554 E7	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
	DESCRIPTION: CAC ISO TO PENETRATION X-103 (CIV)						
CAC-V-15	M554 H6	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
	DESCRIPTION: CAC ISO FROM PENETRATION X-97 (CIV)						
CAC-V-17	M554 D7	2 A	MO GT 4	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
	DESCRIPTION: CAC ISO FROM PENETRATION X-104 (CIV)						
CAS-V-29A THRU D	M510-2A J8	3 AC	SA CK 0.50	C NA NC	HL RF OSP-MSIV/IST-R701	ROJ02	
	DESCRIPTION: CAS TO MS-V-28A,B,C,D (MSIV) OPERATOR CHK						
CAS-V-730	M510-2 H12	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
	DESCRIPTION: AIR LINE ISO FOR TESTING WW-DW VACUUM BRKRS (CIV)						
CAS-VX-82E	M510-2 H12	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
	DESCRIPTION: AIR LINE ISO FOR TESTING WW-DW VACUUM BRKRS (CIV)						
CEP-V-1A	M543-3 H8	2 A	AO BF 30	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: DRYWELL EXHAUST (CIV)						
CEP-V-1B	M543-3 H8	2 A	AO GB 2	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: CEP-V-1A BYPASS (CIV)						
CEP-V-2A	M543-3 H7	2 A	AO BF 30	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: DRYWELL EXHAUST (CIV)						
CEP-V-2B	M543-3 H7	2 A	AO GB 2	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: CEP-V-2A BYPASS (CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CEP-V-3A	M543-3 G9	2 A	AO BF 24	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: SUPPRESSION CHAMBER EXHAUST (CIV)						
CEP-V-3B	M543-3 G9	2 A	AO GB 2	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: CEP-V-3A BYPASS (CIV)						
CEP-V-4A	M543-3 E9	2 A	AO BF 24	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: SUPPRESSION CHAMBER EXHAUST (CIV)						
CEP-V-4B	M543-3 E9	2 A	AO GB 2	C FC NC	G 2Y OSP-CONT/IST-Q701 HJK Q OSP-CONT/IST-Q701 L 2Y TSP-CONT-R801		TV01,2
	DESCRIPTION: CEP-V-4A BYPASS (CIV)						
CIA-RV-5A	M556-1 H11	3 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: CIA TRAIN "A" NITROGEN HEADER RV						
CIA-RV-5B	M556-1 D11	3 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: CIA TRAIN "B" NITROGEN HEADER RV						
CIA-SPV-1A THRU 15A	M556-1 G12	3 B	SO SV 0.50	O FO NC	HJK CS OSP-CIA/IST-Q702	ROJ15	N03 TV01
	DESCRIPTION: CIA NITROGEN BOTTLE AUTO ISO						
CIA-SPV-1B THRU 19B	M556-1 B12	3 B	SO SV 0.50	O FO NC	HJK CS OSP-CIA/IST-Q702	ROJ15	N03 TV01
	DESCRIPTION: CIA NITROGEN BOTTLE AUTO ISO						
CIA-V-20	M556-1 K8	2 A	MO GB 0.75	C FAI NO	G 2Y OSP-CIA/IST-Q701 HJ CS OSP-CIA/IST-Q701 L J TSP-CONT-R801	CSJ03	TV01,2
	DESCRIPTION: NORMAL CIA SUPPLY TO CONTAINMENT (OTBD CIV)						
CIA-V-21 CMP-01	M556-1 K6	2 AC	SA CK 0.75	O/C NA NO	Hx 8Y OSP-CIA/IST-R701 HxL J TSP-CONT-R801	ROJ02	TV02
	DESCRIPTION: NORMAL CIA SUPPLY TO CONTAINMENT CHK (INBD CIV)						
CIA-V-24A	M556-1 J5	2 AC	SA CK 0.50	C NA NC	HL RF OSP-MSIV/IST-R701	ROJ02	
	DESCRIPTION: CIA TO MS-V-22A (MSIV) OPERATOR CHK						
CIA-V-24B	M556-1 J4	2 AC	SA CK 0.50	C NA NC	HL RF OSP-MSIV/IST-R701	ROJ02	
	DESCRIPTION: CIA TO MS-V-22B (MSIV) OPERATOR CHK						
CIA-V-24C	M556-1 K5	2 AC	SA CK 0.50	C NA NC	HL RF OSP-MSIV/IST-R701	ROJ02	
	DESCRIPTION: CIA TO MS-V-22C (MSIV) OPERATOR CHK						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CIA-V-24D	M556-1 K4	2 AC	SA CK 0.50	C NA NC	HL RF OSP-MSIV/IST-R701	ROJ02	
DESCRIPTION: CIA TO MS-V-22D (MSIV) OPERATOR CHK							
CIA-V-30A	M556-1 G9	2 A	MO GB 0.50	O/C FAI NO	G 2Y OSP-CIA/IST-Q701 HJ CS OSP-CIA/IST-Q701 L J TSP-CONT-R801	CSJ03	TV01,2
DESCRIPTION: CIA SUPPLY TO 3 ADS ACCUMULATORS ISO (CIV)							
CIA-V-30B	M556-1 F9	2 A	MO GB 0.50	O/C FAI NO	G 2Y OSP-CIA/IST-Q701 HJ CS OSP-CIA/IST-Q701 L J TSP-CONT-R801	CSJ03	TV01,2
DESCRIPTION: CIA SUPPLY TO 4 ADS ACCUMULATORS ISO (CIV)							
CIA-V-31A CMP-01	M556-1 G7	2 AC	SA CK 0.50	O/C NA NO	Hx 8Y OSP-CIA/IST-R701 HxL J TSP-CONT-R801	ROJ02	TV02
DESCRIPTION: CIA SUPPLY TO 3 ADS ACCUMULATORS CHK (INBD CIV)							
CIA-V-31B CMP-01	M556-1 F7	2 AC	SA CK 0.50	O/C NA NO	Hx 8Y OSP-CIA/IST-R701 HxL J TSP-CONT-R801	ROJ02	TV02
DESCRIPTION: CIA SUPPLY TO 4 ADS ACCUMULATORS CHK (INBD CIV)							
CIA-V-39A	M556-1 J10	3 B	AO BA 0.50	C FC NO	G 2Y OSP-CIA/IST-Q702 HJK CS OSP-CIA/IST-Q702	CSJ04	TV01
DESCRIPTION: CIA NORMAL SUPPLY TO BACKUP SUPPLY HEADER ISO							
CIA-V-39B	M556-1 E10	3 B	AO BA 0.50	C FC NO	G 2Y OSP-CIA/IST-Q702 HJK CS OSP-CIA/IST-Q702	CSJ04	TV01
DESCRIPTION: CIA NORMAL SUPPLY TO BACKUP SUPPLY HEADER ISO							
CIA-V-40M (TYP 7)	M556-1 B5	2 AC	SA CK 0.50	O/C NA NO	HL RF OSP-CIA/IST-R701	ROJ02	
DESCRIPTION: CIA TO ADS ACCUMULATOR CHK							
CIA-V-41A CMP-17	M556-1 J10	3 C	SA CK 0.50	C NA NO	Hx 4Y OSP-CIA/IST-Q702 Di 8Y	CSJ04	
DESCRIPTION: CIA NORMAL SUPPLY TO BACKUP SUPPLY HEADER CHK							
CIA-V-41B CMP-17	M556-1 D10	3 C	SA CK 0.50	C NA NO	Hx 4Y OSP-CIA/IST-Q702 Di 8Y	CSJ04	
DESCRIPTION: CIA NORMAL SUPPLY TO BACKUP SUPPLY HEADER CHK							
CIA-V-52A THRU 66A CMP-02	M556-1 G12	3 C	SA CK 0.50	O NA NC	Hx 8Y OSP-CIA/IST-Q702	ROJ15	
DESCRIPTION: CIA NITROGEN BOTTLE DISCH CHK							
CIA-V-52B THRU 70B CMP-02	M556-1 C12	3 C	SA CK 0.50	O NA NC	Hx 8Y OSP-CIA/IST-Q702	ROJ15	
DESCRIPTION: CIA NITROGEN BOTTLE DISCH CHK							
CIA-V-103A CMP-02	M556-1 H13	3 C	SA CK 0.50	O NA NC	Hx 8Y OSP-CIA/IST-Q702	ROJ15	
DESCRIPTION: CIA NITROGEN BOTTLE DISCH CHK							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CIA-V-103B CMP-02	M556-1 D12	3 C	SA CK 0.50	O NA NC	Hx 8Y OSP-CIA/IST-Q702	ROJ15	
DESCRIPTION: CIA NITROGEN BOTTLE DISCH CHK							
CIA-V-104A	M556-1 H13	3 B	MA GB 0.50	O NA NC	H 2Y OSP-CIA/IST-Q702		
DESCRIPTION: CIA NITROGEN BOTTLE DISCH MAN ISO							
CIA-V-104B	M556-1 D12	3 B	MA GB 0.50	O NA NC	H 2Y OSP-CIA/IST-Q702		
DESCRIPTION: CIA NITROGEN BOTTLE DISCH MAN ISO							
CRD-V-10	M528-1 K6	2 B	AO GB 1	C FC NO	G 2Y OSP-CRD/IST-Q701 HJK Q OSP-CRD/IST-Q701		TV01
DESCRIPTION: SCRAM DISCH VOLUME VENT							
CRD-V-11	M528-1 F7	2 B	AO GB 2	C FC NO	G 2Y OSP-CRD/IST-Q701 HJK Q OSP-CRD/IST-Q701		TV01
DESCRIPTION: SCRAM DISCH VOLUME DRN							
CRD-V-114 (TYP 185)	M528-1 C4	D C	SA CK 0.75	O NA NC	H TS TSP-CRD-C101		N05
DESCRIPTION: HCU TO SCRAM DISCH HEADER CHK							
CRD-V-115 (TYP 185)	M528-1 B7	D C	SA CK 1	C NA NC	H RF OSP-CRD-R701		N05
DESCRIPTION: CHARGING WATER TO HCU CHK							
CRD-V-126 (TYP 185)	M528-1 B6	D B	AO DI 1	O FO NC	H TS TSP-CRD-C101		N05
DESCRIPTION: HCU CONT-ROD INSERT WATER SCRAM VLV							
CRD-V-127 (TYP 185)	M528-1 C4	D B	AO DI 0.75	O FO NC	H TS TSP-CRD-C101		N05
DESCRIPTION: HCU CONT-ROD WITHDRAWAL WATER SCRAM VLV							
CRD-V-138 (TYP 1185)	M528-1 B6	D C	SA CK 0.75	C NA NO	H Q OSP-CRD-W701		N05
DESCRIPTION: COOLING WATER TO HCU CHK							
CRD-V-180	M528-1 K6	2 B	AO GB 1	C FC NO	G 2Y OSP-CRD/IST-Q701 HJK Q OSP-CRD/IST-Q701		TV01
DESCRIPTION: SCRAM DISCH VOLUME VENT							
CRD-V-181	M528-1 F6	2 B	AO GB 2	C FC NO	G 2Y OSP-CRD/IST-Q701 HJK Q OSP-CRD/IST-Q701		TV01
DESCRIPTION: SCRAM DISCH VOLUME DRN							
CSP-RV-51	M619-161	2 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: BACKUP CONTROL AIR SUPPLY HEADER TO CSP-V-5,6,9 RV							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM			Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CSP-RV-52	M619-161	2 C	SA RV .75 X 1	NA NA NC	P	RV	TSP-RV/IST-R701		TV03
DESCRIPTION: CSP-TK-51 RV (CONTROL AIR TO CSP-V-5,6,9)									
CSP-V-1	M543-3 G4	2 A	AO BF 30	C FC NC	G HJK L	2Y Q 2Y	OSP-CONT/IST-Q701 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: CSP TO CONTAINMENT ISO (CIV)									
CSP-V-2	M543-3 G5	2 A	AO BF 30	C FC NC	G HJK L	2Y Q 2Y	OSP-CONT/IST-Q701 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: CSP TO CONTAINMENT ISO (CIV)									
CSP-V-3	M543-3 F3	2 A	AO BF 24	C FC NC	G HJK L	2Y Q 2Y	OSP-CONT/IST-Q701 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: CSP TO CONTAINMENT ISO (CIV)									
CSP-V-4	M543-3 E3	2 A	AO BF 24	C FC NC	G HJK L	2Y Q 2Y	OSP-CONT/IST-Q701 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: CSP TO CONTAINMENT ISO (CIV)									
CSP-V-5	M543-3 C2	2 A	AO BF 24	O/C FO NC	GS HJK L	2Y Q 2Y	ISP-CSP/IST-Q101 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: CSP TO CONTAINMENT ISO (CIV)									
CSP-V-6	M543-3 C9	2 A	AO BF 24	O/C FO NC	GS HJK L	2Y Q 2Y	ISP-CSP/IST-Q101 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: CSP TO CONTAINMENT ISO (CIV)									
CSP-V-7	M543-3 C2	2 AC	AO,SA CK 24	O/C NA NC	GS H L	2Y Q 2Y	ISP-CSP/IST-Q101 ISP-CSP/IST-Q101 TSP-CONT-R801		N02 TV02
DESCRIPTION: VACUUM RELIEF TO SUPPRESSION CHAMBER (CIV)									
CSP-V-8	M543-3 C10	2 AC	AO,SA CK 24	O/C NA NC	GS H L	2Y Q 2Y	ISP-CSP/IST-Q101 ISP-CSP/IST-Q101 TSP-CONT-R801		N02 TV02
DESCRIPTION: VACUUM RELIEF (CIV)									
CSP-V-9	M543-3 C5	2 A	AO BF 24	O/C FO NC	GS HJK L	2Y Q 2Y	ISP-CSP/IST-Q101 OSP-CONT/IST-Q701 TSP-CONT-R801		TV01,2
DESCRIPTION: VACUUM RELIEF TO SUPPRESSION CHAMBER (CIV)									
CSP-V-10	M543-3 C4	2 AC	AO,SA CK 24	O/C NA NC	GS H L	2Y Q 2Y	ISP-CSP/IST-Q101 ISP-CSP/IST-Q101 TSP-CONT-R801		N02 TV02
DESCRIPTION: VACUUM RELIEF (CIV)									
CSP-V-65	M619-161	2 AC	SA CK 1.50	C NA NC	HL	RF	OSP-CSP/IST-R701	ROJ09	
DESCRIPTION: CONTROL AIR CHK TO CIVs, ISOLATES SR FROM NSR AIR									
CSP-V-70 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx	8Y	OSP-CSP/IST-R701	ROJ09	
DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9									

