Omaha Public Power District

Fort Calhoun Station Unit No. 1

Inservice Inspection Program Plan
for the 1980-1983 Period

Revisions:

March, 1977
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P020/e/s

Program Table of Contents

Introduction:

This report defines the Inservice Inspection Program for Class 1, 2, and 3 pressure retaining components for the period starting May 26, 1980 to September 26, 1983 and Class 1, 2, and 3 pumps and valve testing for the period starting September 26, 1978 to September 26, 1983. C C C

This program has been developed as required by Section 50.55(a) of 10 CFR Part 50 following the guidance of the ASME Boiler Pressure Vessel Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components". The ISI program (Inservice Inspection) will be controlled by the Fort Calhoun Station Unit #1 Technical Specifications.

This Inservice Inspection program is in compliance where possible, with the applicable requirements of Section XI, 1974 (Summer 1975 Addenda) of the ASME B & PV Code.

This program incorporates the results of previous inservice and pre-service inspections. It is the intent of the Licensee to continue to review and apply, as appropriate, changes in the code which would improve the total Inservice Inspection Program, pursuant to 10 CFR 50.55(a).

Part 1: Class 1, 2 and 3 Pressure Retaining Components

1.1 Scope and Responsibility

1.1.1 The Piping and Instrument Drawings (P&ID's) in Appendix 1A identify that the system boundaries are always under review and are subject to change.

1.1.2 Class 1 and Class 2 components and the methods of examination for each component are listed in Tables 1.1 and 1.2, respectively. Class 3 components are those found on the P and ID's in Appendix 1A. The specific components to be examined for each class shall be identified in the Fort Calhoun Station Unit #1 Inservice Examination Plan by title and/or number. Class 3 components will be examined to the extent required by IWD-2600. Exceptions to compliance with Tables IWB-2600 and IWC-2600 of Reference (1) are listed in Appendix 1B and Appendix 1C, respectively.

1.2 Inspection Intervals

1.2.1 The inspection intervals for class 1, 2, and 3 components will be ten-year intervals of service commencing on September 26, 1973. As indicated previously, this copy of the program plan covers the first ten year interval, i.e., September 26, 1973 to September 26, 1983. A A A

Ten year examination plans will describe the distribution of examination within the inspection intervals in accordance with IWB-2400, IWC-2400, and IWD-2400 of Reference (1).

1.2.2 The inspection intervals for classes 1, 2, and 3 components may be extended by as much as one year to permit inspections to be concurrent with plant outages as permitted by IWA-2400 of reference (1).

1.3 Examination Catagories

1.3.1 Class 1 components as listed herein in Table 1, will be examined to the extent and frequency as required by Table IWB-2500 of Reference (1). Note: As a result of the 1980 Inservice Inspection the District has adopted a policy of examining the Reactor Coolant Pump Casing Studs every refueling outage. This policy will be pursued rather than the code required "once per interval" inspection.

1.3.2 Class 2 components as listed herein in Table 2 will be examined to the extent and frequency as required by Table IWC-2500 of Reference (1).

1.3.3 Class 3 components as described in the ten year examination plan shall be examined to the extent and frequency as required by Table IWD-2600 and IWD-2400 of reference (1). Open-ended portion of a system extending to the first shutoff valve and buried system components shall be exempted from pressure test and from inspection where accessibility is restricted.

1.4 Examination Methods

1.4.1 Class 1 and 2 components shall be examined by the required visual, surface and volumetric examinations. These examinations shall include one or a combination of the following methods: visual, (VT), liquid penetrant, (PT) magnetic particle, (MT), and radiographic examination in accordance with IWA-2200 of Reference (1). Ultrasonic examinations shall be performed in accordance with the following:

1.4.1.1 Ultrasonic examination of ferritic vessels with a wall thickness of 2½ inches or greater shall be conducted in accordance with Appendix I of Reference (1).

1.4.1.2 Ultrasonic examinations of piping welds shall be conducted in accordance with article 5 of Reference (2) with the following exceptions: All ultrasonic indications which produce a response greater than 50% of the reference level will be recorded, and all indications which produce a response greater than 100% of the reference level will be investigated and evaluated in accordance with Paragraph IWA-2232 of the Summer 1976 Addenda to Section XI. Indications of 20% of the reference

1.4.1.2 (Continued)

level or greater which are interpreted to be a crack shall be identified and evaluated to the rules of Section IX. The ultrasonic examination of ferritic piping will be performed in accordance with the procedural requirements of Appendix I to the Summer 1975 addenda, ASME, Section XI.

1.4.1.3 The volumetric examinations of Class 2 circumferential pipe welds will conform to the additional examination requirements of IE Circular 76-06, dated November 24, 1976 in that the examined area shall, where possible, cover a distance of approximately six times the pipe wall thickness (but not less than two inches and not to exceed 8 inches) on each side of the weld. This additional examination area shall apply only to SI and CS systems piping.

1.4.2 Class 3 components shall be visually examined for leakage in accordance with Article IWD-2000 of Reference (1).

1.5 Evaluation of Examination Results

1.5.1 Class 1 Components

1.5.1.1 The evaluation of the non-destructive examination results shall be in accordance with Article IWB-3000 of Reference (1). All indications shall be subject to comparison with previous data to help in characterization and in determining origin.

1.5.2 Class 2 Components

1.5.2.1 The evaluation of nondestructive examination results shall be in accordance with Article IWB-3000 of Reference (1). All indication shall be subject to comparison with previous data to help in characterization and in determining origin.

1.5.3 Class 3 Components

1.5.3.1 The evaluation of the visual examination results shall be in accordance with Article IWA-5000 of Reference (1).

1.5.4 Indications which have been recorded in the preservices inspection or in a previous inservice inspection which are not characterized as propagating flaws shall be accepted for continued service.

1.6 Repair Requirements

1.6.1 Repair of Class 1, 2 and 3 components shall be performed in accordance with Article IWA-4000 of Reference (1).

1.6.2 Surface defects in class 1, 2 and 3 bolts, studs, nuts and ligaments may be removed by mechanical means when the removal of a defect will not alter the basic configurations of the item. Bolts, studs and nuts that have defects that cannot be removed by mechanical means shall be replaced.

1.7 System Pressure Testing

1.7.1 General Requirements will

1.7.1.1 System Pressure test will be conducted in accordance with Article IWA-5000 of Reference (1).

1.7.1.2 Evaluation of any corroded area will be performed in accordance with Article IWA-5000 of Reference (1).

1.7.1.3 Repairs of corroded areas shall be performed in accordance with Section 1.6 of this program.

1.7.2 Class 1 Components

1.7.2.1 Whenever the reactor coolant system is closed after it has been opened, the system will be leak tested in accordance with Article IWA-5000 and Article IWB-5000 of reference (1) and accordance with Fig. 2-1 and 2-2 of the Technical Specifications.