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CSP-V-71 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-72 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-73 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-74 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-75 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-76 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-77 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-78 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-79 CMP-03	M619-161	2 C	SA CK 1	O NA NC	Hx 8Y OSP-CSP/IST-R701	ROJ09	
	DESCRIPTION: BACKUP CONTROL AIR SUPPLY CHK TO CIVs (CSP-V-5,6,9						
CSP-V-93	M543-3 B5	2 A	SO SV 1	C FC NO	HJK Q OSP-CONT/IST-Q701 G 2Y OSP-CONT/IST-Q701 or TSP-CONT-R801 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: CONTAINMENT N2 SUPPLY (CIV)						
CSP-V-96	M543-3 F5	2 A	SO SV 1	C FC NO	HJK Q OSP-CONT/IST-Q701 G 2Y OSP-CONT/IST-Q701 or TSP-CONT-R801 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: CONTAINMENT N2 SUPPLY (CIV)						
CSP-V-97	M543-3 F4	2 A	SO SV 1	C FC NO	HJK Q OSP-CONT/IST-Q701 G 2Y OSP-CONT/IST-Q701 or TSP-CONT-R801 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: CONTAINMENT N2 SUPPLY (CIV)						
CSP-V-98	M543-3 B4	2 A	SO SV 1	C FC NO	HJK Q OSP-CONT/IST-Q701 G 2Y OSP-CONT/IST-Q701 or TSP-CONT-R801 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: CONTAINMENT N2 SUPPLY (CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
CVB-V-1AB	M543-1 B13	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1CD	M543-1 B12	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1EF	M543-1 B11	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1GH	M543-1 B11	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1JK	M543-1 B9	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1LM	M543-1 B9	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1NP	M543-1 B8	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1QR	M543-1 B7	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
CVB-V-1ST	M543-1 B7	2 AC	AO,SA CK 24	O/C NA NC	GS 2Y MSP-CVB/IST-B101 H Q OSP-CVB/IST-M701 L 2Y TSP-CONT-B801	RV01	N02 TV04
	DESCRIPTION: VACUUM RELIEF TO DRYWELL						
DO-V-1A	M512-4 C11	3 C	SA CK 1.50	O NA NC	H Q OSP-DO/IST-Q701		
	DESCRIPTION: DO-P-1A (TRANSFER PUMP) TO day TANK DISCH CHK						
DO-V-1B	M512-4 H11	3 C	SA CK 1.50	O NA NC	H Q OSP-DO/IST-Q702		
	DESCRIPTION: DO-P-1B (TRANSFER PUMP) TO day TANK DISCH CHK						
DO-V-10	M512-4 D1	3 C	SA CK 1.50	O NA NC	H Q OSP-DO/IST-Q703		
	DESCRIPTION: DO-P-2 (TRANSFER PUMP) DISCH CHK						
DSA-SPV-5A1/2	M512-2 F10	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B701		N06
	DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
DSA-SPV-5A1/4	M512-2 E10	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B701		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5A2/2	M512-2 F6	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B701		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5A2/4	M512-2 E6	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B701		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5B1/2	M512-3 F10	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B702		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5B1/4	M512-3 E10	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B702		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5B2/2	M512-3 F6	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B702		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5B2/4	M512-3 E6	D B	SO 3W 2	O/C FAI NC	H N TSP-DSA-B702		N06
DESCRIPTION: DSA TO EDG START MOTORS BYPASS/VENT VLV							
DSA-SPV-5C1/1	M512-1 F9	D B	SO 3W 1.50	O FAI NC	H N TSP-DSA-B703		N06
DESCRIPTION: DSA TO EDG START MOTORS ISO							
DSA-SPV-5C1/2	M512-1 F9	D B	SO 3W 1.50	O FAI NC	H N TSP-DSA-B703		N06
DESCRIPTION: DSA TO EDG START MOTORS ISO							
DW-V-156	M517 G8	2 A	MA GT 2	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: DEMIN WATER TO CONTAINMENT ISO (OTBD CIV)							
DW-V-157	M517 G8	2 A	MA GT 2	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: DEMIN WATER TO CONTAINMENT ISO (INBD CIV)							
EDR-V-19	M537 D9	2 A	AO GT 3	C FC NO	G 2Y OSP-EDR/IST-Q701 HJK Q OSP-EDR/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: EDR ISO FROM DRYWELL SUMP (CIV)							
EDR-V-20	M537 D9	2 A	AO GT 3	C FC NO	G 2Y OSP-EDR/IST-Q701 HJK Q OSP-EDR/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: EDR ISO FROM DRYWELL SUMP (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
EDR-V-394	M537 C15	3 B	AO GT 3	C FC NO	G 2Y OSP-EDR/IST-Q702 HJK Q OSP-EDR/IST-Q702		TV01
DESCRIPTION: EDR INBD SECONDARY CTMT ISO							
EDR-V-395	M537 C15	3 B	AO GT 3	C FC NO	G 2Y OSP-EDR/IST-Q702 HJK Q OSP-EDR/IST-Q702		TV01
DESCRIPTION: EDR INBD SECONDARY CTMT ISO							
FDR-V-3	M539 D6	2 A	AO BF 3	C FC NO	G 2Y OSP-FDR/IST-Q701 HJK Q OSP-FDR/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: FDR ISO FROM DRYWELL FDR-SUMP-3 (CIV)							
FDR-V-4	M539 D6	2 A	AO BF 3	C FC NO	G 2Y OSP-FDR/IST-Q701 HJK Q OSP-FDR/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: FDR ISO FROM DRYWELL FDR-SUMP-3 (CIV)							
FDR-V-219	M539 D14	3 B	AO GT 3	C FC NO	G 2Y OSP-FDR/IST-Q702 HJK Q OSP-FDR/IST-Q702		TV01
DESCRIPTION: FDR INBD SECONDARY CTMT ISO							
FDR-V-220	M539 D15	3 B	AO GT 3	C FC NO	G 2Y OSP-FDR/IST-Q702 HJK Q OSP-FDR/IST-Q702		TV01
DESCRIPTION: FDR INBD SECONDARY CTMT ISO							
FDR-V-221	M539 D14	3 B	AO GT 3	C FC NO	G 2Y OSP-FDR/IST-Q702 HJK Q OSP-FDR/IST-Q702		TV01
DESCRIPTION: FDR INBD SECONDARY CTMT ISO							
FDR-V-222	M539 D15	3 B	AO GT 3	C FC NO	G 2Y OSP-FDR/IST-Q702 HJK Q OSP-FDR/IST-Q702		TV01
DESCRIPTION: FDR INBD SECONDARY CTMT ISO							
FPC-FCV-1	M526-1 B8	3 B	AO GB 4 X 6	O FO NC	G 2Y OSP-FPC/IST-Q701 HJK Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: FPC DEMINERALIZER BYPASS FCV							
FPC-RV-117A	M526-1 D10	3 C	SA RV 0.75	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: FPC-HX-1A RV							
FPC-RV-117B	M526-1 C11	3 C	SA RV 0.75	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: FPC-HX-1B RV							
FPC-V-112A	M526-1 E12	3 C	SA CK 6	O/C NA NC	H Q OSP-FPC/IST-Q701		
DESCRIPTION: FPC-P-1A DISCH CHK							
FPC-V-112B	M526-1 C12	3 C	SA CK 6	O/C NA NC	H Q OSP-FPC/IST-Q701		
DESCRIPTION: FPC-P-1B DISCH CHK							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
FPC-V-127 CMP-19	M526-1 E6	3 C	SA CK 2	O/C NA NC	Hx 4Y OSP-FPC/IST-Q701 Nit 4Y		
	DESCRIPTION: SW TO FPC CHK						
FPC-V-140 CMP-20	M526-1 C6	3 C	SA CK 8	C NA NO	Hx 4Y OSP-FPC/IST-Q701 Di 10Y		
	DESCRIPTION: FPC DEMIN EFF CHK						
FPC-V-146A CMP-20	M526-1 J10	3 C	SA CK 8	O NA NO	Hx 4Y OSP-FPC/IST-Q701 Di 10Y		
	DESCRIPTION: FPC TO FUEL POOL CHK						
FPC-V-146B CMP-20	M526-1 J10	3 C	SA CK 8	O NA NO	Hx 4Y OSP-FPC/IST-Q701 Di 10Y		
	DESCRIPTION: FPC TO FUEL POOL CHK						
FPC-V-149	M526-1 C7	2 A	MO GT 6	C FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: FPC TO SUPPRESSION POOL ISO (CIV)						
FPC-V-153	M526-1 A11	2 A	MO GT 6	C FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701 L 2Y TSP-CONT-B802		TV01,2
	DESCRIPTION: SUPPRESSION POOL TO FPC-P-3 SUCT (CIV)						
FPC-V-154	M526-1 A10	2 A	MO GT 6	C FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701 L 2Y TSP-CONT-B802		TV01,2
	DESCRIPTION: SUPPRESSION POOL TO FPC-P-3 SUCT (CIV)						
FPC-V-156	M526-1 B10	2 A	MO GT 6	C FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: FPC TO SUPPRESSION POOL ISO (CIV)						
FPC-V-157A CMP-14	M526-1 J10	3 C	SA CK 0.5	O NA NC	Hx CMP OSP-FPC/IST-Q701 Di CMP		N04
	DESCRIPTION: FPC TO FUEL POOL VACUUM BKR CHK						
FPC-V-157B CMP-14	M526-1 J10	3 C	SA CK 0.5	O NA NC	Hx CMP OSP-FPC/IST-Q701 Di CMP		N04
	DESCRIPTION: FPC TO FUEL POOL VACUUM BKR CHK						
FPC-V-172	M526-1 B5	3 B	MO GT 8	C FAI NO	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
	DESCRIPTION: FPC TO SUPPRESSION POOL ISO						
FPC-V-173	M526-1 B5	3 B	MO GT 8	C FAI NO	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
	DESCRIPTION: FPC INFLUENT TO DEMIN ISO						
FPC-V-175	M526-1 C9	3 B	MO GT 8	O FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
	DESCRIPTION: FPC FLTR DEMIN BYPASS						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
FPC-V-181A	M526-1 E14	3 B	MO GT 8	NA FAI NO	G 2Y OSP-FPC/IST-Q701		Passive
	DESCRIPTION: FPC-P-1A SUCT						
FPC-V-181B	M526-1 C14	3 B	MO GT 8	NA FAI NO	G 2Y OSP-FPC/IST-Q701		Passive
	DESCRIPTION: FPC-P-1B SUCT						
FPC-V-184	M526-1 C5	3 B	MO GT 8	C FAI NO	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
	DESCRIPTION: FPC FILTER DEMIN EFFLUENT ISO						
HPCS-RV-14	M520 C6	2 AC	SA RV 1 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
	DESCRIPTION: HPCS-P-3 SUCT RV (CIV)						
HPCS-RV-35	M520 C4	2 AC	SA RV 1.5 X 2	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
	DESCRIPTION: HPCS-P-3 DISCH RV (CIV)						
HPCS-V-1	M520 C7	2 B	MO GT 14	O/C FAI NO	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701		TV01
	DESCRIPTION: CST TO HPCS-P-1 SUCT						
HPCS-V-2	M520 C6	2 C	SA CK 20	O/C NA NC	H Q OSP-HPCS/IST-Q701		
	DESCRIPTION: CST TO HPCS-P-1 SUCT CHK						
HPCS-V-4	M520 G7	1 A	MO GT 12	O/C FAI NC	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701 L 2Y TSP-RCS-R803		TV01,2
	DESCRIPTION: HPCS TO RPV ISO (OTBD CIV)						
HPCS-V-5	M520 H8	1 AC	SA CK 12	O/C NA NC	H RF OSP-HPCS/IST-R701 HL RF TSP-RCS-R803	ROJ08	TV02
	DESCRIPTION: HPCS TO RPV ISO (INBD CIV)						
HPCS-V-6 CMP-21	M520 C5	2 C	SA SC 1.50	C NA NO	Hx Q OSP-HPCS/IST-Q701 Hx 12M OSP-HPCS-A701		N01
	DESCRIPTION: HPCS-P-3 (WATER LEG) DISCH STOP CHK						
HPCS-V-7 CMP-21	M520 C5	2 C	SA CK 1.50	C NA NO	Hx Q OSP-HPCS/IST-Q701 Hx 12M OSP-HPCS-A701		N01
	DESCRIPTION: HPCS-P-3 (WATER LEG) DISCH CHK						
HPCS-V-10	M520 E3	2 B	MO GB 10	C FAI NC	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701		TV01
	DESCRIPTION: HPCS TO CST ISO						
HPCS-V-11	M520 E3	2 B	MO GB 10	C FAI NC	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701		TV01
	DESCRIPTION: HPCS TO CST ISO						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
HPCS-V-12	M520 B5	2 A	MO GT 4	O/C FAI NC	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: HPCS-P-1 MINIMUM FLOW VLV (CIV)							
HPCS-V-15	M520 D7	2 A	MO GT 18	O/C FAI NC	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701 L 2Y TSP-CONT-B802		TV01,2
DESCRIPTION: SUPPRESSION POOL TO HPCS-P-1 SUCT (CIV)							
HPCS-V-16	M520 D6	2 C	SA CK 24	O NA NC	H Q OSP-HPCS/IST-Q701		
DESCRIPTION: SUPPRESSION POOL TO HPCS-P-1 SUCT CHK							
HPCS-V-23	M520 E5	2 A	MO GB 12	C FAI NC	G 2Y OSP-HPCS/IST-Q701 HJ Q OSP-HPCS/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: HPCS TEST LINE TO SUPPRESSION POOL ISO (CIV)							
HPCS-V-24	M520 B4	2 C	SA CK 16	O/C NA NC	H Q OSP-HPCS/IST-Q701		
DESCRIPTION: HPCS-P-1 DISCH CHK							
HPCS-V-28 CMP-23	M524-1 G6	3 C	SA CK 8	O NA NC	Hx Q OSP-SW/IST-Q703 Di 10Y		
DESCRIPTION: HPCS-P-2 (SERVICE WATER) DISCH CHK							
HPCS-V-65	M520 H7	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO HPCS-V-5 OPERATOR (INBD CIV)							
HPCS-V-68	M520 H7	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO HPCS-V-5 OPERATOR (OTBD CIV)							
LPCS-FCV-11	M520 B13	2 A	MO GB 3	O/C FAI NC	G 2Y OSP-LPCS/IST-Q702 HJ Q OSP-LPCS/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: LPCS-P-1 MINIMUM FCV (CIV)							
LPCS-RV-18	M520 G12	2 AC	SA RV 1.5 X 2	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: LPCS-P-1 RV (CIV)							
LPCS-RV-31	M520 D12	2 AC	SA RV 1 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: LPCS-P-2 SUCT RV (CIV)							
LPCS-V-1	M520 D11	2 A	MO GT 24	O/C FAI NO	G 2Y OSP-LPCS/IST-Q702 HJ Q OSP-LPCS/IST-Q702 L 2Y TSP-CONT-B802		TV01,2
DESCRIPTION: SUPPRESSION POOL TO LPCS-P-1 SUCT (CIV)							
LPCS-V-3	M520 B13	2 C	SA CK 16	O/C NA NC	H Q OSP-LPCS/IST-Q702		
DESCRIPTION: LPCS-P-1 DISCH CHK							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM			Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
LPCS-V-5	M520 G11	1 A	MO GT 12	O/C FAI NC	G HJ L	2Y CS 2Y	OSP-LPCS/IST-Q701 OSP-LPCS/IST-Q701 TSP-RCS-R801	CSJ06	TV01,2
DESCRIPTION: LPCS TO RPV ISO (OTBD CIV)									
LPCS-V-6	M520 H9	1 AC	SA CK 12	O/C NA NC	H HL	RF RF	OSP-LPCS/IST-R701 TSP-RCS-R801	ROJ08	TV02
DESCRIPTION: LPCS TO RPV ISO CHK (INBD CIV)									
LPCS-V-12	M520 E14	2 A	MO GB 12	C FAI NC	G HJ L	2Y Q J	OSP-LPCS/IST-Q702 OSP-LPCS/IST-Q702 TSP-CONT-R801		TV01,2
DESCRIPTION: LPCS TEST LINE TO SUPPRESSION POOL ISO (CIV)									
LPCS-V-33 CMP-21	M520 C12	2 C	SA CK 1.50	C NA NO	Hx Hx	Q 12M	OSP-LPCS/IST-Q702 OSP-LPCS-A702		N01
DESCRIPTION: LPCS-P-2 (WATER LEG) DISCH CHK									
LPCS-V-34 CMP-21	M520 C13	2 C	SA SC 1.50	C NA NO	Hx Hx	Q 12M	OSP-LPCS/IST-Q702 OSP-LPCS-A702		N01
DESCRIPTION: LPCS-P-2 (WATER LEG) DISCH STOP CHK									
LPCS-V-66	M520 H10	2 A	MA GB 1	C NA LC	L	J	TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO LPCS-V-6 OPERATOR (INBD CIV)									
LPCS-V-67	M520 H10	2 A	MA GB 1	C NA LC	L	J	TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO LPCS-V-6 OPERATOR (OTBD CIV)									
MS-RV-1A	M529 F11	1 C	AO,SA SR 6 X 10	NA NA NC	G P	2Y RV	TSP-MSRV/IST-R701 ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
DESCRIPTION: MAIN STEAM SAFETY RV									
MS-RV-1B	M529 D11	1 C	AO,SA SR 6 X 10	NA NA NC	G P	2Y RV	TSP-MSRV/IST-R701 ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
DESCRIPTION: MAIN STEAM SAFETY RV									
MS-RV-1C	M529 F6	1 C	AO,SA SR 6 X 10	NA NA NC	G P	2Y RV	TSP-MSRV/IST-R701 ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
DESCRIPTION: MAIN STEAM SAFETY RV									
MS-RV-1D	M529 E7	1 C	AO,SA SR 6 X 10	NA NA NC	G P	2Y RV	TSP-MSRV/IST-R701 ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
DESCRIPTION: MAIN STEAM SAFETY RV									
MS-RV-2A	M529 F10	1 C	AO,SA SR 6 X 10	NA NA NC	G P	2Y RV	TSP-MSRV/IST-R701 ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
DESCRIPTION: MAIN STEAM SAFETY RV									

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
MS-RV-2B	M529 D10	1 C	AO,SA SR 6 X 10	NA NA NC	G 2Y TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
	DESCRIPTION: MAIN STEAM SAFETY RV						
MS-RV-2C	M529 F7	1 C	AO,SA SR 6 X 10	NA NA NC	G 2Y TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
	DESCRIPTION: MAIN STEAM SAFETY RV						
MS-RV-2D	M529 E7	1 C	AO,SA SR 6 X 10	NA NA NC	G 2Y TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
	DESCRIPTION: MAIN STEAM SAFETY RV						
MS-RV-3A	M529 F9	1 C	AO,SA SR 6 X 10	NA NA NC	G 2Y TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
	DESCRIPTION: MAIN STEAM SAFETY RV						
MS-RV-3B	M529 D10	1 C	AO,SA SR 6 X 10	NA NA NC	G 2Y TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
	DESCRIPTION: MAIN STEAM SAFETY RV						
MS-RV-3C	M529 E7	1 C	AO,SA SR 6 X 10	NA NA NC	G 2Y TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	TV03
	DESCRIPTION: MAIN STEAM SAFETY RV						
MS-RV-3D	M529 E8	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						
MS-RV-4A	M529 F9	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						
MS-RV-4B	M529 D9	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						
MS-RV-4C	M529 F8	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						
MS-RV-4D	M529 E8	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
MS-RV-5B	M529 E9	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						
MS-RV-5C	M529 F8	1 C	AO,SA SR 6 X 10	O NA NC	G RF TSP-MSRV/IST-R701 P RV ISP-MS/IST-R101 MSP-MS/IST-R101 ISP-MS/IST-A101	RV04	N08 TV03
	DESCRIPTION: MAIN STEAM & ADS SAFETY RV						
MS-V-16	M529 B13	1 A	MO GT 3	C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L J TSP-CONT-R801	CSJ13	TV01,2
	DESCRIPTION: MAIN STEAM DRN ISO (INBD CIV)						
MS-V-19	M529 B14	1 A	MO GT 3	C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L J TSP-CONT-R801	CSJ13	TV01,2
	DESCRIPTION: MAIN STEAM DRN ISO (OTBD CIV)						
MS-V-20	M529 C15	2 B	MO GB 3	C FAI NC	G 2Y OSP-MSLC/IST-Q702		Passive
	DESCRIPTION: MS LINE DRN ISO (MUST CLOSE FOR MSLC OPERATION)						
MS-V-22A	M529 F12	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (INBD CIV)						
MS-V-22B	M529 E12	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (INBD CIV)						
MS-V-22C	M529 F5	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (INBD CIV)						
MS-V-22D	M529 E5	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (INBD CIV)						
MS-V-28A	M529 F13	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (OTBD CIV)						
MS-V-28B	M529 E13	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (OTBD CIV)						
MS-V-28C	M529 F4	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (OTBD CIV)						
MS-V-28D	M529 E4	1 A	AO GB 26	C FC NO	G 2Y OSP-MS/IST-Q701 HJK CS OSP-MS/IST-Q701 L 2Y TSP-MSIV-B801	CSJ08	TV01,2
	DESCRIPTION: MAIN STEAM ISO VLV (OTBD CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
MS-V-37A (TYP 18)	M529 C11	3 C	SA CK 10	O NA NC	HS RF MSP-MS/IST-R701	ROJ07	TV05
	DESCRIPTION: VACUUM BREAKER ON MSRV TAILPIPE						
MS-V-38A (TYP 18)	M529 C11	3 C	SA CK 10	O NA NC	HS RF MSP-MS/IST-R701	ROJ07	TV05
	DESCRIPTION: VACUUM BREAKER ON MSRV TAILPIPE						
MS-V-67A	M529 F13	1 A	MO GT 1.50	C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ11	TV01,2
	DESCRIPTION: MS-V-28A BODY DRN (OTBD CIV)						
MS-V-67B	M529 D13	1 A	MO GT 1.50	C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ11	TV01,2
	DESCRIPTION: MS-V-28B BODY DRN (OTBD CIV)						
MS-V-67C	M529 F4	1 A	MO GT 1.50	C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ11	TV01,2
	DESCRIPTION: MS-V-28C BODY DRN (OTBD CIV)						
MS-V-67D	M529 D4	1 A	MO GT 1.50	C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ11	TV01,2
	DESCRIPTION: MS-V-28D BODY DRN (OTBD CIV)						
MS-V-146	M502-1 B7	2 B	MO GT 24	C FAI NO	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ10	TV01
	DESCRIPTION: MS SUPPLY TO AUXILIARIES						
MSLC-V-1A	M557 C7	2 B	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q701 HJ Q OSP-MSLC/IST-Q701		TV01
	DESCRIPTION: MS VENT BYPASS TO REACTOR BUILDING						
MSLC-V-1B	M557 C5	2 B	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q701 HJ Q OSP-MSLC/IST-Q701		TV01
	DESCRIPTION: MS VENT BYPASS TO REACTOR BUILDING						
MSLC-V-1C	M557 D7	2 B	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q701 HJ Q OSP-MSLC/IST-Q701		TV01
	DESCRIPTION: MS VENT BYPASS TO REACTOR BUILDING						
MSLC-V-1D	M557 D5	2 B	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q701 HJ Q OSP-MSLC/IST-Q701		TV01
	DESCRIPTION: MS VENT BYPASS TO REACTOR BUILDING						
MSLC-V-2A	M557 C8	1 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING						
MSLC-V-2B	M557 C8	1 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
MSLC-V-2C	M557 E8	1 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING						
MSLC-V-2D	M557 E8	1 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING						
MSLC-V-3A	M557 C9	1 A	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ09	TV01,2
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING (OTBD CIV)						
MSLC-V-3B	M557 C8	1 A	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ09	TV01,2
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING (OTBD CIV)						
MSLC-V-3C	M557 E9	1 A	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ09	TV01,2
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING (OTBD CIV)						
MSLC-V-3D	M557 E8	1 A	MO GT 1.50	O/C FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702 L 2Y TSP-MSIV-B801	CSJ09	TV01,2
	DESCRIPTION: MS VENT TO SGT AND REACTOR BUILDING (OTBD CIV)						
MSLC-V-4	M557 J5	2 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS VENT DOWN FROM MSIV'S TO REACTOR BUILDING						
MSLC-V-5	M557 J5	2 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS VENT DOWN FROM MSIV'S TO REACTOR BUILDING						
MSLC-V-9	M557 H5	2 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS DEPRESS VENT DOWN FROM MSIV'S TO SGT ISO						
MSLC-V-10	M557 H5	2 B	MO GT 1.50	O FAI NC	G 2Y OSP-MSLC/IST-Q702 HJ CS OSP-MSLC/IST-Q702	CSJ09	TV01
	DESCRIPTION: MS DEPRESS VENT DOWN FROM MSIV'S TO SGT ISO						
PI-EFC-X18A	M557 G9	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B102	RV05	
	DESCRIPTION: MAIN STEAM LINE A TO PRESS INST EFC (CIV)						
PI-EFC-X18B	M557 G9	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B102	RV05	
	DESCRIPTION: MAIN STEAM LINE B TO PRESS INST EFC (CIV)						
PI-EFC-X18C	M557 F9	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B102	RV05	
	DESCRIPTION: MAIN STEAM LINE C TO PRESS INST EFC (CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X18D	M557 F9	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B102	RV05	
DESCRIPTION: MAIN STEAM LINE D TO PRESS INST EFC (CIV)							
PI-EFC-X29B	M543-1 H8	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO CMS-PT-6 EFC (CIV)							
PI-EFC-X29F	M543-1 H7	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO CMS-PT-2 EFC (CIV)							
PI-EFC-X30A	M543-1 G13	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO CMS-PT-5 EFC (CIV)							
PI-EFC-X30F	M543-1 F13	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO CMS-PT-1 EFC (CIV)							
PI-EFC-X37E	M521-1 D6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RHR SDC A SUPPLY TO DPIS EFC (CIV)							
PI-EFC-X37F	M521-1 D6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RHR SDC A SUPPLY TO DPIS EFC (CIV)							
PI-EFC-X38A	M529 C13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE B TO DPIS HI SIDE EFC (CIV)							
PI-EFC-X38B	M529 D13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE B TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X38C	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-7B EFC (CIV)							
PI-EFC-X38D	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-7B EFC (CIV)							
PI-EFC-X38E	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-13B EFC (CIV)							
PI-EFC-X38F	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-13B EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X39A	M521-2 H13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE B TO DPIS HI SIDE EFC (CIV)							
PI-EFC-X39B	M529 D13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE B TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X39D	M521-2 H13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RHR LPCI B INJECTION TO DPIS-29B EFC (CIV)							
PI-EFC-X39E	M521-2 H13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RHR LPCI C INJECTION TO DPIS-29B EFC (CIV)							
PI-EFC-X40C	M530-1 F12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
DESCRIPTION: RRC A TO FT-14A,14B,11A EFC (CIV)							
PI-EFC-X40D	M530-1 F12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
DESCRIPTION: RRC A TO FT-14A,14B,11A EFC (CIV)							
PI-EFC-X40E	M530-1 C14	2 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC A (RRC-P-1A) TO PI-1A,602A EFC (CIV)							
PI-EFC-X40F	M530-1 C14	2 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC A (RRC-P-1A) TO PI-2A,603A EFC (CIV)							
PI-EFC-X41C	M530-1 B4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC B (RRC-P-1B) TO DPT-15B EFC (CIV)							
PI-EFC-X41D	M530-1 C4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC B (RRC-P-1B) TO DPT-15B EFC (CIV)							
PI-EFC-X41E	M530-1 B4	2 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC B (RRC-P-1B) TO PI-1B,602B EFC (CIV)							
PI-EFC-X41F	M530-1 C4	2 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC B (RRC-P-1B) TO PI-2B,603B EFC (CIV)							
PI-EFC-X42A	M529 C4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE D TO DPIS HI SIDE EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X42B	M529 C4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE D TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X42C	M543-2 E6	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: H2-02 MONITOR TO DRYWELL ATM SAMPLE EFC (CIV)							
PI-EFC-X42F	M529 H5	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO PRESS INST EFC (CIV)							
PI-EFC-X44AA	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 11 TO FLOW INST EFC (CIV)							
PI-EFC-X44AB	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 12 TO FLOW INST EFC (CIV)							
PI-EFC-X44AC	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 13 TO FLOW INST EFC (CIV)							
PI-EFC-X44AD	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 14 TO FLOW INST EFC (CIV)							
PI-EFC-X44AE	M530-1 J6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 15 TO FLOW INST EFC (CIV)							
PI-EFC-X44AF	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 16 TO FLOW INST EFC (CIV)							
PI-EFC-X44AG	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 17 TO FLOW INST EFC (CIV)							
PI-EFC-X44AH	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 19 TO FLOW INST EFC (CIV)							
PI-EFC-X44AJ	M530-1 E2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 18 TO FLOW INST EFC (CIV)							
PI-EFC-X44AK	M530-1 J6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 20 TO FLOW INST EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X44AL	M530-1 H6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 15 TO FLOW INST EFC (CIV)							
PI-EFC-X44AM	M530-1 H6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 20 TO FLOW INST EFC (CIV)							
PI-EFC-X44BA	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 1 TO FLOW INST EFC (CIV)							
PI-EFC-X44BB	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 2 TO FLOW INST EFC (CIV)							
PI-EFC-X44BC	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 3 TO FLOW INST EFC (CIV)							
PI-EFC-X44BD	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 4 TO FLOW INST EFC (CIV)							
PI-EFC-X44BE	M530-1 J11	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 5 TO FLOW INST EFC (CIV)							
PI-EFC-X44BF	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 6 TO FLOW INST EFC (CIV)							
PI-EFC-X44BG	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 7 TO FLOW INST EFC (CIV)							
PI-EFC-X44BH	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 8 TO FLOW INST EFC (CIV)							
PI-EFC-X44BJ	M530-1 F2	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 9 TO FLOW INST EFC (CIV)							
PI-EFC-X44BK	M530-1 J11	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 10 TO FLOW INST EFC (CIV)							
PI-EFC-X44BL	M530-1 H11	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 5 TO FLOW INST EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X44BM	M530-1 H11	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: JET PUMP NO 10 TO FLOW INST EFC (CIV)							
PI-EFC-X61A	M530-1 F12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
DESCRIPTION: RRC A TO FT-14C,14D EFC (CIV)							
PI-EFC-X61B	M530-1 F12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
DESCRIPTION: RRC A TO FT-14C,14D EFC (CIV)							
PI-EFC-X61C	M529 G5	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO PRESS INST EFC (CIV)							
PI-EFC-X62B	M529 H12	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO PRESS INST EFC (CIV)							
PI-EFC-X62C	M530-1 F6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
DESCRIPTION: RRC B TO FT-24C,24D EFC (CIV)							
PI-EFC-X62D	M530-1 F6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
DESCRIPTION: RRC B TO FT-24C,24D EFC (CIV)							
PI-EFC-X66	M543-1 B6	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL ATM TO CSP-DPT-5 EFC (CIV)							
PI-EFC-X67	M543-1 B13	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL ATM TO CSP-DPT-4 EFC (CIV)							
PI-EFC-X69A	M529 C4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE D TO DPIS HI SIDE EFC (CIV)							
PI-EFC-X69B	M529 C4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE D TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X69E	M530 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC B TO PS-18B EFC (CIV)							
PI-EFC-X69F	M529 H12	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: DRYWELL ATM TO PS-48A,48C,2B EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X70A	M529 E4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE C TO DPIS HI SIDE EFC (CIV)							
PI-EFC-X70B	M529 E4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE C TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X70C	M529 E13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE A TO DPIS HI SIDE EFC (CIV)							
PI-EFC-X70D	M529 E13	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE A TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X70E	M530-1 B14	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC A (RRC-P-1A) TO DPT-15A EFC (CIV)							
PI-EFC-X70F	M530-1 B14	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC A (RRC-P-1A) TO DPT-15A EFC (CIV)							
PI-EFC-X71A	M529 E4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE C TO DPIS HI SIDE EFC (CIV)							
PI-EFC-X71B	M529 E4	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
DESCRIPTION: MAIN STEAM LINE C TO DPIS LO SIDE EFC (CIV)							
PI-EFC-X71C	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-7A EFC (CIV)							
PI-EFC-X71D	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-7A EFC (CIV)							
PI-EFC-X71E	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-13A EFC (CIV)							
PI-EFC-X71F	M519 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RCIC STEAM SUPPLY TO DPIS-13A EFC (CIV)							
PI-EFC-X72A	M529 J6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV STEAM DOME TO PRESS INST EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X73A	M520 J8	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
	DESCRIPTION: HPCS TO RPV TO DPIS-9 EFC (CIV)						
PI-EFC-X74A	M530-1 G12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
	DESCRIPTION: SLC INJ BELOW CORE PLATE TO FLOW INSTR EFC (CIV)						
PI-EFC-X74B	M521-1 H5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
	DESCRIPTION: RHR LPCI A INJECTION TO DPIS-29A EFC (CIV)						
PI-EFC-X74E	M530-1 H11	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
	DESCRIPTION: RRC A TO RHR PUMPS TO DPIS-12A EFC (CIV)						
PI-EFC-X74F	M530-1 H11	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
	DESCRIPTION: RRC A TO RHR PUMPS TO DPIS-12A EFC (CIV)						
PI-EFC-X75A	M530-1 G6	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
	DESCRIPTION: SLC INJ BELOW CORE PLATE TO FLOW INSTR EFC (CIV)5						
PI-EFC-X75B	M530-1 G12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
	DESCRIPTION: SLC INJ ABOVE CORE PLATE TO FLOW INSTR EFC (CIV)						
PI-EFC-X75C	M529 E12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
	DESCRIPTION: MAIN STEAM LINE A TO DPIS EFC (CIV)						
PI-EFC-X75D	M529 E12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B101	RV05	
	DESCRIPTION: MAIN STEAM LINE A TO DPIS EFC (CIV)						
PI-EFC-X75E	M530-1 F5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
	DESCRIPTION: RRC B TO FT-24A,24B EFC (CIV)						
PI-EFC-X75F	M530-1 F5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B106	RV05	
	DESCRIPTION: RRC B TO FT-24A,24B EFC (CIV)						
PI-EFC-X78A	M543-2 E14	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
	DESCRIPTION: H2-O2 MONITOR TO DRYWELL ATM SAMPLE ISO (CIV)						
PI-EFC-X78B	M520 J10	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
	DESCRIPTION: LPCS TO RPV TO RHR-DPS-29A EFC (CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X78C	M523 F12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B103	RV05	
DESCRIPTION: RWCU TO RWCU-FT-37 EFC (CIV)							
PI-EFC-X78F	M530-1 H12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B104	RV05	
DESCRIPTION: RRC A (RRC-P-1A SUCT) TO PS-18A EFC (CIV)							
PI-EFC-X79A	M523 F15	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RWCU TO RWCU-FT-36 EFC (CIV)							
PI-EFC-X79B	M523 F15	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B105	RV05	
DESCRIPTION: RWCU TO RWCU-FT-36 EFC (CIV)							
PI-EFC-X82B	M543-1 B14	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL ATM TO PT-3 EFC (CIV)							
PI-EFC-X84A	M543-1 B6	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL ATM TO PT-4 EFC (CIV)							
PI-EFC-X86A	M543-1 B14	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL TO LT-1 EFC (CIV)							
PI-EFC-X86B	M543-1 B14	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL TO LT-1 EFC (CIV)							
PI-EFC-X87A	M543-1 B6	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL TO LT-2 EFC (CIV)							
PI-EFC-X87B	M543-1 B6	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL TO LT-2 EFC (CIV)							
PI-EFC-X106	M529 H12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X107	M529 H12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X108	M529 G12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-EFC-X109	M529 H5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X110	M529 H5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X111	M529 H5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X112	M529 H5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X113	M529 H5	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X114	M529 H12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X115	M529 H12	1 C	SA CK 1 X .5	NA NA NO	GH TS ISP-EFC-B107	RV05	
DESCRIPTION: RPV TO PRESS INST EFC (CIV)							
PI-EFC-X119	M543-1 B6	2 C	SA CK 1 X .5	NA NA NO	GH FS ISP-EFC-B108		N12 Passive
DESCRIPTION: WETWELL ATM TO CSP-DPT-6 EFC (CIV)							
PI-V-X42D	M521-1 F5	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-50A OPERATOR (INBD CIV)							
PI-V-X54BF	M521-2 H13	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-41B OPERATOR (INBD CIV)							
PI-V-X61F	M521-1 G5	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-41A OPERATOR (INBD CIV)							
PI-V-X62F	M521-3 D12	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-41C OPERATOR (INBD CIV)							
PI-V-X69C	M521-2 F13	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-50B OPERATOR (INBD CIV)							
PI-V-X72F/1 CMP-13	M543-1 F13	2 AC	SA CK 1	C NA NO	Hx 4Y OSP-CONT/IST-R701 HxL J TSP-CONT-R801	ROJ04	TV02
DESCRIPTION: DRYWELL ATM TO RAD-RE-12A CHK (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-V-X73E/1 CMP-13	M543-1 F7	2 AC	SA CK 1	C NA NO	Hx 4Y OSP-CONT/IST-R701 HxL J TSP-CONT-R801	ROJ04	TV02
DESCRIPTION: DRYWELL ATM TO RAD-RE-12B CHK (CIV)							
PI-VX-216	M521-1 G6	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-50A OPERATOR (OTBD CIV)							
PI-VX-218	M521-2 H13	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-41B OPERATOR (OTBD CIV)							
PI-VX-219	M521-1 H6	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-41A OPERATOR (OTBD CIV)							
PI-VX-220	M521-3 D11	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-41C OPERATOR (OTBD CIV)							
PI-VX-221	M521-2 G12	2 A	MA GB 1	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: AIR TO RHR-V-50B OPERATOR (OTBD CIV)							
PI-VX-250	M543-1 F13	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL TO RADIATION MONITOR ISO (CIV)							
PI-VX-251	M543-1 F13	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL TO RADIATION MONITOR ISO (CIV)							
PI-VX-253	M543-1 F13	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL TO RADIATION MONITOR ISO (CIV)							
PI-VX-256	M543-1 F7	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL TO RADIATION MONITOR ISO (CIV)							
PI-VX-257	M543-1 F7	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL TO RADIATION MONITOR ISO (CIV)							
PI-VX-259	M543-1 F7	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL TO RADIATION MONITOR ISO (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PI-VX-262	M543-2 G13	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PI-VX-263	M543-2 F13	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PI-VX-264	M543-2 F13	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PI-VX-265	M543-2 B14	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PI-VX-266	M543-2 F7	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PI-VX-268	M543-2 F7	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PI-VX-269	M543-2 B6	2 B	SO SV 1	NA FC NO	G 2Y OSP-CONT/IST-Q703 HJK Q OSP-CONT/IST-Q703		N11 Passive
DESCRIPTION: DRYWELL TO H2-O2 MONITOR ISO (CIV)							
PSR-V-003/A	M896 E12	2 B	SO SV 1	C FC NC	G 2Y CSP-PSR/IST-Q701 HJ Q CSP-PSR/IST-Q701		TV01
DESCRIPTION: RHR LOOP A SAMPLE ISO							
PSR-V-003/B	M896 D12	2 B	SO SV 1	C FC NC	G 2Y CSP-PSR/IST-Q701 HJ Q CSP-PSR/IST-Q701		TV01
DESCRIPTION: RHR LOOP B SAMPLE ISO							
PSR-V-X73/1	M896 J14	2 A	SO GB 1	C FC NC	G 2Y TSP-CONT-R801 HJK Q CSP-PSR/IST-Q701 L J TSP-CONT-R801	RV03	TV01,2
DESCRIPTION: DRYWELL ATM SAMPLE ISO (CIV)							
PSR-V-X73/2	M896 J12	2 A	SO GB 1	C FC NC	G 2Y TSP-CONT-R801 HJK Q CSP-PSR/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: DRYWELL ATM SAMPLE ISO (CIV)							
PSR-V-X77A/1	M896 E14	1 A	SO GB 1	C FC NC	G 2Y TSP-CONT-R801 HJK Q CSP-PSR/IST-Q701 L J TSP-CONT-R801	RV03	TV01,2
DESCRIPTION: JET PUMP SAMPLE ISO (CIV)							
PSR-V-X77A/2	M896 E12	1 A	SO GB 1	C FC NC	G 2Y TSP-CONT-R801 HJK Q CSP-PSR/IST-Q701 L J TSP-CONT-R801		TV01,2
DESCRIPTION: JET PUMP SAMPLE ISO (CIV)							
PSR-V-X77A/3	M896 F14	1 A	SO GB 1	C FC NC	G 2Y TSP-CONT-R801 HJK Q CSP-PSR/IST-Q701 L J TSP-CONT-R801	RV03	TV01,2
DESCRIPTION: JET PUMP SAMPLE ISO (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM			Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
PSR-V-X77A/4	M896	1	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	F12	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: JET PUMP SAMPLE ISO (CIV)								
PSR-V-X80/1	M896	2	SO	C	G	2Y	TSP-CONT-R801	RV03	TV01,2
	K14	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: DRYWELL ATM SAMPLE ISO (CIV)								
PSR-V-X80/2	M896	2	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	K12	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: DRYWELL ATM SAMPLE ISO (CIV)								
PSR-V-X82/1	M896	2	SO	C	G	2Y	TSP-CONT-R801	RV03	TV01,2
	B12	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: SAMPLE RETURN TO SUPP POOL ISO (CIV)								
PSR-V-X82/2	M896	2	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	B11	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: SAMPLE RETURN TO SUPP POOL ISO (CIV)								
PSR-V-X82/7	M896	2	SO	C	G	2Y	TSP-CONT-R801	RV03	TV01,2
	G12	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: SAMPLE RETURN TO DRYWELL ISO (CIV)								
PSR-V-X82/8	M896	2	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	G11	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: SAMPLE RETURN TO DRYWELL ISO (CIV)								
PSR-V-X83/1	M896	2	SO	C	G	2Y	TSP-CONT-R801	RV03	TV01,2
	J13	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: WETWELL ATM SAMPLE ISO (CIV)								
PSR-V-X83/2	M896	2	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	J12	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: WETWELL ATM SAMPLE ISO (CIV)								
PSR-V-X84/1	M896	2	SO	C	G	2Y	TSP-CONT-R801	RV03	TV01,2
	H12	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: WETWELL ATM SAMPLE ISO (CIV)								
PSR-V-X84/2	M896	2	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	H11	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: WETWELL ATM SAMPLE ISO (CIV)								
PSR-V-X88/1	M896	2	SO	C	G	2Y	TSP-CONT-R801	RV03	TV01,2
	D13	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: SUPP POOL SAMPLE ISO (CIV)								
PSR-V-X88/2	M896	2	SO	C	G	2Y	TSP-CONT-R801		TV01,2
	D11	A	GB	FC	HJK	Q	CSP-PSR/IST-Q701		
			1	NC	L	J	TSP-CONT-R801		
	DESCRIPTION: SUPP POOL SAMPLE ISO (CIV)								

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RCC-RV-34A	M525-2 J7	3 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: FPC-HX-1A SHELL SIDE RV						
RCC-RV-34B	M525-2 G7	3 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: FPC-HX-1B SHELL SIDE RV						
RCC-V-5	M525-1 E4	2 A	MO GB 10	C FAI NO	G 2Y OSP-RCC/IST-Q702 HJ RF OSP-RCC/IST-Q702 L J TSP-CONT-R801	ROJ13	TV01,2
	DESCRIPTION: RCC TO DRYWELL COOLING LOADS (1ST OTBD CIV)						
RCC-V-21	M525-1 D3	2 A	MO GT 10	C FAI NO	G 2Y OSP-RCC/IST-Q702 HJ RF OSP-RCC/IST-Q702 L J TSP-CONT-R801	ROJ13	TV01,2
	DESCRIPTION: RCC FROM DRYWELL COOLING LOADS (OTBD CIV)						
RCC-V-40	M525-1 D4	2 A	MO GT 10	C FAI NO	G 2Y OSP-RCC/IST-Q702 HJ RF OSP-RCC/IST-Q702 L J TSP-CONT-R801	ROJ13	TV01,2
	DESCRIPTION: RCC FROM DRYWELL COOLING LOADS (INBD CIV)						
RCC-V-104	M525-1 E4	2 A	MO GT 10	C FAI NO	G 2Y OSP-RCC/IST-Q702 HJ RF OSP-RCC/IST-Q702 L J TSP-CONT-R801	ROJ13	TV01,2
	DESCRIPTION: RCC TO DRYWELL COOLING LOADS (2ND OTBD CIV)						
RCC-V-129	M525-2 E6	3 B	MO GT 8	C FAI NO	G 2Y OSP-RCC/IST-Q701 HJ Q OSP-RCC/IST-Q701		TV01
	DESCRIPTION: RCC TO FPC-HX-1A & 1B ISO						
RCC-V-130	M525-2 E8	3 B	MO GT 8	C FAI NO	G 2Y OSP-RCC/IST-Q701 HJ Q OSP-RCC/IST-Q701		TV01
	DESCRIPTION: RCC FROM FPC-HX-1A & 1B ISO						
RCC-V-131	M525-2 E8	3 B	MO GT 8	C FAI NO	G 2Y OSP-RCC/IST-Q701 HJ Q OSP-RCC/IST-Q701		TV01
	DESCRIPTION: RCC FROM FPC-HX-1A & 1B ISO						
RCC-V-133A	M525-2 J6	3 C	SA CK 6	C NA NO	H Q OSP-FPC/IST-Q701		
	DESCRIPTION: RCC TO FPC-HX-1A CHK						
RCC-V-133B	M525-2 G6	3 C	SA CK 6	C NA NO	H Q OSP-FPC/IST-Q701		
	DESCRIPTION: RCC TO FPC-HX-1B CHK						
RCC-V-219 CMP-04	M525-1 C4	2 AC	SA CK ½	O/C NA NC	Hx 4Y OSP-RCC/IST-R701 HxL J TSP-CONT-R801 Di 10Y	ROJ05	
	DESCRIPTION: PRESSURE RELIEF AROUND RCC-V-40 CHK (INBD CIV)						
RCIC-RD-1	M519 D12	2 D	SA RD 10	NA NA NC	W RD MMP-RCIC/IST-F701		
	DESCRIPTION: RCIC TURBINE EXHAUST LINE RUPTURE DISC						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RCIC-RD-2	M519 C12	2 D	SA RD 10	NA NA NC	W RD MMP-RCIC/IST-F701		
DESCRIPTION: RCIC TURBINE EXHAUST LINE RUPTURE DISC							
RCIC-RV-3	M519 D13	2 C	SA RV 3/4 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03 N09
DESCRIPTION: RCIC PUMP DISCHARGE THERMAL RELIEF							
RCIC-RV-17	M519 C13	2 C	SA RV 1 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03 N09
DESCRIPTION: RCIC PUMP SUCT RV							
RCIC-RV-19T	M519 D9	2 C	SA RV 2 X 3	NA NA NC	P RV TSP-RV/IST-R701		TV03
DESCRIPTION: RCIC-P-1 DISCH TO LO COOLER RV							
RCIC-V-1	M519 E11	NA B	MO GB 3	C FAI NO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702		TV01
DESCRIPTION: RCIC TURBINE TRIP/THROTTLE VLV (SUPPLIED AS RCIC-DT-1 SKID)							
RCIC-V-2	M519 E11	NA B	HO GT 3	O FO NT	GH Q OSP-RCIC/IST-Q701		N10
DESCRIPTION: RCIC TURBINE GOVERNOR VLV (SUPPLIED AS RCIC-DT-1 SKID)							
RCIC-V-4	M519 B10	2 B	AO DI 1	C FC NO	HJK Q OSP-RCIC/IST-Q702 G 2Y OSP-RCIC/IST-Q702		N07 TV01
DESCRIPTION: RCIC-P-4 DISCH TO EDR ISO							
RCIC-V-5	M519 B10	2 B	AO DI 1	C FC NC	HJK Q OSP-RCIC/IST-Q702 G 2Y OSP-RCIC/IST-Q702		N07 TV01
DESCRIPTION: RCIC-P-4 DISCH TO EDR ISO							
RCIC-V-8	M519 F6	1 A	MO GT 4	C FAI NO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RCIC TURBINE STEAM SUPPLY (OTBD CIV)							
RCIC-V-10	M519 B14	2 B	MO GT 8	C FAI NO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702		TV01
DESCRIPTION: CST TO RCIC-P-1 SUCT							
RCIC-V-11	M519 B13	2 C	SA CK 8	O NA NC	H Q OSP-RCIC/IST-Q701		
DESCRIPTION: CST TO RCIC-P-1 SUCT CHK							
RCIC-V-13	M519 H6	1 A	MO GT 6	O/C FAI NC	G 2Y OSP-RCIC/IST-Q703 HJ CS OSP-RCIC/IST-Q703 L 2Y TSP-RCS-R802	CSJ05	TV01,2
DESCRIPTION: RCIC TO RPV HEAD SPRAY ISO (OTBD CIV)							
RCIC-V-19	M519 F7	2 A	MO GB 2	O/C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RCIC-P-1 MINIMUM FLOW TO SUPP POOL (OTBD CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RCIC-V-21 CMP-05	M519 F8	2 C	SA CK 2	O NA NC	Hx Q OSP-RCIC/IST-Q701 Nit 8Y		
DESCRIPTION: RCIC-P-1 MINIMUM FLOW TO SUPP POOL CHK							
RCIC-V-22	M519 J8	2 B	MO GB 6	C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702		TV01
DESCRIPTION: RCIC-P-1 DISCH TO CST ISO							
RCIC-V-25	M519 E9	2 B	AO DI 1	C FC NO	HJK Q OSP-RCIC/IST-Q702 G 2Y OSP-RCIC/IST-Q702		N07 TV01
DESCRIPTION: RCIC TURBINE STM SUPPLY STM TRAPS TO MAIN COND ISO							
RCIC-V-26	M519 D9	2 B	AO DI 1	C FC NO	HJK Q OSP-RCIC/IST-Q702 G 2Y OSP-RCIC/IST-Q702		N07 TV01
DESCRIPTION: RCIC TURBINE STM SUPPLY STM TRAPS TO MAIN COND ISO							
RCIC-V-28 CMP-06	M519 D8	2 AC	SA CK 1.50	O/C NA NC	Hx Q OSP-RCIC/IST-Q702 HxL J TSP-CONT-R801 Nit 4Y		TV02
DESCRIPTION: AUX COOLING TO SUPP POOL CHK (CIV)							
RCIC-V-30 CMP-07	M519 C7	2 C	SA CK 8	O NA NC	Hx 2Y OSP-RCIC/IST-B501 Hx Q OSP-RCIC/IST-Q701 Di 8Y	ROJ12	
DESCRIPTION: SUPP POOL TO RCIC-P-1 SUCT CHK							
RCIC-V-31	M519 C7	2 A	MO GT 8	O/C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L 2Y TSP-CONT-B802		TV01,2
DESCRIPTION: SUPPRESSION POOL TO RCIC-P-1 SUCT (OTBD CIV)							
RCIC-V-40 CMP-08	M519 E8	2 AC	SA CK 10	O/C NA NC	Hx Q OSP-RCIC/IST-Q701 HxL J TSP-CONT-R801 Nit 8Y		TV02
DESCRIPTION: RCIC TURBINE EXHAUST TO SUPP POOL CHK (CIV)							
RCIC-V-45	M519 F11	2 B	MO GB 4	O/C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702		TV01
DESCRIPTION: RCIC TURB STM SUPPLY ISO (MAIN TURBINE TRIP I/L)							
RCIC-V-46	M519 F11	2 B	MO GB 2	O/C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702		TV01
DESCRIPTION: RCIC AUXILIARY COOLING TO LO COOLER ISO							
RCIC-V-47 CMP-09	M519 B10	2 C	SA CK 2	O/C NA NC	Hx Q OSP-RCIC/IST-Q701 Hx 4Y OSP-RCIC/IST-Q702 Nit 4Y		
DESCRIPTION: RCIC-P-4 (CONDENSATE PUMP) DISCH CHK							
RCIC-V-50	M519 F10	2 A	MO GB 2	C FAI LO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L 2Y TSP-CONT-B802		TV01
DESCRIPTION: RCIC-HX-2 CW SUPPLY ISO							
RCIC-V-59	M519 J8	2 B	MO GT 6	C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702		TV01
DESCRIPTION: RCIC-P-1 TO CST ISO							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RCIC-V-63	M519 H3	1 A	MO GT 10	C FAI NO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RCIC TURBINE STEAM SUPPLY TO RHR STM-COND (CIV)							
RCIC-V-64	M519 G6	1 A	MO GT 10	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: RCIC TURBINE STEAM SUPPLY TO RHR STM-COND (CIV)							
RCIC-V-65	M519 H6	1 C	SA CK 6	O NA NC	G 2Y OSP-RCIC/IST-R701 H RF OSP-RCIC/IST-R701	ROJ08	
DESCRIPTION: RCIC-P-1 DISCH TO RPV HEAD SPRAY CHK							
RCIC-V-66	M519 J4	1 AC	SA CK 6	O/C NA NC	H RF OSP-RCIC/IST-R701 HL RF TSP-RCS-R803	ROJ08	TV02
DESCRIPTION: RCIC TO RPV HEAD SPRAY CHK (INBD CIV)							
RCIC-V-68	M519 E7	2 A	MO GT 10	C FAI NO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RCIC TURBINE EXHAUST TO SUPP POOL (OTBD CIV)							
RCIC-V-69	M519 D7	2 A	MO GT 1.50	C FAI NO	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RCIC VACUUM PUMP TO SUPP POOL (OTBD CIV)							
RCIC-V-76	M519 H3	1 A	MO GB 1	C FAI NC	G 2Y OSP-RCIC/IST-Q702 HJ Q OSP-RCIC/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RCIC-V-63 BYPASS (INBD CIV)							
RCIC-V-90	M519 H7	2 C	SA CK 6	O/C NA NC	H Q OSP-RCIC/IST-Q701		
DESCRIPTION: RCIC DISCHARGE HEADER CHK							
RCIC-V-110	M519 E7	2 B	MO GT 2	NA FAI NO	G 2Y OSP-RCIC/IST-Q702		Passive
DESCRIPTION: RCIC TURB EXH TO SUPP POOL VAC REL ISO							
RCIC-V-111 CMP-11	M519 E7	2 C	SA CK 2	O/C NA NC	Hx 4Y OSP-RCIC/IST-Q702 Di 10Y		N04
DESCRIPTION: RCIC TURBINE EXHAUST VACUUM BREAKER ISO							
RCIC-V-112 CMP-11	M519 E7	2 C	SA CK 2	O/C NA NC	Hx 4Y OSP-RCIC/IST-Q702 Di 10Y		N04
DESCRIPTION: RCIC TURBINE EXHAUST VACUUM BREAKER ISO							
RCIC-V-113	M519 E7	2 B	MO GT 2	NA FAI NO	G 2Y OSP-RCIC/IST-Q702		Passive
DESCRIPTION: RCIC TURB EXH TO SUPP POOL VAC REL ISO							
RCIC-V-204 CMP-12	M519 B14	2 C	SA CK 8	O/C NA NC	Hx Q OSP-RCIC/IST-Q701 Hx 4Y OSP-RCIC/IST-Q702 Di 8Y		
DESCRIPTION: RCIC PUMP SUCT FROM CST CHK							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RCIC-V-742	M519 J6	1 A	MA GB 0.75	C NA LC	L 2Y TSP-RCS-R802		TV02 Passive
DESCRIPTION: SAMPLE PROBE 19B MAN ISO (CIV)							
REA-V-1	M545-3 H1	3 B	AO BF 72	C FC NO	G 2Y OSP-CONT/IST-Q702 HJK Q OSP-CONT/IST-Q702		TV01
DESCRIPTION: REACTOR BUILDING EXHAUST							
REA-V-2	M545-3 H1	3 B	AO BF 72	C FC NO	G 2Y OSP-CONT/IST-Q702 HJK Q OSP-CONT/IST-Q702		TV01
DESCRIPTION: REACTOR BUILDING EXHAUST							
RFW-V-10A	M529 G12	1 AC	SA CK 24	C NA NO	H RF OSP-RFW/IST-Q701 HL 2Y TSP-CONT-R801	ROJ06	TV02
DESCRIPTION: RFW TO RPV CHK (INBD CIV)							
RFW-V-10B	M529 G5	1 AC	SA CK 24	C NA NO	H RF OSP-RFW/IST-Q701 HL 2Y TSP-CONT-R801	ROJ06	TV02
DESCRIPTION: RFW TO RPV CHK (INBD CIV)							
RFW-V-32A	M529 G13	1 AC	AO,SA CK 24	C NA NO	H RF OSP-RFW/IST-Q701 HL 2Y TSP-CONT-R801	ROJ06	N02 TV02
DESCRIPTION: RFW TO RPV CHK (1ST OTBD CIV)							
RFW-V-32B	M529 G5	1 AC	AO,SA CK 24	C NA NO	H RF OSP-RFW/IST-Q701 HL 2Y TSP-CONT-R801	ROJ06	N02 TV02
DESCRIPTION: RFW TO RPV CHK (1ST OTBD CIV)							
RFW-V-65A	M529 G13	1 A	MO GT 24	C FAI NO	G 2Y OSP-RFW/IST-Q701 HJ CS OSP-RFW/IST-Q701 L 2Y TSP-CONT-R801	CSJ02	TV01,2
DESCRIPTION: RFW TO RPV ISO (2ND OTBD CIV)							
RFW-V-65B	M529 G4	1 A	MO GT 24	C FAI NO	G 2Y OSP-RFW/IST-Q701 HJ CS OSP-RFW/IST-Q701 L 2Y TSP-CONT-R801	CSJ02	TV01,2
DESCRIPTION: RFW TO RPV ISO (2ND OTBD CIV)							
RHR-FCV-64A	M521-1 B12	2 A	MO GB 3	O/C FAI NO	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RHR-P-2A MINIMUM FCV (CIV)							
RHR-FCV-64B	M521-2 B5	2 A	MO GB 3	O/C FAI NO	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RHR-P-2B MINIMUM FCV (CIV)							
RHR-FCV-64C	M521-3 E4	2 A	MO GB 3	O/C FAI NO	G 2Y OSP-RHR/IST-Q704 HJ Q OSP-RHR/IST-Q704 L J TSP-CONT-R801		TV01,2
DESCRIPTION: RHR-P-2C MINIMUM FCV (CIV)							
RHR-RV-1A	M521-1 H13	2 AC	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3
DESCRIPTION: RHR-HX-1A SHELL SIDE RV (CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RHR-RV-1B	M521-2 H5	2 AC	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3
DESCRIPTION: RHR-HX-1B SHELL SIDE RV (CIV)							
RHR-RV-5	M521-1 C8	2 AC	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR SHUTDOWN COOLING SUCT RV (CIV)							
RHR-RV-25A	M521-1 D10	2 AC	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR LOOP A TEST LINE RV (CIV)							
RHR-RV-25B	M521-2 C10	2 AC	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR LOOP B TEST LINE RV (CIV)							
RHR-RV-25C	M521-3 E8	2 AC	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR LOOP C TEST LINE RV (CIV)							
RHR-RV-30	M521-2 D8	2 AC	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR FLUSH LINE RV (CIV)							
RHR-RV-88A	M521-1 C7	2 AC	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR-P-2A SUCT RV (CIV)							
RHR-RV-88B	M521-2 B9	2 AC	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR-P-2B SUCT RV (CIV)							
RHR-RV-88C	M521-3 D8	2 AC	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701 L J TSP-CONT-C801		TV02,3 N09
DESCRIPTION: RHR-P-2C SUCT RV (CIV)							
RHR-V-3A	M521-1 H10	2 B	MO GT 18	O/C FAI NO	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702		TV01
DESCRIPTION: RHR-HX-1A OUTLET ISO							
RHR-V-3B	M521-2 J9	2 B	MO GT 18	O/C FAI NO	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703		TV01
DESCRIPTION: RHR-HX-1B OUTLET ISO							
RHR-V-4A	M521-1 C7	2 A	MO GT 24	O/C FAI NO	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702 L 2Y TSP-CONT-B802		TV01,2
DESCRIPTION: SUPPRESSION POOL TO RHR-P-2A SUCT (OTBD CIV)							
RHR-V-4B	M521-2 B11	2 A	MO GT 24	O/C FAI NO	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703 L 2Y TSP-CONT-B802		TV01,2
DESCRIPTION: SUPPRESSION POOL TO RHR-P-2B SUCT (OTBD CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM			Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RHR-V-4C	M521-3 B11	2 A	MO GT 24	O/C FAI NO	G HJ L	2Y Q 2Y	OSP-RHR/IST-Q704 OSP-RHR/IST-Q704 TSP-CONT-B802		TV01,2
	DESCRIPTION: SUPPRESSION POOL TO RHR-P-2C SUCT (OTBD CIV)								
RHR-V-6A	M521-1 B8	2 B	MO GT 18	O/C FAI NC	G HJ	2Y Q	OSP-RHR/IST-Q702 OSP-RHR/IST-Q702		TV01
	DESCRIPTION: RPV TO RHR-P-2A SUCT (SDC MODE)								
RHR-V-6B	M521-1 B7	2 B	MO GT 18	O/C FAI NC	G HJ	2Y Q	OSP-RHR/IST-Q703 OSP-RHR/IST-Q703		TV01
	DESCRIPTION: RPV TO RHR-P-2B SUCT (SDC MODE)								
RHR-V-8	M521-1 E6	1 A	MO GT 20	O/C FAI NC	G HJ L	2Y RF 2Y	OSP-RHR/IST-R704 OSP-RHR/IST-R704 TSP-RCS-R802	ROJ10	TV01,2
	DESCRIPTION: RHR SDC MODE SUPPLY FOR A & B FROM RPV (OTBD CIV)								
RHR-V-9	M521-1 D5	1 A	MO GT 20	O/C FAI NC	G HJ L	2Y RF 2Y	OSP-RHR/IST-R704 OSP-RHR/IST-R704 TSP-RCS-R802	ROJ10	TV01,2
	DESCRIPTION: RHR SDC MODE SUPPLY FOR A & B FROM RPV (INBD CIV)								
RHR-V-11A	M521-1 E11	2 A	MO GT 4	C NA LC	L	J	TSP-CONT-R801		TV02 Passive
	DESCRIPTION: RHR STM-COND TO SUPP POOL ISO (CIV)								
RHR-V-11B	M521-2 C11	2 A	MO GT 4	C NA LC	L	J	TSP-CONT-R801		TV02 Passive
	DESCRIPTION: RHR B STM-COND TO SUPP POOL ISO (CIV)								
RHR-V-16A	M521-1 H7	2 A	MO GT 16	O/C FAI NC	G HJ L	2Y CS J	OSP-RHR/IST-Q705 OSP-RHR/IST-Q705 TSP-CONT-R801	CSJ12	TV01,2
	DESCRIPTION: RHR TO DRYWELL SPRAY HEADER (2ND OTBD CIV)								
RHR-V-16B	M521-2 D11	2 A	MO GT 16	O/C FAI NC	G HJ L	2Y CS J	OSP-RHR/IST-Q706 OSP-RHR/IST-Q706 TSP-CONT-R801	CSJ12	TV01,2
	DESCRIPTION: RHR TO DRYWELL SPRAY HEADER (2ND OTBD CIV)								
RHR-V-17A	M521-1 H6	2 A	MO GT 16	O/C FAI NC	G HJ L	2Y CS J	OSP-RHR/IST-Q705 OSP-RHR/IST-Q705 TSP-CONT-R801	CSJ12	TV01,2
	DESCRIPTION: RHR TO DRYWELL SPRAY HEADER (1ST OTBD CIV)								
RHR-V-17B	M521-2 D11	2 A	MO GT 16	O/C FAI NC	G HJ L	2Y CS J	OSP-RHR/IST-Q706 OSP-RHR/IST-Q706 TSP-CONT-R801	CSJ12	TV01,2
	DESCRIPTION: RHR TO DRYWELL SPRAY HEADER (1ST OTBD CIV)								
RHR-V-21	M521-3 E7	2 A	MO GB 18	C FAI NC	G HJ L	2Y Q J	OSP-RHR/IST-Q704 OSP-RHR/IST-Q704 TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR LOOP C TEST LINE TO SUPP POOL (OTBD CIV)								
RHR-V-23	M521-2 K13	1 A	MO GB 6	C FAI NC	G HJ L	2Y CS 2Y	OSP-RHR/IST-Q706 OSP-RHR/IST-Q706 TSP-RCS-R802	CSJ01	TV01,2
	DESCRIPTION: RHR TO RCIC RPV HEAD SPRAY (OTBD CIV)								