1.7.2.2 At or near the end of each inspection interval, a hydrostatic pressure test shall be performed on the reactor coolant system components. This test shall be conducted in accordance with the requirements of Article IWA-5000 and IWB-5000 of Reference (1). Test temperature shall be in accordance with Figures 2-1 and 2-2 of the Technical Specifications.

1.7.3 Class 2 Components

1.7.3.1 Pressure tests and visual examination of class 2 components will be performed in accordance with the guidelines of paragraph IWC-2412 of Reference (1). The test pressure will be in accordance with the requirements of Article IWC-5000, Winter 1977 Addenda, in exception to the requirements of Reference (1). The Technical Specification 2.1.1, limiting the number of cylces at 125% of design pressure to 10 for the secondary system (steam/feedwater) will be taken into consideration.

Basis for Exception:

The majority of the Class 2 piping systems, subject to the Section XI pressure testing, can be tested only when the plant is in a cold shutdown condition. While in this mode, there does not exist a means of heating the piping systems above ambient temperatures. Providing a means of heating long piping systems to 100°F is considered impractical, within the meaning of 10 CFR 50.55a.

The minimum temperature requirement for performing a system hydrostatic pressure test was established to meet the requirements specified by fracture preventing criteria. Since the Fort Calhoun ferritic components' ambient room temperatures are sufficiently above brittle fracture temperatures (NDT typically $\leq$ -20°F), heating the systems to 100°F is unnecessary. For the austenitic steel components, the NDT temperature is typically -325°F; far below any possible testing temperature. Again, heating the austenitic materials to 100°F is unnecessary.

Preservice hydrostatic tests were performed at ambient temperatures and it is the judgment of OPPD that hydrotesting at ambient temperatures is still acceptable.

1.7.4 Class 3 components

1.7.4.1 Class 3 components shall be pressure tested in accordance with article IWD-5000 of Reference (1).

1.8 Records and Reports

Records and reports for this inspection made in accordance with this program shall be developed and maintained in accordance with Article IWA-6000 of Reference (1).

APPENDIX 1A

The applicable Piping and Instrumentation Drawings accompany this report.

APPENDIX 1B

EXCEPTIONS TO COMPLIANCE WITH TABLE IWB 2600 (CLASS 1 COMPONENTS) IN ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI, SUMMER 1975 ADDENDA

Item No.	Exception
B 1.4	The nozzle-to vessel welds cannot be 100% volumetrically examined from the O.D. since the nozzle supports present an interference to currently available equipment. The nozzle-to-vessel welds will be examined during the Reactor Vessel Examination at the end of the interval. This examination will be from the I.D.
B 2.2	The nozzle-to-shell weld and the inside radiused section of the surge line connection cannot be completely inspected volumetrically due to interference from the heater penetrations. The weld and inside radiused section will be examined volumetrically to the extent possible and according to the schedule designated in the Examination Plan.
B 1.7-1.8	The volumetric total examined of closure studs may be limited per ASME code case N-307, according to NRC letter dated October 8, 1981, Clark to Jones, with attached SER.
B 2.5, 2.6, 2.7	These items are deleted in the inspection program since no bolting two inches and over is used.
B 3.4, 3.5, 3.6	This item has been deleted in the inspection program since no bolting two inches and over is used.
B 4.1	Safe end inspection in branch piping is deleted since branch piping has no safe ends.
B 4.2, 4.3, 4.4	This item has been deleted in the inspection program since no bolting 2 inches and over is used.
B 4.5	The primary piping is fabricated from centrifugally cast stainless steel pipe and cast stainless steel elbows. Experience has shown that these materials and welds are not always amenable to ultrasonic examination. Techniques have been developed to sustantially overcome this problem. Volumetric examination will be performed to the extent practical and according to the schedule designated in the Examination Plan. Should other specialized ultrasonic examination techniques become practical which are more effective, they will be incorporated in the Examination Plan. The ultrasonic examinations presently used will be supplemented by surface examinations where possible and where they will provide additional assurance that the integrity of the primary pressure boundary is being maintained.

B 5.4	The feasibility of volumetric examination has not yet been determined. The examination will be performed if feasible and according to the schedule designated in the Examination Plan. If extensive grinding is not required to prepare the surface of the pump casing adjacent to the weld for surface examination, surface examination will be performed to supplement the volumetric examination.
B 5.6	There is currently no known technique available to volumetrically inspect the pump casing welds. Research is underway to overcome this problem. When proven techniques are available, consideration will be given to the inclusion of these welds in the inspection program. An external surface examination of pump surfaces and welds is not considered possible due to the roughness of the castings. An internal surface examination is impractical due to the high exposures that would be involved (the exam would require a minimum of 16 man-hours; the radiation levels can be expected to be about 5R/hr area and 7R/hr contact). The District's position is that a visual examination, performed only if pump is dissembled for maintenance permitting such inspection, is judged to be adequate based upon design, fabrication and accessibility considerations.
B 5.7	The District's position is that a visual examination performed only if pump is dissembled for maintenance, permitting such inspection, is judged to be adequate based upon design, fabrication, and accessibility considerations.
B 6.1, 6.2, 6.3	This item has been deleted in the inspection program since no bolting two inches and over is used.

Inaccessible Piping Welds:

Figure No.*	Line No.	Weld No.
A-22	12 In. - SI-12	16
A-25	12 In. - SI-24	16
A-27	6 In. - SI-14	10
A-27	6 In. - SI-14	11
A-32	3 In. - HPH-22	1
A-32	3 In. - HPH-22	3
A-38	2 In. - HPH-2.12	5
A-42	12 In. - SDC-20	7

The welds listed above are inaccessible for examination because they are located within walls or floors. Areas on either side of the walls or floors containing these piping welds will be examined for signs of leakage during the pressure and hydrostatic testing of the piping systems.

*See the 10-Year Inservice Examination Plan, Fort Calhoun Nuclear Station Unit No. 1

APPENDIX 1C

EXCEPTIONS TO COMPLIANCE WITH TABLE IWC-2600

Inaccessible Piping Welds:

Figure No.*	Line No.	Weld No.
B-12	12 In-LPSI-12	4
B-13	12 In-LPSI-14	7
B-13	12 In-LPSI-14	10
B-13	12 In-LPSI-14	11
B-14	12 In-LPSI-22	10
B-15	12 In-LPSI-24	4

The welds listed above are inaccessible for examination because they are located within walls or floors. Areas on either side of the walls or floors containing these piping welds will be examined for signs of leakage during the pressure testing of the piping system.