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RHR-V-24A	M521-1 E9	2 A	MO GB 18	O/C FAI NC	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR LOOP A TEST LINE TO SUPP POOL (OTBD CIV)						
RHR-V-24B	M521-2 C11	2 A	MO GB 18	O/C FAI NC	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR LOOP B TEST LINE TO SUPP POOL (OTBD CIV)						
RHR-V-27A	M521-1 D7	2 A	MO GT 6	O/C FAI NC	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR TO SUPPRESSION CHAMBER SPRAY HEADER (OTBD CIV)						
RHR-V-27B	M521-2 C10	2 A	MO GT 6	O/C FAI NC	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR TO SUPPRESSION CHAMBER SPRAY HEADER (OTBD CIV)						
RHR-V-31A	M521-1 C14	2 C	SA CK 18	O/C NA NC	H Q OSP-RHR/IST-Q702		
	DESCRIPTION: RHR-P-2A DISCH CHK						
RHR-V-31B	M521-2 C3	2 C	SA CK 18	O/C NA NC	H Q OSP-RHR/IST-Q703		
	DESCRIPTION: RHR-P-2B DISCH CHK						
RHR-V-31C	M521-3 C3	2 C	SA CK 18	O/C NA NC	H Q OSP-RHR/IST-Q704		
	DESCRIPTION: RHR-P-2C DISCH CHK						
RHR-V-40	M521-2 G4	2 B	MO GB 4	C FAI NC	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703		TV01
	DESCRIPTION: RHR LOOP B TO EDR (SDC WARMUP LINE) ISO						
RHR-V-41A	M521-1 G5	1 AC	SA CK 14	O/C NA NC	H RF OSP-RHR/IST-R701 HL RF TSP-RCS-R801	ROJ08	TV02
	DESCRIPTION: RHR A LPCI TO RPV CHK (INBD CIV)						
RHR-V-41B	M521-2 G13	1 AC	SA CK 14	O/C NA NC	H RF OSP-RHR/IST-R702 HL RF TSP-RCS-R802	ROJ08	TV02
	DESCRIPTION: RHR B LPCI TO RPV (INBD CIV)						
RHR-V-41C	M521-3 E13	1 AC	SA CK 14	O/C NA NC	H RF OSP-RHR/IST-R703 HL RF TSP-RCS-R802	ROJ08	TV02
	DESCRIPTION: RHR C LPCI TO RPV (INBD CIV)						
RHR-V-42A	M521-1 G7	1 A	MO GT 14	O/C FAI NC	G 2Y OSP-RHR/IST-Q705 HJ CS OSP-RHR/IST-Q705 L 2Y TSP-RCS-R801	CSJ06	TV01,2
	DESCRIPTION: RHR A LPCI MODE TO RPV (OTBD CIV)						
RHR-V-42B	M521-2 G12	1 A	MO GT 14	O/C FAI NC	G 2Y OSP-RHR/IST-Q706 HJ CS OSP-RHR/IST-Q706 L 2Y TSP-RCS-R802	CSJ06	TV01,2
	DESCRIPTION: RHR B LPCI MODE TO RPV (OTBD CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RHR-V-42C	M521-3 E11	1 A	MO GT 14	O/C FAI NC	G 2Y OSP-RHR/IST-Q707 HJ CS OSP-RHR/IST-Q707 L 2Y TSP-RCS-R802	CSJ06	TV01,2
	DESCRIPTION: RHR B LPCI MODE TO RPV (OTBD CIV)						
RHR-V-48A	M521-1 J11	2 B	MO GB 18	O/C FAI NO	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702		TV01
	DESCRIPTION: RHR-HX-1A BYPASS						
RHR-V-48B	M521-2 K8	2 B	MO GB 18	O/C FAI NO	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703		TV01
	DESCRIPTION: RHR-HX-1B BYPASS						
RHR-V-49	M521-2 G4	2 B	MO GT 4	C FAI NC	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703		TV01
	DESCRIPTION: RHR LOOP B TO EDR (SDC WARMUP LINE) ISO						
RHR-V-50A	M521-1 E5	1 AC	SA CK 12	O/C NA NC	H RF OSP-RHR/IST-R701 HL RF TSP-RCS-R801	ROJ08	TV02
	DESCRIPTION: RHR A SDC TO RPV CHK (INBD CIV)						
RHR-V-50B	M521-2 F13	1 AC	SA CK 12	O/C NA NC	H RF OSP-RHR/IST-R702 HL RF TSP-RCS-R802	ROJ08	TV02
	DESCRIPTION: RHR B SDC TO RPV (INBD CIV)						
RHR-V-53A	M521-1 E6	1 A	MO GT 12	O/C FAI NC	G 2Y OSP-RHR/IST-Q705 HJ CS OSP-RHR/IST-Q705 L 2Y TSP-RCS-R801	CSJ01	TV01,2
	DESCRIPTION: RHR A SDC MODE TO RPV (OTBD CIV)						
RHR-V-53B	M521-2 F11	1 A	MO GT 12	O/C FAI NC	G 2Y OSP-RHR/IST-Q706 HJ CS OSP-RHR/IST-Q706 L 2Y TSP-RCS-R802	CSJ01	TV01,2
	DESCRIPTION: RHR B SDC MODE TO RPV (OTBD CIV)						
RHR-V-60A	M521-1 G11	2 B	SO SV 0.75	C FC NC	G 2Y OSP-RHR/IST-Q702 HJK Q OSP-RHR/IST-Q702		TV01
	DESCRIPTION: RHR A SAMPLE PROBE 22A ISO						
RHR-V-60B	M521-2 H9	2 B	SO SV 0.75	C FC NC	G 2Y OSP-RHR/IST-Q703 HJK Q OSP-RHR/IST-Q703		TV01
	DESCRIPTION: RHR B SAMPLE PROBE 22B ISO						
RHR-V-68A	M524-1 E14	3 B	MO GT 16	O FAI NO	G 2Y OSP-SW/IST-Q701 HJ Q OSP-SW/IST-Q701		TV01
	DESCRIPTION: SW FROM RHR-HX-1A ISO						
RHR-V-68B	M524-2 G14	3 B	MO GT 16	O FAI NO	G 2Y OSP-SW/IST-Q702 HJ Q OSP-SW/IST-Q702		TV01
	DESCRIPTION: SW B FROM RHR-HX-1B ISO						
RHR-V-73A	M521-1 H14	2 A	MO GB 2	C FAI NC	G 2Y OSP-RHR/IST-Q702 HJ Q OSP-RHR/IST-Q702 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR-HX-1A SHELL SIDE VENT (OTBD CIV)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RHR-V-73B	M521-2 H4	2 A	MO GB 2	C FAI NC	G 2Y OSP-RHR/IST-Q703 HJ Q OSP-RHR/IST-Q703 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RHR-HX-1B SHELL SIDE VENT (OTBD CIV)						
RHR-V-75A	M521-1 G11	2 B	SO SV 0.75	C FC NC	G 2Y OSP-RHR/IST-Q702 HJK Q OSP-RHR/IST-Q702		TV01
	DESCRIPTION: RHR A SAMPLE PROBE 22A ISO						
RHR-V-75B	M521-2 H8	2 B	SO SV 0.75	C FC NC	G 2Y OSP-RHR/IST-Q703 HJK Q OSP-RHR/IST-Q703		TV01
	DESCRIPTION: RHR B SAMPLE PROBE 22B ISO						
RHR-V-84A CMP-22	M521-1 D15	2 C	SA CK 1.50	C NA NC	Hx Q OSP-RHR/IST-Q702 Hx 12M OSP-RHR-A701		N01
	DESCRIPTION: LPCS-P-2 (WATER LEG) TO RHR A CHK						
RHR-V-84B CMP-22	M521-2 B4	2 C	SA CK 1.50	C NA NC	Hx Q OSP-RHR/IST-Q703 Hx 12M OSP-RHR-A702		N01
	DESCRIPTION: RHR-P-3 (WATER LEG) DISCH TO RHR B CHK						
RHR-V-84C CMP-22	M521-3 C5	2 C	SA CK 1.50	C NA NC	Hx Q OSP-RHR/IST-Q704 Hx 12M OSP-RHR-A704		N01
	DESCRIPTION: RHR-P-3 (WATER LEG) DISCH TO RHR C CHK						
RHR-V-85A CMP-22	M521-1 D14	2 C	SA SC 1.50	C NA NC	Hx Q OSP-RHR/IST-Q702 Hx 12M OSP-RHR-A701		N01
	DESCRIPTION: LPCS-P-2 (WATER LEG) TO RHR A STOP CHK						
RHR-V-85B CMP-22	M521-2 B3	2 C	SA SC 1.50	C NA NC	Hx Q OSP-RHR/IST-Q703 Hx 12M OSP-RHR-A702		N01
	DESCRIPTION: RHR-P-3 (WATER LEG) DISCH TO RHR B STOP CHK						
RHR-V-85C CMP-22	M521-3 C4	2 C	SA SC 1.50	C NA NC	Hx Q OSP-RHR/IST-Q704 Hx 12M OSP-RHR-A704		N01
	DESCRIPTION: RHR-P-3 (WATER LEG) DISCH TO RHR C STOP CHK						
RHR-V-120	M521-1 C11	2 A	MA GT 3	C NA LC	L J TSP-CONT-R801		TV02 Passive
	DESCRIPTION: RHR A TO FDR SYS MAN ISO (CIV)						
RHR-V-121	M521-1 C11	2 A	MA GT 3	C NA LC	L J TSP-CONT-R801		TV02 Passive
	DESCRIPTION: RHR A TO FDR SYS MAN ISO (CIV)						
RHR-V-123A	M521-1 E5	1 A	MO GT 1	C FAI NC	G 2Y OSP-RHR/IST-R704 HJ RF OSP-RHR/IST-R704 L 2Y TSP-RCS-R801	ROJ11	TV01,2
	DESCRIPTION: RHR-V-50A BYPASS (INBD CIV) (MOTOR DEENERGIZED)						
RHR-V-123B	M521-2 E13	1 A	MO GT 1	C FAI NC	G 2Y OSP-RHR/IST-R704 HJ RF OSP-RHR/IST-R704 L 2Y TSP-RCS-R802	ROJ11	TV01,2
	DESCRIPTION: RHR-V-50B BYPASS (INBD CIV) (MOTOR DEENERGIZED)						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RHR-V-124A	M521-1 C14	2 A	MO GB 1.50	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: RHR STM-COND DRN TO SUPP POOL (CIV)							
RHR-V-124B	M521-1 C12	2 A	MO GB 1.50	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: RHR STM-COND DRN TO SUPP POOL (CIV)							
RHR-V-125A	M521-4 E5	2 A	MO GB 1.50	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: RHR STM-COND DRN TO SUPP POOL (CIV)							
RHR-V-125B	M521-4 E4	2 A	MO GB 1.50	C NA LC	L J TSP-CONT-R801		TV02 Passive
DESCRIPTION: RHR STM-COND DRN TO SUPP POOL (CIV)							
RHR-V-134A	M521-1 E14	2 A	MO GB 2	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC TIE TO RHR (OTBD CIV)							
RHR-V-134B	M521-2 E6	2 A	MO GB 2	C FAI LC	L J TSP-CONT-R801		N13 TV02 Passive
DESCRIPTION: CAC TIE TO RHR (OTBD CIV)							
RHR-V-209 CMP-18	M521-1 D5	1 AC	SA CK 0.75	O/C NA NC	Hx 4Y OSP-RHR/IST-R701 HxL 2Y TSP-RCS-R802	ROJ03	N04 TV02
DESCRIPTION: THERMAL RELIEF CHK BETWEEN RHR-V-8 AND 9 (CIV)							
RHR-V-503 CMP-10	M521-1 A8	2 C	SA CK 0.50	C NA NC	Hx 4Y OSP-RHR/IST-Q702 Di 10Y		
DESCRIPTION: RHR-V-6A LEAK BY-PASS CHK							
ROA-V-1	M545-3 D1	3 B	AO BF 84	C FC NO	G 2Y OSP-CONT/IST-Q702 HJK Q OSP-CONT/IST-Q702		TV01
DESCRIPTION: REACTOR BUILDING ISO							
ROA-V-2	M545-3 D2	3 B	AO BF 84	C FC NO	G 2Y OSP-CONT/IST-Q702 HJK Q OSP-CONT/IST-Q702		TV01
DESCRIPTION: REACTOR BUILDING ISO							
RRC-V-13A CMP-15	M530-1 C13	2 AC	SA CK 0.75	C NA NO	Hx 4Y OSP-RRC/IST-Q702 HxL J TSP-CONT-R801 Nit 8Y	ROJ14	TV02
DESCRIPTION: RRC PUMP SEAL PURGE INLET CHK (INBD CIV)							
RRC-V-13B CMP-15	M530-1 B13	2 AC	SA CK 0.75	C NA NO	Hx 4Y OSP-RRC/IST-Q702 HxL J TSP-CONT-R801 Nit 8Y	ROJ14	TV02
DESCRIPTION: RRC PUMP SEAL PURGE INLET CHK (INBD CIV)							
RRC-V-16A	M530-1 C14	2 A	MO GT 0.75	C FAI NO	G 2Y OSP-RRC/IST-Q702 HJ RF OSP-RRC/IST-Q702 L J TSP-CONT-R801	ROJ14	TV01,2
DESCRIPTION: RRC PUMP SEAL PURGE INLET (OTBD CIV)							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
RRC-V-16B	M530-1 B14	2 A	MO GT 0.75	C FAI NO	G 2Y OSP-RRC/IST-Q702 HJ RF OSP-RRC/IST-Q702 L J TSP-CONT-R801	ROJ14	TV01,2
	DESCRIPTION: RRC PUMP SEAL PURGE INLET (OTBD CIV)						
RRC-V-19	M530-1 F11	1 A	SO GB 1	C FC NO	G 2Y OSP-RRC/IST-Q701 HJK Q OSP-RRC/IST-Q701 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RRC SAMPLE PROBE 1 ISO (CIV)						
RRC-V-20	M530-1 F12	1 A	SO GB 1	C FC NO	G 2Y OSP-RRC/IST-Q701 HJK Q OSP-RRC/IST-Q701 L J TSP-CONT-R801		TV01,2
	DESCRIPTION: RRC SAMPLE PROBE 1 ISO (CIV)						
RWCU-V-1	M523-1 F14	1 A	MO GT 6	C FAI NO	G 2Y OSP-RWCU/IST-Q701 HJ CS OSP-RWCU/IST-Q701 L J TSP-CONT-R801	CSJ07	TV01,2
	DESCRIPTION: RWCU FROM RPV ISO (INBD CIV)						
RWCU-V-4	M523-1 E15	1 A	MO GT 6	C FAI NO	G 2Y OSP-RWCU/IST-Q701 HJ CS OSP-RWCU/IST-Q701 L J TSP-CONT-R801	CSJ07	TV01,2
	DESCRIPTION: RWCU FROM RPV ISO (OTBD CIV)						
RWCU-V-40	M523-1 H10	1 A	MO GT 6	C FAI NO	G 2Y OSP-RWCU/IST-Q701 HJ CS OSP-RWCU/IST-Q701 L 2Y TSP-CONT-R801	CSJ07	TV01,2
	DESCRIPTION: RWCU TO RFW ISO (OTBD CIV)						
SA-V-109	M510-3 H8	2 A	MA GB 2	C NA LC	L J TSP-CONT-R801		TV02 Passive
	DESCRIPTION: AIR LINE ISO USED FOR MAINT (CAPPED IN DW) (CIV)						
SGT-V-1A	M544 G14	2 B	MO BF 18	C FAI NC	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT INLET						
SGT-V-1B	M544 E14	2 B	MO BF 18	C FAI NC	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT INLET						
SGT-V-2A	M544 H14	3 B	AO BF 18	O FO NO	G 2Y OSP-SGT/IST-Q701 HJK Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FU-1A INLET						
SGT-V-2B	M544 D14	3 B	AO BF 18	O FO NO	G 2Y OSP-SGT/IST-Q702 HJK Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FU-1B INLET						
SGT-V-3A1	M544 G7	2 B	MO BF 18	O FAI NO	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FN-1A1 DISCH						
SGT-V-3A2	M544 J7	2 B	MO BF 18	O/C FAI NO	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FN-1A1 DISCH						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type Actuat, Valve & Size	Position Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
SGT-V-3B1	M544 E7	2 B	MO BF 18	O/C FAI NO	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FN-1A1 DISCH						
SGT-V-3B2	M544 C7	2 B	MO BF 18	O FAI NO	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FN-1A1 DISCH						
SGT-V-4A1	M544 J5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FN-1A1 DISCH						
SGT-V-4A2	M544 G5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FN-1A2 DISCH						
SGT-V-4B1	M544 C5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FN-1B1 DISCH						
SGT-V-4B2	M544 D5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FN-1B2 DISCH						
SGT-V-5A1	M544 J5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FN-1A1 OUTLET						
SGT-V-5A2	M544 G5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q701 HJ Q OSP-SGT/IST-Q701		TV01
	DESCRIPTION: SGT-FN-1A2 OUTLET						
SGT-V-5B1	M544 C5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FN-1B1 OUTLET						
SGT-V-5B2	M544 E5	2 B	MO BF 18	O/C FAI NC	G 2Y OSP-SGT/IST-Q702 HJ Q OSP-SGT/IST-Q702		TV01
	DESCRIPTION: SGT-FN-1B2 OUTLET						
SLC-RV-29A	M522 F6	2 C	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: SLC-P-1A DISCH RV						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
SLC-RV-29B	M522 D6	2 C	SA RV 1 X 2	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: SLC-P-1B DISCH RV						
SLC-V-1A	M522 E4	2 B	MO GB 4	O FAI NC	G 2Y OSP-SLC/IST-Q701 HJ Q OSP-SLC/IST-Q701		TV01
	DESCRIPTION: SLC-TK-1A (STORAGE TANK) TO SLC-P-1A SUCT ISO						
SLC-V-1B	M522 D4	2 B	MO GB 4	O FAI NC	G 2Y OSP-SLC/IST-Q701 HJ Q OSP-SLC/IST-Q701		TV01
	DESCRIPTION: SLC-TK-1B (STORAGE TANK) TO SLC-P-1B SUCT ISO						
SLC-V-4A	M522 F8	1 AD	SO EX 1.50	O/C NA NC	L J TSP-CONT-R801 V EX OSP-SLC-B701	RV06	TV02
	DESCRIPTION: SLC-P-1A DISCH TO RPV ISO (EXPLOSIVE OTBD CIV)						
SLC-V-4B	M522 D8	1 AD	SO EX 1.50	O/C NA NC	L J TSP-CONT-R801 V EX OSP-SLC-B702	RV06	TV02
	DESCRIPTION: SLC-P-1B DISCH TO RPV ISO (EXPLOSIVE OTBD CIV)						
SLC-V-6 CMP-25	M522 F11	1 C	SA CK 1.50	O NA NC	Hx RF OSP-SLC-B701, B702 Nit 4Y	ROJ01	
	DESCRIPTION: SLC TO RPV CHK						
SLC-V-7 CMP-25	M522 H13	1 AC	SA CK 1.50	O/C NA NC	Hx RF OSP-SLC-B701, B702 HxL J TSP-CONT-R801 Nit 4Y	ROJ01	TV02
	DESCRIPTION: SLC TO RPV CHK (INBD CIV)						
SLC-V-33A CMP-16	M522 F7	2 C	SA CK 1.50	O/C NA NC	Hx Q OSP-SLC/IST-Q701 Nit 4Y OSP-SLC/IST-Q701		
	DESCRIPTION: SLC-P-1A DISCH CHK						
SLC-V-33B CMP-16	M522 D7	2 C	SA CK 1.50	O/C NA NC	Hx Q OSP-SLC/IST-Q701 Nit 4Y OSP-SLC/IST-Q701		
	DESCRIPTION: SLC-P-1B DISCH CHK						
SW-RV-001A	M524-1 D14	3 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: RHR-HX-1A TUBE SIDE RV						
SW-RV-001B	M524-2 F14	3 C	SA RV .75 X 1	NA NA NC	P RV TSP-RV/IST-R701		TV03
	DESCRIPTION: RHR-HX-1B TUBE SIDE RV						
SW-TCV-11A	M775 G5	3 B	HO GB 2.50	O FO NT	HK Q ESP-SW/IST-Q701	RV02	
	DESCRIPTION: EMERGENCY CHILLED WATER FROM WMA-CC-51A-1 TCV						
SW-TCV-11B	M775 C5	3 B	HO GB 2.50	O FO NT	HK Q ESP-SW/IST-Q702	RV02	
	DESCRIPTION: EMERGENCY CHILLED WATER FROM WMA-CC-51B-1 TCV						

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
SW-V-1A CMP-24	M524-1 H5	3 C	SA CK 20	O NA NC	Hx Q OSP-SW/IST-Q701 Nit 4Y Di 10Y		
DESCRIPTION: SW-P-1A DISCH CHK							
SW-V-1B CMP-24	M524-2 F5	3 C	SA CK 20	O NA NC	Hx Q OSP-SW/IST-Q702 Nit 4Y Di 10Y		
DESCRIPTION: SW-P-1B DISCH CHK							
SW-V-2A	M524-1 H6	3 B	MO BF 20	O/C FAI NC	G 2Y OSP-SW/IST-Q701 HJ Q OSP-SW/IST-Q701		TV01
DESCRIPTION: SW-P-1A DISCH ISO							
SW-V-2B	M524-2 F6	3 B	MO BF 20	O/C FAI NC	G 2Y OSP-SW/IST-Q702 HJ Q OSP-SW/IST-Q702		TV01
DESCRIPTION: SW-P-1B DISCH ISO							
SW-V-12A	M524-1 G3	3 B	MO GT 18	O/C FAI NC	G 2Y OSP-SW/IST-Q701 HJ Q OSP-SW/IST-Q701		TV01
DESCRIPTION: SW A RETURN TO SPRAY POND B ISO							
SW-V-12B	M524-2 G3	3 B	MO GT 18	O/C FAI NC	G 2Y OSP-SW/IST-Q702 HJ Q OSP-SW/IST-Q702		TV01
DESCRIPTION: SW B RETURN TO SPRAY POND A ISO							
SW-V-29	M524-1 G6	3 B	MO BF 8	O/C FAI NC	G 2Y OSP-SW/IST-Q703 HJ Q OSP-SW/IST-Q703		TV01
DESCRIPTION: HPCS-P-2 DISCH ISO							
SW-V-34	M524-2 C11	3 B	SO GB 1.50	O FO NO	G 2Y OSP-SW/IST-Q702 HJK Q OSP-SW/IST-Q702		TV01
DESCRIPTION: SW FROM RCIC-P-1 ROOM RRA-CC-6 ISO							
SW-V-75A	M524-1 B12	3 B	MO GB 2	O/C FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: SW TIE TO FPC LOOP A							
SW-V-75AA	M524-1 B13	3 B	MA GB 2	O/C FAI NC	H 2Y OSP-FPC/IST-Q701		
DESCRIPTION: SW CROSSTIE TO FPC MAN ISO							
SW-V-75B	M524-2 A14	3 B	MO GB 2	O/C FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: SW TIE TO FPC LOOP B							
SW-V-75BB	M524-2 B14	3 B	MA GB 2	O/C FAI NC	H 2Y OSP-FPC/IST-Q701		
DESCRIPTION: SW CROSSTIE TO FPC MAN ISO							
SW-V-165A	M524-1 E3	3 B	MA BF 18	O/C NA NO	H 2Y OSP-SW/IST-Q701		
DESCRIPTION: SW A RETURN TO SPRAY POND B SPRAY RING HDR BYPASS							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
SW-V-165B	M524-2 K3	3 B	MA BF 18	O/C NA NO	H 2Y OSP-SW/IST-Q702		
DESCRIPTION: SW B RETURN TO SPRAY POND A SPRAY RING HDR BYPASS							
SW-V-170A	M524-1 E3	3 B	MA BF 18	O/C NA NC	H 2Y OSP-SW/IST-Q701		
DESCRIPTION: SW A RETURN TO SPRAY POND B SPRAY RING HDR MAN ISO							
SW-V-170B	M524-2 K3	3 B	MA BF 18	O/C NA NC	H 2Y OSP-SW/IST-Q702		
DESCRIPTION: SW B RETURN TO SPRAY POND A SPRAY RING HDR MAN ISO							
SW-V-187A	M524-1 H14	3 B	MO GT 6	O FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: SW TO FPC-HX-1A INLET							
SW-V-187B	M524-2 C13	3 B	MO GT 6	O FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: SW TO FPC-HX-1B INLET							
SW-V-188A	M524-1 J13	3 B	MO GT 6	O FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: SW FROM FPC-HX-1A OUTLET							
SW-V-188B	M524-2 D12	3 B	MO GT 6	O FAI NC	G 2Y OSP-FPC/IST-Q701 HJ Q OSP-FPC/IST-Q701		TV01
DESCRIPTION: SW FROM FPC-HX-1B OUTLET							
SW-V-226A	M775 F7	3 C	SA CK 3	C NA NC	H Q OSP-CCH/IST-M701		
DESCRIPTION: CCH-EV-1A (EVAPORATOR) OUTLET CHK							
SW-V-226B	M775 B6	3 C	SA CK 3	C NA NC	H Q OSP-CCH/IST-M702		
DESCRIPTION: CCH-EV-1B (EVAPORATOR) OUTLET CHK							
SW-V-227A	M775 H7	3 B	MA GT 3	C NA NC	H 2Y OSP-CCH/IST-M701		
DESCRIPTION: CCH-P-1A SUCT MAN ISO							
SW-V-227B	M775 C7	3 B	MA GT 3	C NA NO	H 2Y OSP-CCH/IST-M702		
DESCRIPTION: CCH-P-1B SUCT MAN ISO							
SW-V-822A	M775 J5	3 B	MA GT 3	O NA NO	H 2Y OSP-CCH/IST-M701		
DESCRIPTION: SW TO WMA-CC-51A-1 (CR CHILLER) MAN ISO							
SW-V-822B	M775 E5	3 B	MA GT 3	O NA NC	H 2Y OSP-CCH/IST-M702		
DESCRIPTION: SW TO WMA-CC-51B-1 (CR CHILLER) MAN ISO							

Valve Test Tables

Valve EPN	Dwg & Coord	Class & Cat	Type: Actuat, Valve & Size	Position: Safety, Failed, Normal	Tests, Frequency & PPM	Testing Exceptions (CSJ/ROJ/ Reliefs)	Remarks (Notes & Technical Position)
SW-V-823A	M775 J5	3 B	MA GT 3	O NA NO	H 2Y OSP-CCH/IST-M701		
DESCRIPTION: SW FROM WMA-CC-51A-1 (CONTROL RM CHILLER) MAN ISO							
SW-V-823B	M775 E5	3 B	MA GT 3	O NA NC	H 2Y OSP-CCH/IST-M702		
DESCRIPTION: SW FROM WMA-CC-51B-1 (CONTROL RM CHILLER) MAN ISO							
TIP-V-1	M604 G13	2 A	SO BA 0.375	C FC NC	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: TIP LINE BALL-TYPE ISO VLV (1ST OTBD CIV)							
TIP-V-2	M604 G13	2 A	SO BA 0.375	C FC NC	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: TIP LINE BALL-TYPE ISO VLV (1ST OTBD CIV)							
TIP-V-3	M604 G12	2 A	SO BA 0.375	C FC NC	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: TIP LINE BALL-TYPE ISO VLV (1ST OTBD CIV)							
TIP-V-4	M604 H12	2 A	SO BA 0.375	C FC NC	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: TIP LINE BALL-TYPE ISO VLV (1ST OTBD CIV)							
TIP-V-5	M604 H12	2 A	SO BA 0.375	C FC NC	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: TIP LINE BALL-TYPE ISO VLV (1ST OTBD CIV)							
TIP-V-6 CMP-26	M604 F12	2 AC	SA CK 0.375	C NA NO	Hx 4Y OSP-TIP/IST-R701 HxL J TSP-CONT-R801 Di 10Y	ROJ04	TV02
DESCRIPTION: TIP PURGE LINE CHK (INBD CIV)							
TIP-V-15	M604 G13	2 A	SO SV 1	C FC NO	G 2Y OSP-CONT/IST-Q703 G 2Y TSP-CONT-R801 HJK Q OSP-CONT/IST-Q703 L J TSP-CONT-R801		TV01,2
DESCRIPTION: TIP PURGE LINE CHK (OTBD CIV)							

5.4 Inservice Testing Program Notes

The following additional information/methodologies are provided as NOTES to the Valve Inservice Testing Program. The NOTE numbers correspond to the notes listed throughout the valve test tables.

NOTE N01

Per Subsection **ISTC-5223 Series Valves in Pairs**, if two check valves are in series configuration without provisions to verify individual reverse flow closure (e.g., keepfill pressurization valves) and the plant safety analysis assumes closure of either valve (but not both), the valve pair may be operationally tested closed as a unit. If the plant safety analysis assumes that a specific valve or both valves of the pair close to perform the safety function(s), the required valve(s) shall be tested to demonstrate individual valve closure.

Per Subsection **ISTC-5224 Corrective Action**, Series valve pairs tested as a unit in accordance with ISTC-5223 that fail to prevent reverse flow shall be declared inoperable, and both valves shall be either repaired or replaced.

The following series check valve pairs are being tested in accordance with ISTC-5223 and ISTC-5224 requirements as stated above. A review of the License Basis Documents indicates that these valves are not credited individually for any safety related function. Therefore, one valve could be removed without requiring NRC approval. The safety related function for these check valves is to close, which prevents bypass flow from the applicable ECCS pump and maintains the ECCS injection flow path integrity. As long as one of the check valves in the series pair is capable of closure, then the intended design function for the check valves is met.

The operability of these valves in the open direction (non safety function) is demonstrated continuously during normal power operation. Failure to open would become apparent by the decay of system pressure to a point where a Control Room Annunciator would turn on, indicating low system pressure.

Each pair of series check valves is exercise tested during the quarterly surveillance by some positive means (measurement or observation of an operational parameter such as pressure or flow) to verify the closure capability of at least one of the valves to prevent reverse flow and open capability of both valves. Acceptance criteria to verify closure of each pair of check valves is provided in the implementing surveillance procedures. If closure capability of the pair of valves is questionable, both valves shall be declared inoperable and both valves shall be repaired or replaced as necessary before the return to service.

LPCS-V-33, 34
HPCS-V-6, 7
RHR-V-84A, 85A
RHR-V-84B, 85B
RHR-V-84C, 85C

NOTE N02

The valve actuator was installed to facilitate stroke testing of the valve. It is not intended for use in normal system operations and is therefore, exempt from ISTC-5131(a) (stroke-time measurement) and ISTC-3560 (operation of fail-safe actuators) requirements.

CSP-V-7, 8, 10
CVB-V-1AB, CD, EF, GH, JK, LM, NP, QR, ST
RFW-V-32A, 32B

NOTE N03

These valves are operated by a programmer with an index wheel. The programmer is activated by logic which trips on low header pressure or on header isolation combined with low header pressure. The programmer rotates one position to de-energize a solenoid and open a nitrogen bottle isolation valve. If the low pressure condition persists, in 30 seconds, the programmer rotates and another solenoid is de-energized to open another nitrogen bottle isolation valve. The index wheel is equipped with a window through which a number 1 through 20 may be seen. Each number corresponds to the number of solenoids de-energized in its rotational sequence which corresponds directly with the number of valves that are open.

It is the Owner's position that this is not a "Valve Position Indicator" as used in ISTC-3700. At best it is an indicator of whether or not specific solenoids should be energized or not.

CIA-SPV-1A through 15A
CIA-SPV-1B through 19B

NOTE N04

The following check valves do not serve as ASME over pressure protection devices and as such are outside the scope of OM Code Mandatory Appendix I. However, these valves are tested per Subsection ISTC.

FPC-V-157A and FPC-V-157B
RCIC-V-111 and RCIC-V-112
RHR-V-209

NOTE N05

The following CRD valves (typical of 185 valves) perform a function important to safety. These valves are non-ASME and as such are not required to be included in the IST program by 10 CFR 50.55a or by GL 89-04. These valves are being tested per Columbia Generating Station Technical Specifications or FSAR applicable to each valve. This alternate testing complies with position 7 of GL 89-04.

Valve	Category	Function	Tested Per Technical Specifications or FSAR
CRD-V-114	C	Check Valve to SCRAM Header	SR 3.1.3.4
CRD-V-115	C	Charging Water Check Valve	FSAR 4.6.1
CRD-V-126	B	Drive Water AOV	SR 3.1.3.4
CRD-V-127	B	Withdraw AOV	SR 3.1.3.4
CRD-V-138	C	Cooling Water Check Valve	SR 3.1.3.2

NOTE N06

The following emergency diesel generator air start system valves perform a function important to safety. These valves are non-ASME and as such are not required to meet the testing requirements of OM Code Subsection ISTC. These valves will be tested during DG Air Starter Motor Testing as Part of post maintenance testing and prior to return to service. Note that two valves will be tested at a time but a failure of a single valve would be detected.

Valve

DSA-SPV-5A1/2

DSA-SPV-5A1/4

DSA-SPV-5A2/2

DSA-SPV-5A2/4

DSA-SPV-5B1/2

DSA-SPV-5B1/4

DSA-SPV-5B2/2

DSA-SPV-5B2/4

DSA-SPV-5C1/1

DSA-SPV-5C1/2

NOTE N07

Affected Valves	Class	Cat.	Function	System(s)
RCIC-V-4	2	B	RCIC-P-4 Discharge to EDR Isolation	Reactor Core Isolation Cooling
RCIC-V-5	2	B	RCIC-P-4 Discharge to EDR Isolation	Reactor Core Isolation Cooling
RCIC-V-25	2	B	RCIC Turbine Steam Supply Steam Traps to Main Condenser Isolation	Reactor Core Isolation Cooling
RCIC-V-26	2	B	RCIC Turbine Steam Supply Steam Traps to Main Condenser Isolation	Reactor Core Isolation Cooling

The close function to close off equipment drain path during RCIC system operation can be accomplished by either valve RCIC-V-4 or RCIC-V-5 (CCERs C97-0139, Rev 0 and CCER C97-0010, Rev 1). Similarly the close function to close off the steam drip pot drain path during RCIC system operation can be accomplished by either valve RCIC-V-25 or RCIC-V-26 (CCER C92-0128, Rev 2). However all four valves are being maintained with an active function of close to increase reliability of the RCIC system to meet its design requirements. Failure of one of the valves in each pair to meet its acceptance criteria specified in the surveillance procedure OSP-RCIC/IST-Q702 will not affect RCIC system operability.

NOTE N08

Per ISTC-1200, Category B safety and relief valves are excluded from the requirements of ISTC-3700, Valve Position Verification and ISTC-3500, Valve Testing Requirements.

NOTE N09

These relief valves have been installed for thermal relief application. Their only overpressure protection function is to protect the applicable ECCS system from fluid expansion caused by changes in fluid temperature. Per calculation 5.19.15, these valves are installed for thermal relief, i.e. requiring flows of 1 gpm or less.

HPCS-RV-14, HPCS-RV-35
LPCS-RV-18, LPCS-RV-31
RCIC-RV-3, RCIC-RV-17
RHR-RV-5, RHR-RV-25A/B/C, RHR-RV-30, RHR-RV-88A/B/C

NOTE N10

Affected Valves	Class	Cat.	Function	System(s)
RCIC-V-2	2	B	RCIC Turbine Governor Valve	Reactor Core Isolation Cooling

This valve is skid mounted and regulates steam flow to the RCIC Turbine. Proper operation of the valve is verified during quarterly pump test per surveillance procedure OSP-RCIC/IST-Q701.

NOTE N11

The following solenoid operated H2O2 monitoring isolation valves per FSAR Table 6.2.16 must remain open during normal operation, shutdown and post LOCA accidents. Therefore these valves perform no active safety function and are classified as "B passive". Only test requirements for these valves per OM Code Subsection ISTC is 2 year VPI. Valves will be stroke timed at the Owner's discretion.

PI-VX-262, PI-VX-263, PI-VX-264, PI-VX-265, PI-VX-266, PI-VX-268 and PI-VX-269.

NOTE N12

These containment atmosphere and suppression pool instrument line EFCVs have been deleted from the Technical Specifications testing requirements and are now tested per FSAR Section 6.2.4.4 (Reference: Technical Specification SR 3.6.1.3.8 Amendment #170, GI2-01-017, February 20, 2001.) These valves have no active safety function and are included in the IST program at Owner's discretion and will be periodically tested per FSAR Section 6.2.4.4.

NOTE N13

CAC system has been deactivated per PDC 3539. The primary containment penetration lines have been isolated from the CAC skids by closing the isolation valves. The breakers have been opened and the control fuses removed. The inboard motor operated containment isolation valves have been chained and locked closed. Outboard hydraulically operated containment isolation valves have been de-energized. Valve position indications have also been de-energized. PDC 3539 is consistent with the Safety Evaluation Report (SER) for Columbia Generating Station License Amendment 189/GI2-05-033, issued March 03,2005.

5.5 Records and Reports of Valves

Records and reports pertaining to valves in the Program will be maintained in accordance with OM Subsection ISTC-9000. The files will contain the following:

1. Valve records will be maintained in accordance with Paragraph ISTC-9100.

2. Inservice test plans include valve surveillance test procedures. The inservice testing records for valves in the Program will be maintained in accordance with Paragraph ISTC-9200.

3. Records of tests for valves in the Program will be maintained in accordance with Paragraph ISTC-9120. Completed surveillance test procedures are retained per Plant administrative procedures.

4. Records of corrective actions for valves in the Program will be maintained in accordance with Paragraph ISTC-9130. Corrective actions are documented on WOs and/or CRs.

Records and reports pertaining to pressure relief devices in the Program will also be maintained in accordance with OM Code Mandatory Appendix I, Paragraph I-5000 requirements.