Examination Category C-D; Pressure-Retaining Bolting Exceeding 1-inch in Diameter

An exception to the requirements of the Summer 1975 addenda of the Section XI Code is taken in regard to pressure-retaining bolting exceeding 1 inch in diameter. The District proposes to comply with the Summer 1976 addenda which modifies the bolting examination requirements to examine only the pressure-retaining bolting exceeding 2 inches in diameter. Since the Summer 1976 and all subsequent addenda to the Section XI Code have adopted the 2-inch diameter and greater examination requirement, the potential for failure and the consequences thereof appear to be of little concern. The code requirement of the Summer 1975 addenda is deemed to be impractical in relation to the level of safety achieved by performing the examination versus the manpower and monetary expenditures involved.

*See the 10-Year Examination Plan, Fort Calhoun Nuclear Station Unit No. 1

APPENDIX 1D

Inaccessible Piping:

Buried raw water lines from the intake structure to the auxiliary building cannot be tested since the isolation valves are not designed to be leak-tight shut-off valves. Flow instrumentation in the system is capable of detecting signficant leaks by sensing a reduction of flow.

PART 2: Class 1, 2, and 3 Pump and Valve Tests

2.1 Scope and Responsibility

2.1.1 The P&ID's of Appendix 1A identify the Location of each Class 1, 2, and 3 pump and valve.

2.1.2 Class 1, 2, and 3 pumps to be examined under Subsection IWP, the methods of examination for each pump, and exceptions to the tests of Subsection IWP are found in Appendix 2A. The Class 1, 2, and 3 valves to be examined under Subsection IWV, the methods of examination for each valve, and exceptions to the tests of Subsection IWV are found in Appendix 2B.

2.2 Inspection Intervals

2.2.1 The inspection intervals for Class 1, 2 and 3 pumps are in accordance with Article IWP-3000 of Reference (1) with exceptions as found in Appendix 2A. The inspection intervals for Class 1, 2, and 3 valves are in accordance with Article IWV-3000 of Reference (1) with exceptions as found in Appendix 2B.

2.3 Examination Categories

2.3.1 The examination categories for each Class 1, 2, and 3 pump valve have been determined from the appropriate articles of Subsection IWP and IWV of Reference (1), respectively, with exceptions, and are found in Appendix 2A and Appendix 2B, respectively.

2.4 Examination Methods

2.4.1 The methods to be used to examine Class 1, 2, and 3 pumps and valves have been determined from the appropriate articles of Subsections IWP and IWV of Reference (1), respectively. These methods, along with exceptions, are listed in Appendix 2A and Appendix 2B for Class 1, 2, and 3 pumps and valves, respectively.

2.5 Evaluation of Examination Results

2.5.1 Pumps:

2.5.1.1 The evaluation of examination results shall be in accordance with Subarticle IWP-3200 and Table IWP-3100-2 of Reference (1) as appropriate.

2.5.2 Valves:

2.5.1.2 The evaluation of examination results shall be in accordance with the appropriate Subarticles of Article IWV-3000 of Reference (1).

2.6 Records and Reports

2.6.1 Records and reports for the inspection of Class 1, 2, and 3 pumps shall be made in accordance with Article IWP-6000 of Reference (1). Records and reports for the inspection of Class 1, 2, and 3 valves shall be made in accordance with Article IWV-6000 of Reference (1).

2.7 Repair Requirements

2.7.1 Pumps:

2.7.1.1 Repairs will be made as required by Reference (1), Subsection IWP.

2.7.2 Valves:

2.7.2.1 Repairs will be made as required by Reference (1), Subsection IWV.

APPENDIX 2A

INSERVICE INSPECTION OF PUMPS

Discussion: All the pumps that require an inservice tests for operational readiness under the ASME B & PV Code, Section XI, Subsection IWP are listed below. The inservice test parameters with test frequencies are tabulated for each pump. The requested test exceptions and basis for each exception are given for the applicable parameters.

General: All the pumps listed are directly coupled to induction motor drivers; therefore, the rotation speed need not be measured as prescribed in Subarticle 4400. Operating modes, as designated in this appendix, are as follows: Mode 1 - Power Operation, Mode 2 - Hot Standby, Mode 3 - Hot Shutdown, Mode 4 - Cold Shutdown, Mode 5 - Refueling Shutdown.

Low Pressure Safety Injection Pumps SI-1A, B Class 2

Function: The LPSI pumps are available for safety injection of borated water into the reactor coolant system following a LOCA and are used to remove residual heat for cold shutdowns.

Containment Spray Pumps SI-3A, B, C Class 2

Function: The CS pumps are available to spray borated water into containment following a LOCA.

High Pressure Safety Injection Pumps SI-2A, B, C Class 2

Function: The HPSI pumps are available for safety injection of borated water into the reactor coolant system following a LOCA and are used to maintain the required water level in the safety injection tanks.

Test Parameter	Frequency	Subarticle Exceptions	Operating Modes Required For Testing
Inlet Pressure	Quarterly	IWP-3100, 3400	1, 2, 3, 4 or 5
Differential Pressure	Quarterly	IWP-3100, 3400	1, 2, 3, 4 or 5
Vibration Amplitude	Quarterly	IWP-3400	1, 2, 3, 4 or 5
Lubrication Level	Quarterly	IWP-3400	1, 2, 3, 4 or 5
Bearing Temperature	Yearly	-	1, 2, 3, 4 or 5

Exceptions:

IWP-3100 Inlet and differential pressure measurement

Basis: Inlet pressure for these tests will be determined by measuring the static head tank level.

Exceptions

IWP-3400 Inlet pressure, differential pressure, vibration amplitude, and lubrication level will be measured on a quarterly schedule in lieu of monthly.

Basis: These pumps operate infrequently, and degradation is more likely to result from usage than from periods of inactivity.

Monthly testing imposes a manpower hardship that is not commensurate with an increase in quality or safety. Testing all eight safety injection and containment spray pumps requires a total of 30 man-hours, and a licensed control room operator must be diverted from his primary responsibility of monitoring plant equipment that is in operation.

Monthly testing subjects the persons conducting the test to adverse working conditions for extended periods of time. Two men are required in the pump rooms for 12 hours during C the test. The pump rooms typically have a radiation level of 10 m-rem/hr, resulting in a total exposure of 240 m-rem during the performance of each test. In addition, running the pumps represents a noise hazard and ambient temperatures of around 95°F with a relative humidity of near 100%.

During the test, each pump is unavailable to perform its safeguard function.