The Valve Inservice Test Program, associated surveillance test procedures and results, and corrective actions are retained per Plant Administrative Procedures.

SAMPLE VALVE STROKE DATA SHEET

VALVE EPN	# OPENING TIME IN SECONDS					# CLOSING TIME IN SECONDS				
	Ref. Value	Alert Lo (+1)(+2)	Measured Value	Alert Hi (+1)(+2)	Action Hi (+1)(+2)	Ref. Value	Alert Lo (+1)(+2)	Measured Value	Alert Hi (+1)(+2)	Action Hi (+1)(+2)
RHR-V-4A †	111	94		128	144	109	93		125	142
RHR-V-6A †	102	87		117	133	100	85		115	130
RHR-V-3A †	106	90		122	138	105	89		121	137
RHR-V-48A †	86	73		99	112	85	72		98	111
RHR-FCV-64A †	13	11		15	17 (+5)	13	11		15	17 (+5)
RHR-V-27A †	29	25		33	38	29	25		33	36 $ (+3)
RHR-V-84A/85A	N/A	N/A		N/A	N/A	N/A	N/A		N/A	Not Closed (+4)
RHR-V-31A	N/A	N/A		N/A	Not Open	N/A	N/A		N/A	Not Closed
RHR-V-24A †	88	75		101	114	86	73		99	112 (+6)
RHR-V-60A	N/A	N/A		N/A	N/A	N/A	N/A		N/A	2
RHR-V-75A	N/A	N/A		N/A	N/A	N/A	N/A		N/A	2
RHR-V-73A †	10 (+7)	N/A		N/A	N/A	10	8		13	15
RHR-V-503	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	Not Closed

\# (+1) For measured values beyond the Alert Value or Action Value refer to Precaution and Limitations 4.5 or 4.6, respectively.

(+2) When comparing measured values to Alert and Action limits round all measured Stroke Times to the nearest second. Use standard rounding techniques, e.g., 10.49 rounds to 10 and 10.5 rounds to 11 seconds.

(+3) Limiting stroke time per LCS.

\# (+4) If the valves are found not closed, repair or replace both valves RHR-V-84A and RHR-V-85A.

(+5) Use listed stroke time as limiting even though a higher limit is specified in RHR system design specification data sheet, CVI 02E12-03,6

(+6) Use listed stroke time as limiting even though a higher limit is specified in Licensee Control Specifications.

(+7) Measure until motion stops (GT 95%) as indicated on RHR-POI-608A.

† Motor operated valve

SAMPLE TWO year VPI VERIFICATION AND CHANNEL CALIBRATION DATA SHEET

Valve No.	Valve Condition Inspected	# Verified Open				# Verified Closed				Valve Operation	
		Local Indication		Remote Indication		Remote Indication		Local Indication			
		Initial	As Found	Sat	Unsat	Sat	Unsat	Initial	As Found		
	7.3.1	7.3.2	7.3.3	7.3.4	7.3.4	7.3.4	7.3.4	7.3.2	7.3.3	7.3.5	7.3.7
RHR-V-4A #(+1)											
RHR-V-6A											
RHR-V-3A											
RHR-V-48A											
RHR-FCV-64A #(+1)											
RHR-V-27A #(+1)											
RHR-V-24A #(+1)											
RHR-V-73A #(+1)											

(+1) These valves require channel calibration in addition to two year VPI. VPI verification satisfies both requirements.

5.6 Technical Positions

Technical Position - TV01

Title

Limiting Values of Full-stroke Times for Power Operated Valves

Issue Discussion

OM Code subsection ISTC requires that an initial reference value be established for each valve or group of valves. The acceptance criteria is a percentage ± of the reference value. Subsection ISTC recognizes that operating characteristics of electric motor operated valves are more consistent than those of other power operated valves.

Subsection ISTC specifies stroke time acceptance criteria in Paragraphs ISTC-5122, ISTC-5132, ISTC-5142 and ISTC-5152. The limiting values of stroke time testing are to be established by the Owner according to Paragraphs ISTC-5121, ISTC-5131, ISTC-5141 and ISTC-5151.

Position

The following criteria shall be used to establish Acceptance Criteria and Limiting Value ranges for power operated valves:

Type	Acceptance Criteria (Alert)	Limiting Value (Action)
MOVs ≤ 10 seconds	± .25 Tref*	1.50 Tref**
MOVs > 10 seconds	± .15 Tref	1.30 Tref
SOVs/AOVs/HOVs ≤ 10 seconds	± .50 Tref	2.00 Tref
SOVs/AOVs/HOVs > 10 seconds	± .25 Tref	1.50 Tref

* or ± a 1.0 second change in stroke time, whichever is greater when compared to the Reference value

** or ± a 1.0 second change in stroke time, whichever is greater when compared to the Alert Hi value

Technical Position -- **TV01** (Contd.)

NOTES:

1. Tref is the reference or average stroke value in seconds for an individual valve or valve grouping.

2. Standard rounding techniques are used when rounding measured stroke times during valve stroke timing (e.g., 10.49 rounds to 10 and 10.5 is rounded to 11 seconds). Measured stroke times are rounded to the nearest second when comparing measured values to Acceptance Criteria and Limiting value.

3. When establishing new reference values by taking the average of previous values, use measured values without rounding off. The new reference values will then be rounded off to the nearest second.

4. The Acceptance Criteria and the Limiting Value will be rounded off to the nearest second.

5. When reference stroke values or average stroke values are affected by other parameters or conditions, then these parameters or conditions must be analyzed and the above factors adjusted.

6. If the above calculated values exceed a TS (Technical Specification), FSAR value or other design basis limit, then the TS, FSAR or design basis value must be used for the limiting value of full-stroke.

7. Valves with stroke times of less than 2 seconds are exempt from the above acceptance criteria, if the maximum limiting valve stroke time is set at 2 seconds (ISTC-5122(c), ISTC-5132(c), ISTC-5142(c) and ISTC-5152(c)).

   Standard rounding techniques will be used when rounding off readings during stroke timing (e.g., 2.49 seconds rounds to 2 and 2.5 rounds to 3 seconds). Specific valves with normal stroke times less than 2 seconds will be identified as "Fast Acting Valves" and will be considered acceptable if the measured stroke time (rounded to the nearest second) remains at 2 seconds or less. Corrective action will be required when a "Fast Acting Valve" rounded stroke time is 3 seconds or greater.

8. Per OM Code ((ISTC-5121(c), ISTC-5131(c), ISTC-5141(c) and ISTC-5151(c))), stroke times shall be measured to at least the nearest second. Thus rounding technique for measurements and reference values meets the Code requirements

9. When valve stroke time measuring techniques other than stop watches provide more precise measurements, rounding technique will not be used.

Technical Position -- TV02

Title

Seat Leakage Testing per 10 CFR 50, Appendix J, Option B

Issue Discussion

Category A containment isolation valves are to be tested as required by OM Code, ISTC-3620 in accordance with 10 CFR 50, Appendix J, Option B program. Containment isolation valves with a leakage requirement based on other functions shall be tested in accordance with ISTC-3630. Examples of these other functions are reactor coolant system pressure isolation valves and certain Owner-defined system functions such as inventory preservation, system protection, or flooding protection.

Position

Category A containment isolation valves are tested in accordance with 10 CFR 50, Appendix J, as approved by the NRC in WNP-2 Safety Evaluation Reports. Certain exceptions to Appendix J testing requirements are detailed in the Columbia Generating Station FSAR and Technical Specifications where the associated basis is documented.

All PIVs are tested per Technical Specification SR 3.4.6.1. These valves are reactor coolant pressure boundary pressure isolation valves and are hydraulically leak tested at Reactor Coolant System pressure of 1035 psig during refueling outages in lieu of a type C test. Per technical specification, the actual test pressure shall be greater than or equal to 935 psig. Maximum allowable leakage rate for these valves as specified in Paragraph ISTC-3630(e) shall be less than or equal to 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at function differential pressure. When leakage rates are measured using pressures lower than function maximum pressure differential, the observed leakage shall be adjusted to the function maximum differential value in accordance with the formula in Paragraph ISTC-3630(b)(4). Valves or valve combination with leakage rates exceeding the value specified by the Owner per ISTC-3630(e) shall be declared inoperable and either repaired or replaced. A retest demonstrating acceptable operation shall be performed following any corrective action before the valve is returned to service. During refueling outages valves exceeding specified leakage limits are declared inoperable for containment isolation function but considered operable for system operability during Mode 4 and 5. Valves are repaired or replaced before Plant startup.

Technical Position -- **TV03**

Title

Inservice Performance Testing of Pressure Relief Valves

Issue Discussion

Subsection ISTC-5240 requires testing of safety and relief valves in accordance with mandatory Appendix I.

Position

The following clarifications will be used when implementing testing requirements for safety and relief valves.

- Replacement valve (I-2000): New valves not previously used at Columbia Generating Station.
- Spare class 1 Main Steam relief valves, which have been set-pressure tested after repair and refurbishment prior to new 10 year interval implementation date, in accordance with the Code in effect for 2nd 10 year interval, will not be retested prior to installation in the Plant provided they were tested LT 5 years before installation. These valves will be considered operable based on this previous test. Next test for these valves shall occur before 5 years from the previous test.
- Testing of valve accessories is not dependent on operating conditions and will be performed at normal ambient condition (I-1120(a)).
- Test sequence in Paragraph I-3310 is not applicable for refurbishments.
- Reduced system pressure for valve actuation includes zero pressure (Paragraph I-3410(d)).
- Each installed class 1 pressure relief valve shall be As Found tested at least once every 5 years. The test interval for any installed valve shall not exceed 5 years. When As Found test requirements have been satisfied for a given 24 month or 5 year test interval, additional valves removed for maintenance do not require As Found set-pressure testing prior to disassembly for maintenance.

Technical Position -- TV04

Title

Inservice Testing of Vacuum Relief Valves, suppression chamber-to-drywell vacuum breakers (CVB Valves)

Issue Discussion

Per OM Code Subsection ISTC-5230, vacuum breakers shall meet the applicable inservice test requirements of ISTC-5220 and Mandatory Appendix I.

OM Code, Mandatory Appendix I, Paragraph I-3370 specifies the following testing requirements for Class 2 and 3 vacuum relief valves:

(a) The valves shall be actuated to verify open and close capability, set pressure, and performance of any pressure and position sensing accessories.

(b) Compliance with the Owner's seat tightness criteria shall be determined.

Per Paragraph I-1380, all Class 2 and 3 vacuum relief valves shall be tested every 2 years, unless performance data suggests the need for a more appropriate test interval.

Position

At Columbia Generating Station these vacuum relief valves are operability tested in accordance with Technical Specification 3.6.1.7. Technical Specification testing detailed below meets or exceeds the testing requirements of ISTC-5220 and Mandatory Appendix I. As such these valves will continue to be tested in accordance with the Columbia Generating Station Technical Specifications. Leakage testing of these valves is performed by conducting a drywell-to-suppression chamber bypass leak test (Relief Request RV01). These testing requirements will also apply to replacement and refurbished valves, as applicable.

SURVEILLANCE REQUIREMENTS:

1. SR 3.6.1.7.1, verify each vacuum breaker is closed every 14 days.

2. SR 3.6.1.7.2, perform a functional test of each required vacuum breaker every 31 days and within 12 hours after any discharge of steam to the suppression chamber from the safety/relief valves.

3. SR 3.6.1.7.3, verify the full open setpoint of each required vacuum breaker is less than or equal to 0.5 psid every 24 months.

Position indicators are verified operable during the performance of above surveillances.

Technical Position -- TV05

Title

Inservice Testing of Vacuum Relief Valves, Main Steam vacuum breaker valves (MS 37 and 38 Series)

Issue Discussion

Per OM Code Subsection ISTC-5230, vacuum breakers shall meet the applicable inservice test requirements of ISTC-5220 and Mandatory Appendix I.

OM Code, Mandatory Appendix I, Paragraph I-3370 specifies the following testing requirements for Class 2 and 3 vacuum relief valves:

(a) The valves shall be actuated to verify open and close capability, set pressure, and performance of any pressure and position sensing accessories.

(b) Compliance with the Owner's seat tightness criteria shall be determined.

Per Paragraph I-1380, all Class 2 and 3 vacuum relief valves shall be tested every 2 years, unless performance data suggests the need for a more appropriate test interval.

Position

The vacuum breaker system allows MSRV downcomer pressure to equalize with drywell pressure as downcomer steam is condensed in the suppression pool. These valves have no defined leakage (seat tightness) criteria for their specified normal set pressure (seating force) range. Short duration steam leakage into the drywell is not desirable, but such leakage does not pose a challenge to containment function or integrity. These valves also have no pressure and position sensing accessories. Thus, operability test requirements per Appendix I are to verify valve open and close capability and set pressure determination. The safety function of these valves is to open only. This testing is performed every refueling outage (ROJ07). These testing requirements meet the testing requirements of ISTC-5220 and Mandatory Appendix I. These testing requirements will also apply to replacement and refurbished valves, as applicable.

5.7 Cold Shutdown Justifications

ISTC-3510 states that all Active category A, category B, and category C check valves shall be tested nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222.

ISTC-3521 states that category A and B valves shall be full-stroke tested or exercised during operation at power to the position(s) required to fulfill its function(s). If full-stroke exercising during operation at power is not practicable, it may be limited to part-stroke during operation at power and full-stroke during cold shutdowns. Valves full-stroke exercised at cold shutdowns shall be exercised during each cold shutdown, except as specified in ISTC-3521(g). Such exercise is not required if the time period since the previous full-stroke exercise is less than 3 months. During extended shutdowns, valves that are required to perform their intended function shall be exercised every 3 months, if practicable.

ISTC-3522 states that category C check valves shall be exercised during operation at power in a manner that verifies obturator travel by using the methods in ISTC-5221. If exercising is not practicable during operation at power, it shall be performed during cold shutdowns. Valves exercised at cold shutdowns shall be exercised during each cold shutdown, except as specified in ISTC-3522(e). Such exercise is not required if the interval since the previous exercise is less than 3 months. During extended shutdowns, valves that are required to perform their intended function shall be exercised every 3 months, if practicable.

Valve exercising during cold shutdown shall commence within 48 hours of achieving cold shutdown and continue until all testing is complete or the plant is ready to return to operation at power. For extended outages, testing need not be commenced in 48 hour provided all valves required to be tested during cold shutdown will be tested before or as part of plant startup. However, it is not the intent of the Code to keep the plant in cold shutdown to complete cold shutdown testing.

All valves tested during cold shutdown outages shall also be tested before startup from refueling outages, unless testing has been completed within the previous 3 months. If an outage lasts beyond 3 months, all cold shutdown testing shall be completed within the last 3 months of the shutdown.

Cold shutdown valves are tested in groups by several different procedures. The decision whether to start cold shutdown testing on any particular procedure will depend on the estimated length of the cold shutdown period; system outages/conditions; time interval from the last cold shutdown testing; or other particular conditions.

The following valves are identified as being impracticable to exercise during Plant operations and will therefore be exercised during cold shutdowns. All of these valves will be tested during each refueling outage. The valves are identified by unique valve numbers and Code identification as to Code Class and Valve Category.

Cold Shutdown Justification -- **CSJ01**

Description

It is not practicable to full or partial stroke exercise open the following RHR valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
RHR-V-23	1	A	RHR supply to vessel head spray	Residual Heat Removal
RHR-V-53A, B	1	A	Loop A, B outboard isolation valve for shutdown cooling return	

Justification

Valves are interlocked with reactor coolant system pressure such that valves automatically close to protect the RHR pump discharge line from elevated reactor coolant system pressures. Opening circuit is disabled by the same pressure interlocks. Opening these valves during plant operation or bypassing the interlocks associated with the reactor coolant systems could result in over pressurization of the discharge line of the RHR system and may cause the loss of shutdown RHR cooling capability. Interlocks cannot be bypassed with normal control circuits.

In addition as stated in NUREG 1482 Rev1 Sections 3.1.1(2) and (3), all valves when cycled that could either result in a loss of containment integrity or could subject a system to pressures in excess of their design pressures, would be acceptable to test only during cold shutdown outages.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- **CSJ02**

Description

It is not practicable to full or partial stroke exercise the following RFW valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
RFW-V-65A, B	1	A	Reactor feedwater isolation valves	Reactor Feedwater

Justification

Closure of either of these Category A valves during normal plant operation would isolate the feed water to the reactor and would result in a loss of flow to the reactor vessel. This could cause a significant reduction of reactor coolant inventory and potentially cause several of the safety systems to initiate.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- CSJ03

Description

It is not practicable to full or partial stroke exercise the following CIA valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
CIA-V-30A, B	2	A	Nitrogen supply to ADS accumulators (outboard CIV)	Containment Instrument Air
CIA-V-20	2	A	Instrument air supply to inboard MSIVs and MSRVs (outboard CIV)	

Justification

1. Testing CIA-V-30A and 30B at power requires securing the safety related nitrogen supply to the ADS valve accumulators. Thus closing these valves renders ADS MSRVs inoperable. This is operationally undesirable to do while the Plant is operating.

2. Testing CIA-V-20 at power isolates instrument supply air from the inboard MSIVs. Excessive system leakage downstream of this valve can result in closure of inboard MSIVs and Plant SCRAM. Monitoring downstream header pressure during valve closure requires installation of a local test gauge in a high radiation area. Reduced exercising frequency is also justified by ALARA.

3. In addition as stated in NUREG 1482 Rev1 Sections 3.1.1(2), all valves when cycled that could either result in a loss of containment integrity, would be acceptable to test only during cold shutdown outages.

   The risks associated with challenging these protective systems during power operations is not considered prudent, and therefore alternative cold shutdown testing frequency is warranted.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- CSJ04

(INACTIVE- FOR CHECK VALVES CIA-41A & 41B TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to full or partial stroke exercise category B CIA valves during normal Plant operation, nor full stroke exercise category C CIA valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
CIA-V-39A, B	3	B	These valves cross connect the normal nitrogen supply for the Main Steam Isolation Valves and Main Steam Relief Valves (including the 7 ADS Valves) accumulators to the backup nitrogen supply for the 7 ADS valves.	Containment Instrument Air
CIA-V-41A, B	3	C		

Justification

Testing these valves requires securing the backup nitrogen supply to the ADS valve accumulators. Isolating the backup nitrogen supply to the ADS and/or MSIVs during normal power operations is undesirable to do while the Plant is operating at power.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- **CSJ05**

Description

It is not practicable to full or partial stroke exercise open the following RCIC valve during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
RCIC-V-13	1	A	RCIC pump discharge isolation, and containment isolation, and reactor coolant pressure isolation valve.	Reactor Core Isolation Cooling

Justification

This valve is the isolation valve from the RCIC pump discharge to the Reactor Pressure Vessel Head Spray. This Category A valve is an outboard Containment Isolation Valve as well as a Reactor Coolant Pressure Isolation Valve. Opening this valve during normal power operations increases the possibility of over pressurizing a low pressure system with the higher pressure from the Reactor system.

In addition as stated in NUREG 1482 Rev1 Sections 3.1.1(2) and (3), all valves when cycled that could either result in a loss of containment integrity or could subject a system to pressures in excess of their design pressures, would be acceptable to test only during cold shutdown outages.

Alternative Frequency

This valve will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- **CSJ06**

Description

It is not practicable to full or partial stroke exercise open the following LPCS or RHR valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
LPCS-V-5	1	A	LPCS discharge isolation to the reactor vessel.	Low Pressure Core Spray
RHR-V-42A, B, C	1	A	RHR discharge isolation to the reactor vessel.	Residual Heat Removal

Justification

The risk of injuring Plant personnel, over pressurizing the associated pump and piping, or causing an intersystem LOCA makes the opening of these valves imprudent during power operations. This cold shutdown testing is recommended by NUREG-1482, Rev 1, section 3.1.1(3).

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- **CSJ07**

Description

It is not practicable to full or partial stroke exercise the following RWCU valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
RWCU-V-1	1	A	Containment Iso., RWCU Pump Suction Iso.	Reactor Water Cleanup
RWCU-V-4	1	A	Containment Iso., RWCU Pump Suction Iso.	
RWCU-V-40	1	A	Containment Iso., RWCU Pump Discharge Iso.	

Justification

Testing these valves during power operations requires system shutdown which imposes thermal stresses on the pumps and heat exchangers, significantly increasing the potential for equipment damage. In addition as stated in NUREG 1482 Rev1 Sections 3.1.1(2) and (3), all valves when cycled that could either result in a loss of containment integrity or could subject a system to pressures in excess of their design pressures, would be acceptable to test only during cold shutdown outages.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- CSJ08

Description

It is not practicable to full or partial stroke exercise the Main Steam Isolation Valves (MSIVs) during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
MS-V-22A	1	A	Main Steam Line A Inboard Isolation Valve	Main Steam
MS-V-22B	1	A	Main Steam Line B Inboard Isolation Valve	
MS-V-22C	1	A	Main Steam Line C Inboard Isolation Valve	
MS-V-22D	1	A	Main Steam Line D Inboard Isolation Valve	
MS-V-28A	1	A	Main Steam Line A Outboard Isolation Valve	
MS-V-28B	1	A	Main Steam Line B Outboard Isolation Valve	
MS-V-28C	1	A	Main Steam Line C Outboard Isolation Valve	
MS-V-28D	1	A	Main Steam Line D Outboard Isolation Valve	

Justification

Full stroke testing each MSIV during normal reactor operation requires isolating the respective main steam line. These isolations are conducted with the Plant at reduced power, however, the evolution still results in primary system pressure spikes, reactor power fluctuations, and increased flow in the unisolated steam lines. Each of these reactor pressure transients or power excursions has the potential to induce an automatic SCRAM and actuation of the safety relief valves. The risks of challenging these protective systems during power operations could result in a reactor trip or safety system actuation and is therefore not considered prudent. The MSIVs will be full stroked exercised during cold shutdown outages when the MSIVs are able to be isolated..

In addition, close stroke testing of MSIVs requires isolation of non-safety related air, which is not accessible during plant operation.

The implementation of the alternate frequency will contribute to the reduction of the relief valve challenge and failure rate as specifically recommended in NUREG-0626.

Alternative Frequency

These valves will be full stroke exercised and stroke timed during cold shutdown conditions.

Cold Shutdown Justification -- CSJ09

Description

It is not practicable to full or partial stroke exercise open the following MSLC valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
MSLC-V-2A, B, C, D	1	B	Prevent Radioactive Material Release	Main Steam Leakage Control
MSLC-V-3A, B, C, D	1	A	CIV, Prevent Radioactive Material Release	
MSLC-V-4, 5, 9, 10	2	B	Prevent Radioactive Material Release	

Justification

Testing the valves quarterly during normal Plant operation subjects the valves to operation with 1020 psi across the seat. While the valves and operators are designed for the 1020 psi differential, this results in excessive wear and tear on the valves that may affect their performance when required to operate to allow the MSLC System to operate or maintain isolation if the inboard MSIV fails to close.

The valves (MSLC-V-2A/B/C/D and MSLC-V-3A/B/C/D) perform two functions: (1) isolation during normal Plant operation and in case of failure of the inboard MSIV to close adequately for the MSLC system to operate and (2) open to allow the inboard MSLC to operate. The valves (MSLC-V-4/5/9/10) perform two functions: (1) isolation during normal Plant operation and in case of failure of the outboard MSIV to close adequately for the MSLC system to operate; and (2) open to allow the outboard MSLC to operate. Since the valves are normally in the closed position during Plant operation and will be required to open or close with only 38 psi across them in case of an accident, the potential of having to shut the Plant down if they don't seat after a test, and subjecting the valve to severe duty compared to what it normally operates against, is not considered prudent.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- CSJ10

Description

It is not practicable to full or partial stroke exercise the following MS valve during normal Plant operation.

Plant Affected Valves	Class	Cat.	Function	System(s)
MS-V-146	2	B	Isolation Valve, Main Steam Supply to Auxiliary Equipment	Main Steam

Justification

This valve is normally open at power. Closing this valve at power would isolate steam from the following equipment.

1. Reactor Feed Water Pumps and result in loss of RPV level and a reactor scram.

2. Main Steam Bypass Valves and result in equipment inoperability.

3. Main Steam Air Ejectors and result in loss of Main Condenser vacuum.

Closing this valve at normal power operations would result in the isolation of steam to the equipment as listed above and could result in the initiation of safety systems or equipment.

Alternative Frequency

This valve will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- **CSJ11**

Description

It is not practicable to full or partial stroke exercise open the following MS valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
MS-V-67A, B, C, D	1	A	Outboard MSIV drain valve (MS-V-28A, B, C, D)	Main Steam

Justification

These Category A valves are normally closed during power operation.

1. Failure of these valves in a non-conservative position (open) during the surveillance testing at normal Plant operation could result in an unacceptable iodine release in the event of an accident, e.g., 26″ main steam line break.

2. Failure to close during surveillance testing could result in a loss of containment integrity, because the inboard MSIV is open during normal Plant operation. (NUREG-1482 Rev 1 Section 3.1.1(2)).

3. Cycling of these valves during normal Plant operation could increase the fatigue usage of the superpipe between the MSIV and the MS-V-67 valve above acceptable limits, i.e., Usage > 0.1.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- **CSJ12**

Description

It is not practicable to full or partial stroke exercise open the following RHR valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
RHR-V-16A, B	2	A	Drywell Spray Header (2nd outboard CIV)	Residual Heat Removal
RHR-V-17A, B	2	A	Drywell Spray Header (1st outboard CIV)	

Justification

These Category A valves are normally closed during power operation:

1. Valve exercising during power operation increases the possibility that a containment boundary valve will not be fully closed, thus resulting in loss of containment integrity.

2. These valves are located in relatively high radiation areas and require operators to attach test hoses to supplement the testing of these valves. Reduced exercising frequency is justified by ALARA.

3. Each time these valves are exercised, there is a risk of spraying/wetting down safety related equipment in the drywell (Ref. OER 82083F-INPO SER 41-85, Containment Spraying Events, OER 89040I-7, INPO RSEN 91-01 Recurring Significant Events).

4. During exercising of outboard valves, piping between the valves is filled and pressurized. Inadequate filling of piping before exercising the outboard valve can result in water hammer damage to the RHR system.

5. In addition as stated in NUREG 1482 Revision 1 Sections 3.1.1(1) and (2) all valves that when cycled could either cause a loss of system function if they were to fail in a non-conservative position or could result in a loss of containment integrity during the cycling test, would be acceptable to test only during cold shutdown outages.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

Cold Shutdown Justification -- CSJ13

Description

It is not practicable to full or partial stroke exercise open the following Main Steam valves during normal Plant operation.

Affected Valves	Class	Cat.	Function	System(s)
MS-V-16	1	A	Containment Isolation	Main Steam
MS-V-19	1	A	Containment Isolation	

Justification

1. These valves are normally closed above 5% power operation.

2. Valve exercising during power operation increases the possibility that a containment boundary valve will not be fully closed, thus resulting in loss of containment integrity.

3. Cycling these valves during power operation produces severe thermal cycles and stress on the drain line piping (reference calculation ME-02-94-37). Each thermal cycle is an unnecessary challenge to piping integrity and Plant safety overall.

4. Valves are inaccessible during power operation. MS-V-16 is inside primary containment and MS-V-19 is in the steam tunnel.

5. In addition as stated in NUREG 1482 Revision 1 Sections 3.1.1(1) and (2) all valves that when cycled could either cause a loss of system function if they were to fail in a non-conservative position or could result in a loss of containment integrity during the cycling test, would be acceptable to test only during cold shutdown outages.

Alternative Frequency

These valves will be full stroke exercised during cold shutdown.

5.8 Refueling Outage Justifications

ISTC-3510 states that all Active category A, category B, and category C check valves shall be tested nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222.

ISTC-3521 states that category A and B valves shall be full-stroke tested or exercised during operation at power to the position(s) required to fulfill its function(s). If exercising is not practicable during operation at power or cold shutdowns, it may be limited to full-stroke during refueling outages.

ISTC-3522 states that category C check valves shall be exercised during operation at power in a manner that verifies obturator travel by using the methods in ISTC-5221. If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

All valve testing required to be performed during a refueling outage shall be completed before returning the plant to operation at power.

The following valves are identified as being impractical to exercise during Plant operations and cold shutdowns and will therefore be full-stroke exercised during refueling outages. The valves are identified by unique valve numbers and Code identification as to Code Class and Valve Category.

Refueling Outage Justification -- **ROJ01**

(INACTIVE- CHECK VALVES TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to exercise the following SLC check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
SLC-V-6	1	C	Standby Liquid Control discharge to reactor vessel	Standby Liquid Control
SLC-V-7	1	AC		

Justification

1. Valves have no operator with which they may be stroked and are located in the primary containment.

2. Exercising the valves require the initiation of the SLC system and full flow injection into the reactor vessel. Initiation of SLC flow involves the discharge of Category D explosively activated valves. This involves destroying the valve and is an impractical evolution to perform during reactor operation or cold shutdowns since it could result in the addition of chemical poison to the reactor vessel. During power operation, the injection of chemical poison would necessitate shutting down the reactor. Poison injection during cold shutdown would require extensive cleanup of the reactor coolant to remove the poison. Furthermore, it would require frequent replacement of the explosive charges in the explosively activated valves, which is costly and burdensome. Paragraph ISTC-5260(c) requires testing of one explosive charge every 2 years.

3. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing. (Applies to SLC-V-7).

4. These valves are not frequently cycled and should not experience a high rate of degradation associated with cycling, such as hinge or seating surface wear.

Alternative Frequency

During each refueling outage:

1. One of the Standby Liquid Control system loops, including the associated explosive valve, will be initiated. A flow path to the Reactor Vessel will be verified by pumping demineralized water to the vessel, this verifies valve opening.

2. Valve closure capability will be verified in conjunction with 10 CFR 50 Appendix J (Type C) testing or by other positive means.

Refueling Outage Justification -- **ROJ02**

(INACTIVE- FOR CHECK VALVES CIA-V-21, 31A & 31B TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to exercise the following CIA check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
CIA-V-21	2	AC	Instrument air supply to containment (inside containment)	Containment Instrument Air
CIA-V-31A,B	2	AC	Instrument air supply to ADS valves (inside containment)	
CIA-V-40M,N,P, R,S,U,V	2	AC	Instrument air to ADS Accumulators (inside containment)	
CIA-V-24A,B,C,D	2	AC	Instrument air to Accumulators for inboard MSIVs (inside containment)	
CAS-V-29A,B,C,D	3	AC	Control air to Accumulators for outboard MSIVs (inside steam tunnel)	

Justification

1. NUREG-1482 Rev 1, Section 4.1.6 allows extension of test interval to refueling outage for check valves verified closed by leak testing. (Applies to CIA-V-21, 31A and 31B.)

2. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing. (Applies to CIA-V-24 Series and CIA-V-40 Series.)

   The CIA-V-24 and CIA-V-40 Series check valves are located inside the containment and are inaccessible during power operations and during cold shutdowns when the containment is inerted. There is no way to remotely isolate the valves and observe the pressure decay of the accumulators.

3. There is no local or remote position indication for these check valves. These valves can be verified closed only by performing a leak-rate test. This requires reconfiguring the system, hook-up and disconnection of leak test apparatus. (Applies to all referenced valves.)

Refueling Outage Justification -- ROJ02 (Contd.)

(INACTIVE- FOR CHECK VALVES CIA-V-21, 31A & 31B TESTED I.A.W. CONDITION MONITORING PLAN)

4. Due to system design, no practical method exists to perform this testing during power operations and during cold shutdowns when the containment is inerted. (Applies to all referenced valves.)

   The CAS-V-29 Series check valves are located in an area inaccessible during power operation, but accessible during cold shutdown conditions with containment inerted. The testing requires disassembly of mechanical connections which challenges the integrity/functionality of the system. The testing also requires the depressurization of the Reactor Building Service Air header. The risk of inducing a system fault due to disassembly and reassembly of system parts is increased with the frequency of occurrence and thus renders this approach impractical for a cold shutdown test frequency. In this case, the increased risk of system malfunction due to testing exceeds the benefit of testing these check valves on a cold shutdown test frequency.

5. Each time an MSIV is exercised, the corresponding accumulator check valve is exercised. This testing effectively demonstrates there is no blockage in the air supply lines to the MSIV, but does not effectively demonstrate check valve closure and hence does not effectively detect a stuck open check valve. [Applies to CIA-V-24 Series and CAS-V-29 Series.]

Alternative Frequency

During each refueling outage:

1. Pressure decay or flow make up leakage tests will be performed on the accumulators in order to verify closure of CAS-V-29 Series, CIA-V-24 and 40 Series check valves and opening ability of CIA-V-21, 31A and 31B.

2. Closure of CIA-V-21, 31A, and 31B will be verified by normal 10 CFR 50, Appendix J (Type C) testing.

Refueling Outage Justification -- ROJ03

(INACTIVE- CHECK VALVE TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to exercise the following RHR check valve during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RHR-V-209	1	AC	Containment isolation and Reactor Coolant System Pressure Boundary and pressure relief for piping between valves RHR-V-8 and 9.	Residual Heat Removal

Justification

1. This check valve is located inside the containment and does not have valve position indication or an operator of any type. It cannot be tested without interrupting RHR shutdown cooling flow. During power operations, access is prohibited. During cold shutdown conditions, RHR cannot be out of service more than 2 hours per an 8 hour interval (per Columbia Generating Station Technical Specification 3.4.10). Additionally, containment may not be de-inerted during all cold shutdowns.

2. This valve is normally closed and is verified to be adequately seated by leak tests during each refueling outage. This valve performs the passive safety functions of containment isolation and reactor coolant system pressure isolation. Its active function of relieving pressure between valves RHR-V-8 and RHR-V-9 is a very unlikely situation and could only occur during time periods where both RHR-V-8 and 9 are shut and containment temperature is significantly above normal (i.e., LOCA condition). The proposed alternate testing avoids extraordinary testing efforts.

3. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing.

Alternative Frequency

This check valve will be exercised during each refueling outage.

Refueling Outage Justification -- **ROJ04**

(INACTIVE- CHECK VALVES TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to exercise the following check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
PI-V-X72f/1	2	AC	Containment Isolation	Process Instrumentation
PI-V-X73e/1	2	AC	Containment Isolation	
TIP-V-6	2	AC	Containment Isolation	Traversing Incore Probe

Justification

1. These check valves are located on the discharge of the radiation leak detection monitors and on the purge system for the TIP. These containment isolation valves are located inside the containment and are inaccessible during power operation and during cold shutdowns when the containment is inerted. Therefore, it is impractical to test these check valves quarterly during power operations or during cold shutdowns when containment remains inerted.

2. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing.

Alternative Frequency

These valves will be exercised during each refueling outage.

Refueling Outage Justification -- **ROJ05**

(INACTIVE- CHECK VALVE TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to exercise the following RCC check valve during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RCC-V-219	2	AC	Pressure relief around RCC-V-40 check	Reactor Closed Cooling Water

Justification

1. This check valve is located around the inboard isolation valve on the RCC return line. The valve is located inside containment and is inaccessible during power operation and during cold shutdowns when the containment is inerted. Therefore, it is impractical to test this check valve quarterly during power operations or during cold shutdowns when containment remains inerted.

2. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing.

Alternative Frequency

This check valve will be exercised during each refueling outage.

Refueling Outage Justification -- **ROJ06**

It is not practicable to exercise the following RFW check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RFW-V-10A, B	1	AC	Reactor feedwater inboard check valve	Reactor Feedwater
RFW-V-32A, B	1	AC	Reactor feedwater outboard check valve	

Justification

1. NUREG-1482 Rev 1, Section 4.1.6, allows extension of test interval to refueling outage for check valves verified closed by leak testing.

2. There is no local or remote position indication for these check valves. These valves can be verified closed only by performing a leak-rate test. This requires reconfiguring the system, hook-up and disconnection of leak test apparatus.

3. These valves are held open by feedwater flow and cannot be closed during power operation.

Alternative Frequency

These valves will be verified close by leak-rate testing during each refueling outage. These valves are open during the plant operation to supply water to the reactor.

Refueling Outage Justification -- ROJ07

Description

It is not practicable to exercise the following MS check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
MS-V-37 Series (Typ 18)	3	C	Open: To break vacuum in the downcomers of the main steam relief valves. Close: To direct steam to the quenchers in the wetwell.	Main Steam
MS-V-38 Series (Typ 18)	3	C		

Justification

1. The vacuum breaker system allows MSRV downcomer pressure to equalize with drywell pressure as downcomer steam is condensed in the suppression pool. The 36 normally closed check valves (2 on each downcomer) are not equipped with an external means of actuation for exercising the valve. Testing these valves is impractical with the reactor operating or the containment inerted as this testing requires personnel entry into the containment building.

2. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing.

Alternative Frequency

These valves will be exercised when the reactor is shutdown and the containment de-inerted during each refueling outage. Breakaway force required to move the valve disc off its seat is measured. The valves are also manually operated and visually verified to open and reseat. The safety function of these valves is to open only.

Refueling Outage Justification -- **ROJ08**

Description

It is not practicable to exercise the following check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RCIC-V-66	1	AC	RCIC discharge to the reactor vessel head	Reactor Core Isolation Cooling
RCIC-V-65	1	C	RCIC discharge to the reactor vessel head	Reactor Core Isolation Cooling
LPCS-V-6	1	AC	LPCS discharge to the reactor vessel	Low Pressure Core Spray
HPCS-V-5	1	AC	HPCS Discharge to the reactor vessel	High Pressure Core Spray
RHR-V-41A, B, C	1	AC	RHR Loop A, B, C discharge to the reactor vessel	Residual Heat Removal
RHR-V-50A, B	1	AC	RHR Loop A, B discharge to the recirculating pump discharge	Residual Heat Removal

Justification

1. These valves (except RCIC-V-65) function as Reactor Coolant System Pressure Boundary Isolation valves. This requires the check valve disc to properly seat and achieve a relatively leak-tight seal. Technical Specification SR 3.4.6.1 requires seat leakage testing of these valves at IST program frequency. Each pressure isolation valve is individually leak tested in accordance with the differential pressure requirements of the Code. Seat leakage as a method of showing valve closure testing is labor and dose intensive and as such impractical to perform during each cold shutdown and should be tested during refueling outages only.

2. These check valves have exhibited excellent leak-tight integrity since commercial operation.

3. Due to lack of position indications (except RCIC-V-65), the other positive means of verifying these valves fully open is by passing the required accident condition flow through these valves. This is an acceptable full-stroke per position 1 of Attachment 1 of Generic Letter 89-04. Position indication of RCIC-V-65 is not reliable.

4. With flow rates on the order of 7500 gpm (ECCS), vessel level rises at a rate of 38 inches per minute. Operating ranges for RPV level provides a narrow band in which to work, making any such injection a challenge to Plant Technical Specification limits and can result in flooding of main steam lines.

5. Because of the differences in water chemistry, frequent injections of Suppression Pool water into the RPV is undesirable and can lead to additional crud accumulations in the crevices of piping nozzles, etc., thus resulting in higher dose rates in the containment.

Refueling Outage Justification -- **ROJ08** (Contd.)

6. The subject valves have been inspected internally and have exhibited no signs of wear which could affect the ability of the valves to stroke full open or closed. These check valves do not exhibit signs of back-seat tapping or hinge pin wear, nor have they shown indication that internal fastener retention methods are inadequate.

7. During normal Plant operation, these valves are normally closed and do not open.

8. NUREG-1482 Rev 1, Section 3.1.1.3 states that valves may be tested during refueling outages if they would otherwise be tested during cold shutdown outages that require the containment to be de-inerted for performance of valve testing.

9. NUREG-1482 Rev 1, Section 4.1.6 allows extension of the test interval to refueling outage for check valves verified closed by leak testing.

Alternative Frequency

During each refueling outage:

1. Closure ability of these valves (except RCIC-V-65 which does not have a closed safety function) shall be demonstrated by leakage test as required by Technical Specification SR 3.4.6.1.

2. Opening ability of these valves shall be demonstrated by passing the maximum required accident condition flow through these valves.

3. Verify closure of RCIC-V-65 based on valve position indication.

Refueling Outage Justification -- ROJ09

(INACTIVE- FOR CHECK VALVES CSP-V70 THROUGH CSP-V-79 TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to exercise the following CSP check valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
CSP-V-65	2	AC	Close: To provide isolation for safety related control air to containment isolation valves CSP-V-5, 6 and 9.	Containment Supply and Purge
CSP-V-70 through CSP-V-79	2	C	Open: To provide safety related control air to containment isolation valves CSP-V-5, 6 and 9.	

Justification

1. There is no local or remote position indication for these check valves. Testing these valves requires partial depressurization of the supply header. Although, only partial depressurization is expected, full depressurization could easily occur due to leaky boundary valves, operator error, or check valve failure. Depressurization of the supply header to CSP-V-5, 6 and 9 will cause these containment isolation valves to fail open.

2. Due to system design, no practical method exists to perform this testing during power operations or during cold shutdowns. CSP-V-65 can only be verified closed by performing a special pressure decay leak-rate test. This requires reconfiguring the system and hook-up and disconnection of leak test apparatus. This requires the system to be breached and a portion depressurized.

3. To verify CSP-V-70 through 79 open, flow from each of the 10 Nitrogen bottles and thus through each of these check valves must be demonstrated. This requires the system to be breached and the safety related supply header depressurized and would be performed in conjunction with the pressure decay test to verify closure of CSP-V-65. This testing will deplete safety related nitrogen inventory and will require replacement of depleted nitrogen bottles after the test.

4. Review of the maintenance history for CSP-V-65 reveals that no failures have been observed. Failure of CSP-V-65 to close and its effects pertaining to Probabilistic Risk Assessment core melt frequency indicates a negligible increase in containment failure frequency.

Alternative Frequency

During each refueling outage, each of these check valves will be exercised per Subsection ISTC requirements.

Refueling Outage Justification -- **ROJ10**

Description

It is not practicable to full or partial stroke exercise open the following RHR valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RHR-V-8	1	A	Isolate RHR shutdown cooling suction line from reactor recirculation loop A	Residual Heat Removal
RHR-V-9	1	A		

Justification

1. Valves are interlocked with reactor coolant system pressure such that these valves automatically close to protect the RHR pump suction line from elevated reactor coolant system pressures. Opening circuit is disabled by the same pressure interlocks. Overpressurization of the suction line may cause the loss of RHR shutdown cooling capability. Interlocks cannot be bypassed with normal control circuits.

2. Full stroke testing at cold shutdown frequency degrades the outage safety plan because the RHR shutdown cooling function is lost. RHR-V-8 and 9 should be stroked at refueling outage frequency when testing can be scheduled for minimal impact to the Plant. With shutdown cooling unavailable, it puts the Plant in the yellow band of the outage safety plan, and in a 2 hour LCO (Technical Specification 3.4.10). If tested at refueling outage frequency, the testing can be scheduled at the end of the outage when decay heat load is lowest.

3. Valves are exercised during every outage when the RHR shutdown cooling function is initiated.

Alternative Frequency

During each refueling outage, each of these valves will be exercised per Subsection ISTC requirements.

Refueling Outage Justification -- **ROJ11**

Description

It is not practicable to full or partial stroke exercise open the following RHR valves during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RHR-V-123A, B	1	A	CIV, HI-LO Pressure Isolation	Residual Heat Removal

Justification

1. These valves are normally closed with the motor operator deenergized during power operations and function as Reactor Coolant Pressure Boundary/Containment Isolation Valves. Opening the valves for the sole purpose of verifying the ability to close is not prudent, as it presents an unnecessary challenge to the containment and increases the potential for an intersystem LOCA.

2. These valves have no active safety function. The MOVs are deenergized during Modes 1, 2 or 3. Columbia Generating Station Technical Specification SR 3.6.1.3.5 requires verification of isolation time of these valves per IST Program.

Alternative Frequency

During each refueling outage, each of these valves will be exercised per ISTC Code requirements.

Refueling Outage Justification – **ROJ12**

(INACTIVE- CHECK VALVE TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to full stroke exercise the following RCIC check valve during normal Plant operation or cold shutdown.

Affected Valves	Class	Cat.	Function	System(s)
RCIC-V-30	2	C	Suppression pool to RCIC-P-1 suction check	Reactor Core Isolation Cooling

Justification

1. This check valve is located on the suction piping from suppression pool for RCIC-P-1. Normal quarterly testing of RCIC system is with suction from Condensate Storage Tank (CST) and the pump discharge to CST.

2. Section 4.1.6 of NUREG-1482 Rev 1, states the need to set up test equipment is adequate justification to defer reverse flow testing of check valves to a refueling outage frequency. This position is also stated in response to question 2.3.19 in, "Summary of Public Workshops held in NRC Regions on Inspection Procedure (IP) 73756, "Inservice Testing of Pumps and Valves", and Answers to Panel Questions on Inservice Testing issues."

3. Verifying RCIC-V-30 full open by passing the required accident flow through the check valve will require pumping suppression pool water into the CST. Because of the differences in water chemistry, frequent injections of suppression pool water into the CST is undesirable. Thus, full flow testing should be limited to refueling outages only.

Alternative Frequency

Each refueling outage, during startup after refueling the valve will be verified full open by passing the maximum required accident condition flow through the valve per procedure OSP-RCIC/IST-B501. As an alternate, Non-Intrusive Testing Technique may also be used to verify the valve full open. Valve will also be verified closed.

Refueling Outage Justification -- **ROJ13**

Description

It is not practicable to full or partial stroke exercise open the following RCC valves during normal Plant operation or cold shutdown outages.

Affected Valves	Class	Cat.	Function	System(s)
RCC-V-5	2	A	Isolation valves for reactor closed cooling water lines penetrating the primary containment.	Reactor Closed Cooling Water
RCC-V-21	2	A		
RCC-V-40	2	A		
RCC-V-104	2	A		

Justification

Closure of any isolation valve will interrupt cooling water flow to the Reactor Recirculation (RRC) Pump seals, to the RRC pump motor coolers and to the Drywell Air Coolers possibly causing failure of this equipment. Stopping the RRC Pumps for the sole purpose of performing testing of the above listed RCC valves could extend the Cold Shutdown period.

As stated in NUREG 1482 Revision 1 Section 3.1.1.4, Subsection ISTC of the OM Code allows licensees to extend the test interval to defer testing to refueling outages when it is not practical to perform the tests during power operation or cold shutdown outages. The NRC staff has determined that licensees need not schedule valve testing that requires stopping and restarting reactor coolant pumps during each cold shutdown solely to allow for the testing of such valves. This repetitive cycling would increase pump wear and stress, as well as the number of cycles of related plant equipment, and could extend the length of cold shutdown outages.

Alternative Frequency

These valves will be exercised each refueling outage.

Refueling Outage Justification -- ROJ14

(INACTIVE- FOR CHECK VALVES RRC-V-13A & 13B TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to full or partial stroke exercise the following RRC valves during normal Plant operation or cold shutdowns.