The safety injection and containment spray pumps are low-maintenance, low-failure rate items. The containment spray pumps SI-3A, B, and C operate essentially only during tests. Maintenance records show these pumps have not required repair in eight years. The high pressure safety injection pumps SI-2A, B, and C are operated only during tests and to fill safety injection tanks during plant operation. Maintenance records show that one seal was replaced in eight years. The low pressure safety injection pumps operate during tests and as shutdown cooling pumps during cold shutdown periods. These pumps operate for considerably longer periods than the other pumps and maintenance records indicate that each pump required seal repair once. Thus, the plant maintenance records support the conclusions that the pumps are reliable and degradation is the result of use. Monthly testing requires that each pump be run eight (8) hours longer per year than quarterly testing would require.

Little or no additional increases in the level of safety or quality would accompany monthly testing because the pumps are historically reliable; redundant components exist for each pump; the pumps are lined up for their safety function and are essentially inactive during normal operations. Monthly tests further detract from a level of safety by subjecting workers to unnecessary radiation exposure, harsh working conditions, and by increasing the wear on the pumps.

Charging Pumps CH- 1A, B, C Class 2

Function: The charging pumps are provided to return the purification flow to the reactor coolant system during plant steady state operations.

Test Parameter	Frequency	Operating Mode Required for Testing
Inlet Pressure	Monthly	1, 2 or 3
Differential Pressure	Monthly	1, 2 or 3
Flow Rate	Monthly	1, 2 or 3
Vibration Amplitude	Monthly	1, 2 or 3
Lubricant Level and Pressure	Monthly	1, 2 or 3
Bearing Temperature	Yearly	1, 2 or 3

Component Cooling Pumps AC-3A, B, C Class 3

Function: The component cooling pumps supply cooling water to equipment in the containment and auxiliary building.

Test Parameter	Frequency	Subarticle Exceptions	Operating Modes Required for Testing
Inlet Pressure	-	IWP-3110	-
Differential Pressure	-	IWP-3110	-
Flow Rate	-	IWP-3110	-
Vibration Amplitude	Monthly		1, 2, 3, 4 or 5
Lubricant Level of Pressure	-	IWP-3110	-
Bearing Temperature	Yearly		1, 2, 3, 4 or 5

Exceptions

IWP-3110 Inlet and differential pressure measurement

Basis: System design does not include instrumentation for measuring these parameters. Discharge pressure will be measured on a monthly schedule to help determine possible pump degradation.

Establishment of a reference value for flow rate.

Basis: There are many components or subsystems on the component cooling water system with several possible piping configurations. Some of the components are critical elements to which the flow rate cannot arbitrarily be varied for the sake of running a pump test. Consequently, establishing a reference flow rate for a pump test on a periodic basis is impractical.

Lubricant level or pressure observation.

Basis: The pump bearings are cartridge type that have been re-packed with the proper amount of grease and under normal conditions require no further attention for the life of the bearings.

Reference: Ingersoll Rand Instruction Manual.

Boric Acid Pumps CH-4A, B Class 3

Function: The boric acid pumps supply blended boric acid to the charging pump header and provide makeup to the SIRW and volume control tanks.

Test Parameter	Frequency	Subarticle Exceptions	Operating Modes Required for Testing
Inlet Pressure	Monthly	IWP-3110	1, 2, 3, 4 or 5
Differential Pressure	Monthly	IWP-3110	1, 2, 3, 4 or 5
Vibration Amplitude	Monthly	-	1, 2, 3, 4 or 5
Lubricant Level	Monthly	-	1, 2, 3, 4 or 5
Bearing Temperature	Yearly	-	1, 2, 3, 4 or 5

Exceptions:

IWP-3110 Inlet and differential pressure measurement.

Basis: Inlet pressure will be determined by measuring the static head tank level.

Raw Water Pumps AC-10A, B, C, D Class 3

Function: The raw water pumps provide a cooling medium for the component cooling water system.

Test Parameter	Frequency	Subarticle Exceptions	Operating Modes Required for Testing
Inlet Pressure	-	IWP-3110	-
Differential Pressure	-	IWP-3110	-
Flow Rate	-	IWP-3110	-
Vibration Amplitude	Monthly	-	1, 2, 3, 4 or 5
Bearing Temperature	-	IWP-3110	-
Discharge Pressure vs. Motor Amperage	Monthly	IWP-3110	1, 2, 3, 4 or 5

Exceptions:

IWP-3110 Inlet Pressure measurement.

Basis: System design does not permit direct measurement of inlet pressure. Varying river level and unknown accumulations of sand near the pump suction bell makes it impossible to determine the inlet pressure.

Differential pressure measurement.

Basis: Because of the inability to measure inlet pressure, differential pressure measurement is not possible.

Flow rate measurement.

Basis The system design does not provide an accurate indication of flow rate due to fouling by untreated river water.

Bearing temperature measurement.

Basis: All bearings are inaccessible for temperature measurement. All are submerged in river water.

Discharge pressure vs. motor amperage.

Basis: To be performed in lieu of a differential pressure measurement. An acceptable motor amperage value will be determined over a discharge pressure range of 26 through 40 psig.

Exception to IWP-3220 for All Pump Tests:

All test data shall be analyzed within 4 working days after completion of test.

Basis: An allowance of 4 working days to analyze test data instead of the 96 hour requirement will allow greater flexibility in scheduling and performing the various tests. Special allowances for weekends and holidays will not have to be made in scheduling the tests. The safety related consequences of completing analysis within 4 working days rather than 96 hours is not considered to be great, since pump tests are performed on a quarterly basis.

APPENDIX 2B

INSERVICE INSPECTION OF VALVES

DISCUSSION: All valves that require an inserve test for operational readiness under the ASME B&PV Code, Section XI, Subsection IWV, are listed below. All test parameters, frequencies, and test exceptions are tabulated with each valve.

It has been determined that there are no Category D valves at the Fort Calhoun Station, Unit No. 1 which are subject to the inservice inspection program.

All locked valves are given operational checks to verify position in accordance with Operating Instructions for the affected system, satisfying the requirements of Category E.

TABLE 2B-1

The following Category A valves are listed in groups representing those valves which must be tested simultaneously due to system configuration.

1. TCV-202, HCV-204
2. HCV-241, HCV-206
3. HCV-506A, HCV-506B
4. HCV-467C, HCV-467D
5. HCV-507A, HCV-507B
6. HCV-467A, HCV-467B
7. HCV-438C, HCV-438D
8. HCV-438A, HCV-438B
9. HCV-500A, HCV-500B
10. HCV-2983, SI-185, HCV-2956, HCV-2976, HCV-2936, HCV-2916, PCV-2949, HCV-2969, PCV-2909, PCV-2929
11. HCV-509A, HCV-509B
12. HCV-508A, HCV-508B
13. HCV-882, VA-289
14. HCV-425A, HCV-425B
15. HCV-425C, HCV-425D
16. HCV-2603A, HCV-2603B
17. HCV-2604A, HCV-2604B
18. HCV-2504A, HCV-2504B
19. PCV-742E, PCV-742F
20. PCV-742G, PCV-742H
21. HCV-746A, HCV-746B
22. HCV-881, VA-280
23. HCV-1560A, HCV-1560B
24. HCV-1559A, HCV-1559B
25. PCV-742A, PCV-742B
26. PCV-742C, PCV-742D

CATEGORY A VALVES

Valve Number	Type	P&ID Number	Location	Size	Max Leakage Rate (sccm)		Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-241	Globe	CE-E-23866- 210-120-1 of 2	C3	3/4"	1580 150 psig	1000 60 psig	14	RO	NO, FC	Ex
HCV-206	Globe	CE-E-23866- 210-120-1 of 2	C3	3/4"	1580 150 psig	1000 60 psig	21	RO	NO, FC	Ex
TCV-202	Globe	CE-E-23866- 210-120-1 of 2	A5	2"	32300 2500 psig	5000 60 psig	51	RO	NO, FC	Ex
HCV-204	Globe	CE-E-23866- 210-120-2 of 2	A7	2"	32300 2500 psig	5000 60 psig	16	RO	NO, FC	Ex
HCV-383-3	Butterfly	CE-E-23866 210-130-1 of 2	B8	24"		15000 60 psig	30	Q	NC, FAI	
HCV-383-4	Butterfly	CE-E-23866- 210-130-1 of 2	B8	24"		15000 60 psig	30	Q	NC, FAI	
HCV-2983	Globe	CE-E-23866- 210-130-1 of 2	B1	2"	24150 350 psig	10000 60 psig	39	Q	NO, FC	
SI-185 Category A/E	Globe	CE-E-23866- 210-130-1 of 2	B1	2"	24150 350 psig	15000 60 psig	NA	NA	NC, LC	Ex
HCV-2956	Globe	CE-E-23866- 210-130-2 of 2	A3	1"	20400 250 psig	10000 60 psig	12	RO	NC, FC	Ex
HCV-2976	Globe	CE-E-23866- 210-130-2 of 2	C3	1"	20400 250 psig	10000 60 psig	12	RO	NC, FC	Ex
HCV-2936	Globe	CE-E-23866 210-130-2 of 2	E3	1"	20400 250 psig	10000 60 psig	12	RO	NC, FC	Ex

CATEGORY A VALVES

Valve Number	Type	P&ID Number	Location	Size	Max Leakage Rate (sccm)	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-2916	Globe	CE-E-23866- 210-130-2 of 2	F3	1"	20400 10000 2500 psig 60 psig	12	RO	NC, FC	Ex
PCV-2949	Globe	CE-E-23866- 210-130-2 of 2	A3	1"	64500 10000 2500 psig 60 psig	14	Q	NC, FC	
PCV-2969	Globe	CE-E-23866- 210-130-2 of 2	C3	1"	64500 10000 2500 psig 60 psig	14	Q	NC, FC	
PCV-2909	Globe	CE-E-23866- 210-130-2 of 2	F3	1"	64500 10000 2500 psig 60 psig	14	Q	NC, FC	
PCV-2929	Globe	CE-E-23866- 210-130-2 of 2	F3	1"	64500 10000 2500 psig 60 psig	14	Q	NC, FC	
PCV-742A	Butterfly	GHDR-11405- M-1	D4	42"	18000 60 psig	2	RO	NC, FC	Ex
PCV-742B	Butterfly	GHDR-11405- M-1	E4	42"	18000 60 psig	2	RO	NC, FC	Ex
PCV-742C	Butterfly	GHDR-11405- M-1	D4	42"	18000 60 psig	2	RO	NC, FC	Ex
PCV-742D	Butterfly	GHDR-11405- M-1	E4	42"	18000 60 psig	2	RO	NC, FC	Ex
HCV-746A	Gate	GHDR-11405- M-1	E3	2"	5000 60 psig	8	Q	NC, FC	Ex
HCV-746B	Gate	GHDR-11405- M-1	E3	2"	5000 60 psig	8	Q	NC, FC	
PCV-742E	Saunders Diaphram	GHDR-11405- M-1	E3	1"	2000 60 psig	9	Q	NO, FC	

CATEGORY A VALVES

Valve Number	Type	P&ID Number	Location	Size	Max Leakage Rate (sccm)	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
PCV-742F	Saunders Diaphragm	GHDR-11405-M-1	E2	1"	2000 60 psig	9	Q	NO, FC	
PCV-742G	Saunders Diaphragm	GHDR-11405-M-1	E2	1"	2000 60 psig	9	Q	NO, FC	
PCV-742H	Saunders Diaphragm	GHDR-11405-M-1	E2	1"	2000 60 psig	9	Q	NO, FC	
HCV-881	Butterfly M-1	GHDR-11405-	D5	4"	8000 60 psig		RO	NC, FC	Ex
HCV-882	Butterfly M-1	GHDR-11405-	D5	4"	8000 60 psig	NA	RO	NC, FO	Ex
VA-280 Category A/E	Butterfly M-1,	GHDR-11405-M1	E5	4"	8000	NA	RO	NC, FAI, LC	Ex
VA-289 Category A/E	Butterfly M-1,	GHDR-11405-	E5	4"	8000	NA	RO	NC, FAI, LC	Ex
HCV-1559A	Saunders Diaphragm	GHDR-11405-M-5	G3	2½"	5000 60 psig	NA	NA	NC, FC	Ex
HCV-1559B	Saunders Daiphragm	GHDR-11405-M-5	G3	2½"	5000 60 psig	NA	NA	NC, FC	Ex
HCV-1560A	Saunders Diaphragm	GHDR-11405-M-5	G4	2"	5000 60 psig	NA	NA	NC, FC	Ex
HCV-1560B	Saunders Daiphragm	GHDR-11405-M-5	G4	2"	5000 60 psig	NA	NA	NC, FC	Ex
HCV-500A	Saunders Diaphragm	GHDR-11405-M-6	F3	4"	8000 60 psig	66	Q	NC, FC	
HCV-500	Saunders Daiphragm	GHDR-11405-M-6	F3	4"	8000 60 psig	66	Q	NC, FC	
HCV-506A	Saunders Diaphragm	GHDR-11405-M-7	A3	2"	5000 60 psig	16	Q	NC, FC	