Affected Valves	Class	Cat.	Function	System(s)
RRC-V-13A,B	2	AC	Inboard and outboard isolation valves for the recirculation pumps seal purge line	Reactor Recirculation
RRC-V-16A,B	2	A		

Justification

Closure of the Category A isolation valves (RRC-V-16A/B) during power operations or cold shutdowns when the RRC pumps are operating is not permitted as this will interrupt seal purge water flow to the Reactor Recirculation (RRC) Pumps. Loss of purge flow may result in excessive seal wear and possibly failure of the pump seals, to the RRC pump.

Category AC valves (RRC-V-13A/B) are held open by purge water flow and cannot be closed during power operations or cold shutdowns when the RRC pumps are operating as this would isolate seal purge water flow to the RRC pumps and could result in excessive wear and possible failure of the seals possibly causing failure of this equipment. Stopping the RRC Pumps for the sole purpose of performing testing of the above listed RRC valves could extend the Cold Shutdown period.

As stated in NUREG 1482 Revision 1 Subsection 3.1.1.4, Subsection ISTC of the OM Code allows licensees to extend the test interval to defer testing to refueling outages when it is not practical to perform the tests during power operation or cold shutdown outages. The NRC staff has determined that licensees need not schedule valve testing that requires stopping and restarting reactor coolant pumps during each cold shutdown period solely to allow for the testing of such valves. This repetitive cycling would increase pump seal wear and stress, as well as the number of cycles of related plant equipment, and could extend the length of cold shutdown outages.

Alternative Frequency

The above listed valves will be exercised at each refueling outage.

Refueling Outage Justification -- ROJ15

(INACTIVE- FOR CHECK VALVES CIA-V-52A TO 66A, CIA-52B TO 70B, CIA-V-103A & 103B TESTED I.A.W. CONDITION MONITORING PLAN)

Description

It is not practicable to full or partial stroke exercise open the following CIA valves during normal Plant operation or cold shutdown outages.

Affected Valves	Class	Cat.	Function	System(s)
CIA-SPV-1B to 19B	3	B	CIA nitrogen bottle auto isolation valve.	Containment Instrument Air
CIA-SPV-1A to 15A	3	B		
CIA-V-52A to 66A	3	C	CIA nitrogen bottle discharge check valves.	
CIA-V-52B to 70B	3	C		
CIA-V-103A, B	3	C	CIA remote nitrogen bottle discharge check valves.	

Justification

Valve testing requires overriding valve control circuitry, isolating or expending emergency nitrogen supply tanks, and venting the system. This would inhibit the system from performing its designed safety function in case of an emergency. Performing the valve testing during normal cold shutdowns could result in the expending of emergency nitrogen tanks and depleting the supply of the emergency nitrogen system. In order to perform bi-directional testing of the check valves as required by OM Code Subsection ISTC, this would required the nitrogen supply to be depleted in order to verify forward flow thru the check valve and then isolated for reverse closure verification. As a result of the necessity to re-pressurize the emergency nitrogen due to the depletion caused by the testing of the check valves, this could result in a potential delay in startup from a cold shutdown condition.

As stated in NUREG 1482 Revision 1 Sections 3.1.1, Subsection ISTC of the OM Code allows licensees to extend the test interval to defer testing to refueling outages when it is not practical to perform the tests during power operation or cold shutdown outages. The NRC staff has determined that licensees need not schedule valve testing that requires excessive manipulation of plant equipment or other activities during each cold shutdown period solely to allow for the testing of such valves. This depletion of nitrogen supply and the requirement to resupply the nitrogen, could extend the length of cold shutdown outages.

Alternative Frequency

These valves will be full stroke exercised during refueling outages.

5.9 Relief Requests From Certain Subsection ISTC and Mandatory Appendix I Requirements

Relief Requests either provide alternative to Code requirements in accordance with 10CFR 50.55a(a)(3)(i) or relief from impractical Code requirements in accordance with 10CFR 50.55a(f)(5)(iii). They provide technical justification and propose alternate testing to be performed in lieu of the Code required testing.

Relief Request -- RV01

Relief Request
in Accordance with 10CFR 50.55a(f)(5)(iii)

-- Inservice Testing Impracticality --

ASME Code Components Affected

Affected Valves	Class	Cat.	Function	System(s)
CVB-V-1AB, CD, EF, GH, JK, LM, NP, QR, ST	2	AC	To break vacuum on the drywell to suppression chamber downcomers and to limit steam leakage from the downcomer to the wetwell gas space.	Primary Containment Cooling and Purge

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

OM Subsection ISTC-3630, Leakage Rate for Other Than Containment Isolation Valves.

Impracticality of Compliance

These check valves cannot be tested individually therefore, assigning a limiting leakage rate for each valve or valve combination is not practical..

Burden Caused by Compliance

Subsection ISTC-3630 requires Category A valves, other than containment isolation valves, to be individually leak tested. Each vacuum relief valve assembly consists of two independent testable check valves in series with no instrument located between them to allow testing of each of the two check valves. Therefore, leak testing in accordance with the Code is impractical. Modifications to allow individual testing of these valves would require a major system redesign and be burdensome.

Relief Request -- **RV01** (Contd.)

Proposed Alternative and Basis for Use

These valves will be leak tested according to Columbia Generating Station Technical Specification SR 3.6.1.1.2 during outages by conducting a drywell-to-suppression chamber bypass leak rate test. The purpose of this leak rate test is to assure that the leakage from the drywell to the suppression pool chamber does not exceed Technical Specification limits. Maintaining the pressure suppression function of primary containment requires limiting the leakage from the drywell to the suppression chamber. Thus, if an event were to occur that pressurized the drywell, the steam would be directed through the downcomers into the suppression pool. This surveillance measures drywell to suppression chamber differential pressure during a 4 hour period to ensure that the leakage paths that would bypass the suppression pool are within allowable limits. Satisfactory performance of this surveillance is achieved by establishing a known differential pressure (GE 1.5 psid) between the drywell and the suppression chamber and verifying that the bypass leakage is equivalent to that through an area GE 0.005 ft^2. The leakage test is performed every 24 months. Two consecutive test failures, however, would indicate unexpected primary containment degradation and would require increasing the frequency to once every 12 months until the situation is remedied as evidenced by passing two consecutive tests. This leakage test complies with the requirements of Paragraph ISTC-3630(c) for the valve assembly. These valves are verified-closed by position indicators, tested in the open direction using a torque wrench, and each valve seat is visually inspected per Technical Specification SR 3.6.1.7.1, SR 3.6.1.7.2, and SR 3.6.1.7.3.

Quality/Safety Impact

The leakage criteria and corrective actions specified in the Columbia Generating Station Technical Specification SR 3.6.1.1.2 combined with visual examination of valve seats every refuel outage should provide adequate assurance of the relief valve assembly's ability to remain leak tight and to prevent a suppression pool bypass. Thus, proposed alternative provides adequate assurance of material quality and public safety.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159), Relief Request No. RV01.

Relief Request -- RV02

Relief Request
in Accordance with 10CFR 50.55a(f)(5)(iii)

-- Inservice Testing Impracticality --

ASME Code Components Affected

Affected Valves	Class	Cat.	Function	System(s)
SW-TCV-11A, B	3	B	Throttle flow to control temperature of the Control Room	Standby Service Water

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

1. OM Subsection ISTC, Paragraph ISTC-5141, Hydraulically Operated Valves Stroke Testing

2. OM Subsection ISTC, Paragraph ISTC-5142, Stroke Test Acceptance Criteria

3. OM Subsection ISTC, Paragraph ISTC-5143(b), Stroke Test Corrective Action

Impracticality of Compliance

It is difficult to accurately measure the stroke time of these hydraulically actuated control valves. These valves are not provided with any form of override that would allow them to be manually cycled. Additionally, they are not provided with position indication. Partial stroking of these valves can be verified by observing system operational parameter changes, but accurate timing of full stroke for trending purposes is impractical.

Burden Caused by Compliance

1. These hydraulically actuated valves serve as regulating thermostatic control valves. The valves do not function to rapidly isolate or de-isolate the piping into which they are installed. Rather, their function is to slowly regulate throughout their entire stroke range to control the outlet temperatures of the components they serve. SW-TCV-11A & 11B are controlled by thermostats which regulate main control room air temperature.

Relief Request -- **RV02** (Contd.)

2. Manual control of these valves can only be obtained by lifting the 4-20 mA control leads to inject a test signal to the hydraulic actuator. This in turn requires that the Technical Specification 3.7.4 and Licensee Controlled Specification 1.7.2 required systems be taken out of service.

3. Modification of the existing valves or installation of new valves to provide manual control and position indication would be burdensome and costly.

Proposed Alternative and Basis for Use

1. In general, control valves that respond to system conditions are exempt from IST per Subsection ISTC-1200. However, these control valves perform a fail-safe function (fail open), and must be tested in accordance with the Code provisions to monitor the valve for degrading conditions. ASME Code Case OMN-8 states that stroke-time testing need not be performed for these valves when the only safety-related function of the valves is to fail safe. Code Case OMN-8, as accepted in RG 1.192 is only applicable through OM Code-1995. OM Code Committee is in the process of revising the applicability of this Code Case to the later approved OM Code editions and addenda.

2. These valves shall be exercised quarterly in accordance with the Subsection ISTC requirements and the failsafe position on a loss of power (OPEN) shall be verified. Any abnormality or erratic action experienced during valve exercising shall be evaluated per the Corrective Action Program.

Quality/Safety Impact

The alternative testing to be performed will verify proper operation of the valve to meet its design function. Adequate assurance of material quality and maintenance of public safety will be provided.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

Similar relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159), Relief Request No. RV03.

Relief Request -- RV03

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

--Alternative Provides Acceptable Level of Quality and Safety--

ASME Code Components Affected

Affected Valves	Class	Cat.	Function	System(s)
PSR-V-X73-1	2	A	Containment Isolation	Post Accident Sampling
PSR-V-X80-1	2	A		
PSR-V-X83-1	2	A		
PSR-V-X77A1	1	A		
PSR-V-X82-1	2	A		
PSR-V-X84-1	2	A		
PSR-V-X77A3	1	A		
PSR-V-X82-7	2	A		
PSR-V-X88-1	2	A		

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

OM Subsection ISTC-5150, Solenoid-Operated Valves, Stroke Testing

Reason for Request

Subsection ISTC-5151 requires the stroke time of all solenoid-operated valves be measured to at least the nearest second. These nine PSR solenoid valves are the inboard Containment Isolation Valve for nine different penetrations and are operated from a single keylock control switch. It is impractical to measure the individual valve stroke times. To do so would require repetitive cycling of the control switch causing unnecessary wear on the valves and control switch with little compensating benefit.

Proposed Alternative and Basis for Use

These solenoid valves stroke under 2 seconds and are considered rapid-acting valves. Their safety function is to close to provide containment isolation. The stroke time of the slowest valve will be measured by terminating the stroke time measurement when the last of the nine indicating lights becomes illuminated. If the stroke time of the slowest valve is in the acceptance range (less than or equal to 2 seconds), then the stroke times of all valves will be considered acceptable. However, if the stroke time of the slowest valve exceeds the acceptance criteria (2 seconds), all 9 valves will be declared inoperable and corrective actions in accordance with Subsection ISTC-5153 taken.

Relief Request – **RV03** (Contd.)

Quality/Safety Impact

The proposed alternate testing will verify that the valves respond in a timely manner and provide information for monitoring signs of material degradation. This provides adequate assurance of material quality and public safety.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159) and Supplement to SER Dated March 25, 1999 (TAC No. MA3813), Relief Request No. RV04.

Relief Request -- RV04

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

--Alternative Provides Acceptable Level of Quality and Safety--

ASME Code Components Affected

Affected Valves	Class	Cat.	Function	System(s)
MS-RV-1A, B, C, D	1	C		
MS-RV-2A, B, C, D	1	C	Overpressure Protection	
MS-RV-3A, B, C	1	C		Main Steam
MS-RV-3D	1	C	Overpressure Protection and Auto Depressurization System to lower reactor pressure sufficient to allow initiation of Low Pressure Coolant Injection (RHR, LPCI mode)	
MS-RV-4A, B, C, D	1	C		
MS-RV-5B, C	1	C		

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

Mandatory Appendix I, Paragraph I-3310: Sequence of Periodic Testing of Class 1 Main Steam Pressure Relief Valves with Auxiliary Actuating Devices.

Reason for Request

1. Remote set point verification devices (SPVD) have been permanently installed on all eighteen MSRVs to allow set point testing at low power operation, typically during shutdown for refueling outage and on startup if necessary. Crosby's SPVD incorporate a nitrogen powered, metal bellows assembly that adds a quantified lifting force on the valve stem until the MSRV's popping pressure is reached. During normal power operation, these heads remain deenergized and do not interfere with normal safety or relief valve functions. Removal and replacement of the MSRVs is normally used only for valve maintenance and normally not for the purpose of As- Found set pressure determination. MSRVs are removed and replaced for maintenance purposes (e.g., seat leakage, refurbishment) nominally each refueling outage. The valves which are required to be As-Found set pressure tested, as part of the Code required periodic testing, do not necessarily correspond to those required to be replaced for maintenance. Actuators and solenoids are separated from the valve and remain in place when MSRVs are removed and replaced for maintenance.

Relief Request -- **RV04** (Contd.)

If MSRV periodic set pressure testing could not be performed at power during shutdown for refueling outage due to reactor scram it will required to be performed during power ascension from refueling outage. This will require Paragraphs I-3310(d), (e), (f), (g) and (h) tests to be performed during outage prior to Paragraphs I-3310(a), (b), (c) and (i) tests. Paragraph I-3310(g) is not applicable to these valve designs.

2. "Valves" and "accessories" (actuators, solenoids, etc.) have different maintenance and test cycles due to the methods used for maintenance and testing at Columbia Generating Station as discussed in item 1., and should be considered separately for the purposes of meeting the required test frequency and testing requirements. Valve testing (i.e., visual examination, seat tightness, set pressure determination and compliance with Owner's seat tighiness criteria, in accordance with Paragraphs I-3310 (a), (b), (c) and (i)) are independent of and can be separate from testing of "accessories" (i.e., solenoids, actuator, position indicators and pressure sensing element, in accordance with Paragraphs I-3310 (d), (e), (f), and (h)). Paragraph I-3310 states that tests before maintenance or set-pressure adjustment, or both, shall be performed for I-3310(a), (b), and (c) in sequence. The remaining shall be performed after maintenance or set pressure adjustments. Valve maintenance or set pressure adjustment does not affect "accessories" testing; likewise, maintenance on "accessories" does not affect valve set pressure or seat leakage. Therefore, the MSRVs and the "accessories" may be tracked separately for the purpose of satisfying the Paragraph I-1320 test frequency requirements.

3. Paragraph I-3310(f) requires determination of operation and electrical characteristics of position indicators, and Paragraph I-3310(h) requires determination of actuating pressure of auxiliary actuating device sensing element and electrical continuity. These tests are required to be performed at the same frequency as the valve set pressure and auxiliary actuating device testing.

   The position indicators are all calibrated and functional tested during outages; the sensing elements (pressure switches) are all checked and calibrated nominally every 24 months. Although the existing tests do not have a one-to-one correspondence to the valve or actuator tests, these calibrations and functional tests meet all testing requirements of this Subsection, and far exceed the required test frequency and testing requirements.

Relief Request -- RV04 (Contd.)

Proposed Alternative and Basis for Use

1. "Valves" and "accessories" (actuators, solenoids, etc.) shall be tested separately and meet Paragraph I-1320 test frequency requirements. Since the valve and actuator test and maintenance cycles are different, the Plant positions of the actuators selected, or due, for periodic testing may not match the Plant positions of the MSRVs selected, or due, for As-Found set pressure testing.

   MSRV periodic set pressure testing will normally be performed at power during shutdown for refueling outage. If MSRV periodic set pressure testing could not be performed at power during shutdown for refueling outage due to reactor scram it will be performed during power ascension from refueling outage. This will require Paragraphs I-3310(d) and (e) tests to be performed during outage prior to Paragraphs I-3310 a), (b), (c) and (i) tests.

   The actuators and solenoids will be tested at the end of the outage after other maintenance is complete, and the tests will be credited as satisfying the Code periodic test requirements provided that no actuator or solenoid maintenance (other than actuator assembly re-installation on a replaced valve) is performed that would affect their As-Found status prior to testing or that could affect the valve's future set pressure determination.

2. All MSRV position indicators will continue to be tested in accordance with existing surveillance procedures for monthly channel checks, and for channel calibration and channel functional testing on nominally 24 month frequency during shutdowns. These tests will be credited for satisfying the requirements of Paragraph I-3310(f).

3. All auxiliary actuating device sensing elements (pressure switches) will continue to be tested and calibrated on a 24 month frequency. These tests will be credited for satisfying the requirements of paragraph I-3310(h).

Quality/Safety Impact

Due to different maintenance and test cycles of valves and accessories and also due to methods used for testing and maintenance, it is impractical to meet the Code required testing requirements without subjecting the valves to unnecessary challenges and increased risk of seat degradation. The requirement for testing actuators and accessories in a specific sequence does not enhance system or component operability, or in any way improve nuclear safety. The proposed alternate testing adequately evaluates the operational readiness of these valves commensurate with their safety function. This will help reduce the number of challenges and failures of safety relief valves and still provide timely information regarding operability and degradation. This will provide adequate assurance of material quality and public safety.

Relief Request -- RV04 (Contd.)

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SER letter dated November 27, 1995 (TAC No. M91159) and Supplement to SER Dated March 25, 1999 (TAC No. MA3813), Relief Request No. RV05.

Relief Request -- RV05

Proposed Alternative
in Accordance with 10CFR 50.55a(a)(3)(i)

--Alternative Provides Acceptable Level of Quality and Safety--

ASME Code Components Affected

Affected Valves	Class	Cat.	System(s) / Function
PI-EFC-X18A, B, C, D	1	C	System(s): Process Instrumentation for various systems connected to RPV Function: Excess flow check valves are provided in each instrument process line that is Part of the reactor coolant pressure boundary. Design and installation of the excess flow check valves at Columbia Generating Station conform to Regulatory Guide 1.11. Close: The reactor instrument line excess flow check valves close to limit the flow in the respective instrument lines in the event of an instrument line break downstream of the EFCVs outside containment.
PI-EFC-X37E, F	1	C	
PI-EFC-X38A, B, C, D, E, F	1	C	
PI-EFC-X39A, B, D, E	1	C	
PI-EFC-X40C, D	1	C	
PI-EFC-X40E, F	2	C	
PI-EFC-X41C, D	1	C	
PI-EFC-X41E, F	2	C	
PI-EFC-X42A, B	1	C	
PI-EFC-X44A Series (Typ 12)	1	C	
PI-EFC-X44B Series (Typ 12)	1	C	
PI-EFC-X61A, B	1	C	
PI-EFC-X62C, D	1	C	
PI-EFC-X69A, B, E	1	C	
PI-EFC-X70A, B, C, D, E, F	1	C	
PI-EFC-X71A, B, C, D, E, F	1	C	
PI-EFC-X72A	1	C	
PI-EFC-X73A	1	C	
PI-EFC-X74A, B, E, F	1	C	
PI-EFC-X75A, B, C, D, E, F	1	C	
PI-EFC-X78B, C, F	1	C	
PI-EFC-X79A, B	1	C	
PI-EFC-X106	1	C	
PI-EFC-X107	1	C	
PI-EFC-X108	1	C	
PI-EFC-X109	1	C	
PI-EFC-X110	1	C	
PI-EFC-X111	1	C	
PI-EFC-X112	1	C	
PI-EFC-X113	1	C	
PI-EFC-X114	1	C	
PI-EFC-X115	1	C	

Relief Request -- RV05 (Contd.)

Applicable Code Edition and Addenda

The 2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code

Applicable Code Requirement

OM Subsection ISTC-3522(c), Category C Check Valves. If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

OM Subsection ISTC-3700, Valve Position Verification. Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated.

Reason for Request and Basis for Use

OM Code Subsection ISTC requires testing of active or passive valves that are required to perform a specific function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident. The EFCVs are not required to perform a specific function for shutting down or maintaining the reactor in a cold shutdown condition. Additionally, the reactor instrument lines are assumed to maintain integrity for all accidents except for the Instrument Line Break Accident (ILBA) as described in FSAR, Subsection 15.6.2. The reactor instrument lines at Columbia Generating Station have a flow-restricting orifice upstream of the EFCV to limit reactor coolant leakage in the event of an instrument line rupture. Isolation of the instrument line by the EFCV is not credited for mitigating the ILBA. Thus, a failure of an EFCV is bounded by the Columbia Generating Station safety analysis. These EFCVs close to limit the flow of reactor coolant to the secondary containment in the event of an instrument line break and as such are included in the IST program at the Owner's discretion and are tested in accordance with the amended Technical Specification SR 3.6.1.3.8.

The GE Licensing Topical Report, NEDO-32977-A (Reference 2), and associated NRC safety evaluation, dated March 14, 2000, provides the basis for this relief. The report provides justification for relaxation of the testing frequency as described in the amended Technical Specification SR 3.6.1.3.8. The report demonstrates the high degree of EFCV reliability and the low consequences of an EFCV failure. Excess flow check valves have been extremely reliable throughout the industry. Based on 15 years of testing (up to year 2000) with only one (1) failure, the Columbia Generating Station revised Best Estimate Failure Rate is 7.9E-8 per hour; less than the industry average of 1.01E-7 per hour. There have been no failure since year 2000. Technical Specification amendment request for SR 3.6.1.3.8 was reviewed by the NRC staff in safety evaluation (SE) dated February 20, 2001 (Reference 3).

Failure of an EFCV, though not expected as a result of the amended Technical Specification change, is bounded by the Columbia Generating Station safety analysis. Based on the GE Topical report and the analysis contained in the FSAR, the proposed alternative to the required exercise frequency and valve indication verification frequency for EFCVs provide an acceptable level of quality and safety. In Reference 3, the NRC staff concluded that the increase in risk associated with the relaxation of EFCV testing is sufficiently low and acceptable.

Relief Request -- RV05 (Contd.)

Proposed Alternative

Energy Northwest requests relief pursuant to 10 CFR 50.55a(a)(3)(i) to test reactor instrument line excess flow check valves in accordance with the amended Technical Specification SR 3.6.1.3.8. This SR requires verification every 24 months that a representative sample of reactor instrument line EFCVs actuate to the isolation position on an actual or simulated instrument line break signal. The representative sample consists of an approximately equal number of EFCVs such that each EFCV is tested at least once every 10 years (nominal). Valve position indication verification of the representative sample will also be performed during valve testing. Any EFCV failure will be evaluated per the Columbia Generating Station Corrective Action Program.

Duration of Proposed Alternative

Third 10 year interval.

Precedents

This relief request was granted for the previous 10 year interval.

SE letter dated April 5, 2001 (TAC No. MB0422), Relief Request No. RV06.

References

1. FSAR 15.6.2

2. Letter BWROG-00069, dated June 14, 2000, from W.G. Warren, (BWR Owners Group) to Office of Nuclear Reactor Regulation, "Transmittal of Approved GE Licensing Topical Report NEDO-32977-A, Excess Flow Check Valve Testing Relaxation", dated November 1998

3 Letter GI2-01-017, dated February 20, 2001, Jack Cushing (NRC) to JV Parish (EN), "Columbia Generating station - Issuance of Amendment RE: Technical Specifications Surveillance Requirement 3.6.1.3.8 (TAC NO. MB0421)"