CATEGORY A VALVES

Valve Number	Type	P&ID Number	Location	Size	Max Leakage Rate (sccm)	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-506B	Saunders Diaphragm	GHDR-11405-M-7	A3	2"	5000 60 psig	16	Q	NO, FC	
HCV-2504A	Gate	GHDR-11405-M-12	B1	3/8"	6450 2500 psig 1000 60 psig	1.5	Q	NO, FC	Ex
HCV-2504B	Gate	GHDR-11405-M-12	B1	3/8"	6450 2500 psig 1000 60 psig	1.5	Q	NO, FC	
HCV-1749	Gate	GHDR-11405-M-13	D1	4"	8000 60 psig	NA	NA	NC, FC	Ex
HCV-425A	Globe	GHDR-11405-M-40	E2	3"	10000 60 psig	21	RO	NO, FC	Ex
HDV-425B	Globe	GHDR-11405-M-40	E3	3"	10000 60 psig	21	RO	NO, FC	Ex
HCV-425C	Globe	GHDR-11405-M-40	G2	3"	10000 60 psig	21	RO	NO, FC	Ex
HCV-425D	Globe	GHDR-11405-M-40	G3	3"	10000 60 psig	21	RO	NO, FO	Ex
HCV-438A	Globe	GHDR-11405-M-40	A3	6"	10000 60 psig	75	RO	NO, FO	Ex
HCV-438B	Globe	GHDR-11405-M-40	B3	6"	10000 60 psig	54	RO	NO, FC	Ex
HCV-438C	Globe	GHDR-11405-M-40	D3	6"	10000 60 psig	75	RO	NO, FO	Ex
HCV-438D	Globe	GHDR-11405-M-40	D3	6"	10000 60 psig	54	RO	NO, FC	Ex
HCV-467A	Globe	GHDR-11405-M-40	F3	1½"	5000 60 psig	9	RO	NO, FC	Ex
HCV-467B	Globe	GHDR-11405-M-40	F3	1½"	5000 60 psig	9	RO	NO, FC	Ex

CATEGORY A VALVES

Valve Number	Type	P&ID Number	Location	Size	Max Leakage Rate (sccm)	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-467C	Globe	GHDR-11405-M-40	G3	1½"	5000 60 psig	9	RO	NO, FC	Ex
HCV-467D	Globe	GHDR-11405-M-40	G3	1½"	5000 60 psig	9	RO	NO, FC	Ex
HCV-2603A	Gate	GHDR-11405-M-42	A3	1"	2000 60 psig	4.8	Q	NO, FC	
HCV-2603B	Gate	GHDR-11405 M-42	A2	1"	2000 60 psig	4.8	Q	NO, FC	Ex
HCV-2604A	Gate	GHDR-11405 M-42	C2	1"	2000 60 psig	5.7	Q	NO, FC	
HCV-2604B	Gate	GHDR-11405 M-42	C2	1"	2000 60 psig	5.7	Q	NO, FC	Ex
HCV-507A	Saunders Diaphragm	GHDR-11405 M-98	A2	3"	6000 60 psig	26	Q	NO, FC	
HCV-507B	Saunders Diaphragm	GHDR-11405 M-98	A2	3"	6000 60 psig	26	Q	NO, FC	
HCV-508A	Saunders Diaphragm	GHDR-11405 M-98	A5	½"	1000 60 psig	4.8	Q	NO, FC	
HCV-508B	Saunders Diaphragm	GHDR-11405 M-98	A5	½"	1000 60 psig	4.8	Q	NO, FC	
HCV-509A	Saunders Diaphragm	GHDR-11405 M-98	A5	½"	1000 60 psig	4.8	Q	NO, FC	
HCV-509B	Saunders Diaphragm	GHDR-11405 M-98	A5	½"	1000 60 psig	4.8	Q	NO, FC	
PCV-1849	Saunders Diaphragm			2"	5000 60 psig	15	RO	NO, FC	Ex

CATEGORY B VALVES

Valve Number	P&ID Number	Location	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
LCV-101-1	CE-E-23866-210-120 1 of 2	B2	NA	RO	NC, FC	Ex
LCV-101-2	CE-E-23866-210-120-1 1 of 2	B2	NA	RO	NO, FC	Ex
LCV-218-1	CE-E-23866-210-120 1 of 2	I1	11	Q	NO, FO	
LCV-218-2	CE-E-23866-210-120 1 of 2	I4	28	RO	NO, FAI	Ex
HCV-238	CE-E-23866-210-120 1 of 2	A7	48	Q	NO, FO	
HCV-239	CE-E-23866-210-120 1 of 2	A7	51	Q	NO, FO	
TCV-211-1	CE-E-23866-210-120-2 2 of 2	B7	9	Q	NC, FC	
TCV-211-2	CE-E-23866-210-120 2 of 2	A2	2	Q	NO, FTB	
HCV-258	CE-E-23866-210-121	E3	46	RO	NC, FAI	Ex
HCV-265	CE-E-23866-210-121	E2	46	RO	NC, FAI	Ex
HCV-257	CE-E-23866-210-121	F4	20	Q	NO, FC	

Note: LCV-218-3, HCV-240, and PCV-210 have been deleted in the 1980-1983 ISI Plan as they do not perform safety-related functions.
Reference: Telecons - Hickle (OPPD) and Wang (NRC) dated March 19 and 23, 1979.

CATEGORY B VALVES

Valve Number	P&ID Number	Location	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-264	CE-E-23866-210-121	F2	20	Q	NO, FC	
HCV-268	CE-E-23866-210-121	B6	24	RO	NC, FAI	Ex
FCV-269	CE-E-23866-210-121	C7	6	Q	NC, FC	
HCV-385	CE-E-23866-210-130 1 of 2	F1	72	Q	NO, FO	
HCV-386	CE-E-13866-210-130 1 of 2	G1	72	Q	NO, FO	
HCV-344	CE-E-23866-210-130 1 of 2	B3	140	RO	NC, FO	Ex
HCV-345	CE-E-23866-210-130 1 of 2	B4	140	RO	NC, FO	Ex
LCV-383-1	CE-E-23866-210-130 1 of 2	H3	30	Q	NO, FO	
LCV-383-2	CE-E-23866-210-130 1 of 2	H2	30	Q	NO, FO	
HCV-347 Category B/E	CE-E-23866-210-130 1 of 2	B5	200	RO	NC, FAI, LC	Ex
HCV-317	CE-E-23866-210-130 2 of 2	A6	12*	Q	NC, FAI	
HCV-318	CE-E-23866-210-130-2 2 of 2	A6	12*	Q	NC, FAI	
HCV-320	CE-E-23866-210-130 2 of 2	C6	12*	Q	NC, FAI	
HCV-321	CE-E-23866-210-130	C6	12*	Q	NC, FAI	

*Changed from the 1976-1980 ISI Program Plan.
Reference: USAR Section 6.2.3.6.

CATEGORY B VALVES

Valve Number	P&ID Number	Location	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-314	CE-E-23866-210-130 2 of 2	E6	12*	Q	NC, FAI	
HCV-315	CE-E-23866-210-130 2 of 2	E6	12*	Q	NC, FAI	
HCV-311	CE-E-23866-210-130 2 of 2	F6	12*	Q	NC, FAI	
HCV-312	CE-E-23866-210-130 2 of 2	F6	12*	Q	NC, FAI	
HCV-331	CE-E-23866-210-130 2 of 2	B6	12*	Q	NC, FAI	
HCV-333	CE-E-23866-210-130 2 of 2	C6	12*	Q	NC, FAI	
HCV-348 Category B/E	CE-E-23866-210-130 2 of 2	H6	200	RO	NC, FAI, LC	Ex
HCV-329	CE-E-23866-210-130 2 of 2	E6	12*	Q	NC, FAI	
HCV-327	CE-E-23866-210-130 2 of 2	G6	12*	Q	NC, FAI	
HCV-474	GHDR-11405-M-10	H3	15	Q	NO, FO	
AC-186	GHDR-11405-M-11	C2	NA	Q	NO	
AC-187	GHDR-11405-M-11	C2	NA	Q	NC	
HCV-400A	GHDR-11405-M-40	A2	18	CS	NO, FO	Ex
HCV-400B	GHDR-11405-M-40	A3	18	CS	NO, FO	Ex
HCV-401A	GHDR-11405-M-40	B3	18	CS	NO, FO	Ex
HCV-401B	GHDR-11405-M-40	B3	18	CS	NO, FO	Ex

*Changed from the 1976-1980 ISI Program Plan.
Reference: USAR Section 6.2.3.6.

CATEGORY B VALVES

Valve Number	P&ID Number	Location	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-402A	GHDR-11405-M-40	B2	18	CS	NO, FO	Ex
HCV-402B	GHDR-11405-M-40	B3	18	CS	NO, FO	Ex
HCV-403A	GHDR-11405-M-40	B2	18	CS	NO, FO	Ex
HCV-403B	GHDR-11405-M-40	B3	18	CS	NO, FO	Ex
HCV-403C	GHDR-11405-M-40	C2	18	CS	NO, FO	Ex
HCV-403D	GHDR-11405-M-40	C3	18	CS	NO, FO	Ex
HCV-402C	GHDR-11405-M-40	C2	18	CS	NO, FO	Ex
HCV-2850	GHDR-11405-M-100	A4	18	Q	NC, FO	
HCV-2851	GHDR-11405-M-100	A4	18	Q	NC, FO	
HCV-2852	GHDR-11405-M-100	B4	18	Q	NC, FO	
HCV-2853	GHDR-11405-M-100	D1	18	Q	NC, FO	
HCV-2882A	GHDR-11405-M-100	D1	18	Q	NC, FO	
HCV-2880A	GHDR-11405-M-100	D2	18	Q	NC, FO	
HCV-2881A	GHDR-11405-M-100	D3	18	Q	NC, FO	
HCV-2883A	GHDR-11405-M-100	D3	18	Q	NC, FO	
HCV-2882B	GHDR-11405-M-100	E1	45	Q	NC, FO	
HCV-2880B	GHDR-11405-M-100	E2	45	Q	NC, FO	
HCV-2881B	GHDR-11405-M-100	E3	45	Q	NC, FO	
HCV-2883B	GHDR-11405-M-100	E3	45	Q	NC, FO	

CATEGORY B VALVES

Valve Number	P&ID Number	Location	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-402D	GHDR-11405-M-40	C3	18	CS	NO, FO	Ex
HCV-401C	GHDR-11405-M-40	D2	18	CS	NO, FO	Ex
HCV-401D	GHDR-11405-M-40	D3	18	CS	NO, FO	Ex
HCV-400C	GHDR-11405-M-40	D2	18	CS	NO, FO	Ex
HCV-400D	GHDR-11405-M-40	D3	18	CS	NO, FO	Ex
YCV-1045A	GHDR-11405-M-252	B1	25	Q	NC, FO	
YCV-1045B	GHDR-11405-M-252	B1	25	Q	NC, FO	
HCV-1041A	GHDR-11405-M-252	B1	4	CS	NO, FO	Ex
HCV-1042A	GHDR-11405-M-252	B2	4	CS	NO, FO	Ex
HCV-1041C	GHDR-11405-M-252	B1	110	CS	NC, FAI	Ex
HCV-1042C	GHDR-11405-M-252	B1	110	CS	NC, FAI	Ex
HCV-1107B	GHDR-11405-M-253	B2	90	Q	NC, FO	
HCV-1108B	GHDR-11405-M-253	B2	90	Q	NC, FO	
HCV-1387A	GHDR-11405-M-253	C2	51	CS	NO, FC	Ex
HCV-1387B	GHDR-11405-M-253	C2	51	CS	NO, FC	Ex
HCV-1388A	GHDR-11405-M-253	A2	39	CS	NO, FC	Ex
HCV-1388B	GHDR-11405-M-253	A2	39	CS	NO, FC	Ex
HCV-1384*	GHDR-11405-M-253	C3	60	Q	NO, FAI	
HCV-1385	GHDR-11405-M-253	C1	30	CS	NO, FAI	Ex
HCV-1386	GHDR-11405-M-253	B2	30	CS	NO, FAI	Ex

*Added to 1980 - 1983 Plan.

CATEGORY B VALVES

Valve Number	P&ID Number	Location	Max. Permissible Stroke Time (sec)	Test Schedule	Failure Mode	Exceptions Refer to Appendix 2C
HCV-1107A	GHDR-11405-M-253	B2	60	Q	NC, FO	
HCV-1108A	GHDR-11405-M-253	B2	60	Q	NC, FO	
HCV-2506A	GHDR-11405-M-12	B2	3	CS	NO, FC	Ex
HCV-2506B	GHDR-11405-M-12	B2	3	CS	NO, FC	Ex
HCV-2507A	GHDR-11405-M-12	B3	3	CS	NO, FC	Ex
HCV-2507B	GHDR-11405-M-12	B3	3	CS	NO, FC	Ex

CATEGORY C VALVES

Valve Number	Type	P&ID Number	Location	Normal Position	Test Frequency	Exceptions Refer to Appendix 2C
RC-141	Relief	CE-E-23866-210-110	G6	NC	RO	
RC-142	Relief	CE-E-23866-210-110	G5	NC	RO	
CH-159	Relief	CE-E-23866-210-120 1 of 2	H3	NC	Table IWV-3510-1	
CH-181	Relief	CE-E-23866-210-120 1 of 2	F5	NC	Table IWV-3510-1	
CH-182	Relief	CE-E-23866-210-120 1 of 2	E4	NC	Table IWV-3510-1	
CH-183	Relief	CE-E-23866-210-120 1 of 2	E6	NC	Table IWV-3510-1	
CH-198	Check	CE-E-23866-210-120 1 of 2	C7	NC	Ex	Ex
CH-335	Relief	CE-E-23866-210-120	A1	NC	Table IWV-3510-1	

Note: Valves CH-223, CH-208, CH-224, CH-336, deleted from 1980 - 1983 Plan.

CATEGORY C VALVES

Valve Number	Type	P&ID Number	Location	Normal Position	Test Frequency	Exceptions Refer to Appendix 2C
CH-338	Relief	CE-E-23866-210-121	D7	NC	Table IWV-3510	
CH-151	Check	CE-E-23866-210-121	C7	NC	Q	
SI-102	Check	CE-E-23866-210-130 1 of 2	F7	NC	RO	Ex
SI-108	Check	CE-E-23866-210-130 1 of 2	F6	NC	RO	Ex
SI-115	Check	CE-E-23866-210-130 1 of 2	F6	NC	RO	Ex
SI-100	Check	CE-E-23866-210-130 1 of 2	H7	NC	Q/RO	Ex
SI-113	Check	CE-E-23866-210-130 1 of 2	H6	NC	Q/RO	Ex
SI-121	Check	CE-E-23866-210-130 1 of 2	F5	NC	RO	Ex
SI-129	Check	CE-E-23866-210-130 1 of 2	F4	NC	RO	Ex
SI-135	Check	CE-E-23866-210-130 1 of 2	F3	NC	RO	Ex
SI-143	Check	CE-E-23866-210-130 1 of 2	F2	NC	RO	Ex
SI-149	Check	CE-E-23866-210-130 1 of 2	F2	NC	EX	Ex
SI-160	Check	CE-E-23866-210-130 1 of 2	C8	NC	EX	Ex
SI-159	Check	CE-E-23866-210-130 1 of 2	C8	NC	EX	Ex
SI-140	Check	CE-E-23866-210-130 1 of 2	H3	NC	EX	Ex

<u>CATEGORY C VALVES</u>

Valve Number	Type	P&ID Number	Location	Normal Position	Test Frequency	Exceptions Refer to Appendix 2C
SI-139	Check	CE-E-23866-210-130 1 of 2	H2	NC	Q/RO	Ex
SI-298	Relief	CR-E-23866-210-130 1 of 2	D3	NC	Table IWV-3510-1	
SI-299	Relief	CR-E-23866-210-130 1 of 2	D4	NC	Table IWV-3510-1	
SI-209	Check	CE-E-23866-210-130 1 of 2	D1	NC	RO	Ex
SI-213	Check	CE-E-23866-210-130 2 of 2	B1	NC	RO	Ex
SI-217	Relief	CE-E-23866-210-130 2 of 2	E1	NC	RO	Ex
SI-221	Relief	CE-E-23866-210-130 2 of 2	G1	NC	RO	
SI-207	Check	CE-E-23866-210-130 2 of 2	B4	NC	RO	Ex
SI-211	Check	CE-E-23866-210-130 2 of 2	D4	NC	RO	Ex
SI-215	Check	CE-E-23866-210-130 2 of 2	E4	NC	RO	Ex
SI-219	Check	CE-E-23866-210-130 2 of 2	G4	NC	RO	Ex
SI-208	Check	CE-E-23866-210-130 2 of 2	B6	NC	RO	Ex
SI-212	Check	CE-E-23866-210-130 2 of 2	D6	NC	RO	Ex
SI-216	Check	CE-E-23866-210-130 2 of 2	E6	NC	RO	Ex
SI-220	Check	CE-E-23866-210-130 2 of 2	G6	NC	RO	Ex
SI-195	Check	CE-E-23866-210-130 2 of 2	A6	NC	RO	Ex
SI-198	Check	CE-E-23866-210-130 2 of 2	C6	NC	RO	Ex
SI-201	Check	CE-E-23866-210-130 2 of 2	E6	NC	RO	Ex

CATEGORY C VALVES

Valve Number	Type	P&ID Number	Location	Normal Position	Test Frequency	Exceptions Refer to Appendix 2C
SI-204	Check	CE-E-23866-210-130 2 of 2	F6	NC	RO	Ex
SI-196	Check	CE-E-23866-210-130 2 of 2	A6	NC	RO	Ex
SI-199	Check	CE-E-23866-210-130 2 of 2	C6	NC	RO	Ex
SI-202	Check	CE-E-23866-210-130 2 of 2	E6	NC	RO	Ex
SI-205	Check	CE-E-23866-210-130 2 of 2	F6	NC	RO	Ex
SI-194	Check	CE-E-23866-210-130 2 of 2	B5	NC	RO	Ex
SI-197	Check	CE-E-23866-210-130 2 of 2	C5	NC	RO	Ex
SI-200	Check	CE-E-23866-210-130 2 of 2	E5	NC	RO	Ex
SI-203	Check	CE-E-23866-210-130 2 of 2	G5	NC	RO	Ex
MS-291	Check	GHDR-11405-M-252	I4	NC	RO	Ex
SI-175	Check	CE-E-23866-210-130 2 of 2	I3	NC	RO	Ex
SI-196	Check	CE-E-23866-210-130 2 of 2	I3	NC	RO	Ex

Note: Valves AC-341, AC-4A-HX, AC-4B-Hx, AC-8-HX-Reliefs deleted from 1980 - 1983 Plan.

CATEGORY C VALVES

Valve Number	Type	P&ID Number	Location	Normal Position	Test Frequency	Exceptions Refer to Appendix 2C
MS-292	Relief	GHDR-11405-M-252	A2	NC	Table IWV-3510	Ex
MS-275	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-279	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-276	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-277	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-280	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-281	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-278	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex
MS-282	Relief	GHDR-11405-M-252	A1	NC	Table IWV-3510	Ex

CATEGORY E VALVES

Valve Number	P&ID Number	Location	Locked Postion	Notes
HCV-208	CE-E-23866-210-120-1 of 2	A3	Open	Also Category A
SI-185	CE-E-23866-210-130-1 of 2	B1	Closed	Also Category B
HCV-347	CE-E-23866-210-130-1 of 2	B5	Closed	
HCV-2977	CE-E-23866-210-130-1 of 2	G2	Open	
HCV-2978	CE-E-23866-210-130-1 of 2	F2	Open	
HCV-2967	CE-E-23866-210-130-1 of 2	G2	Open	
HCV-2968	CE-E-23866-210-130-1 of 2	F2	Open	
HCV-2957	CE-E-23866-210-130-1 of 2	G3	Open	
HCV-2958	CE-E-23866-210-130-1 of 2	F3	Open	
HCV-2947	CE-E-23866-210-130-1 of 2	H4	Open	
HCV-2948	CE-E-23866-210-130-1 of 2	F4	Open	
HCV-2937	CE-E-23866-210-130-1 of 2	H5	Open	
HCV-2938	CE-E-23866-210-130-1 of 2	F5	Open	
HCV-2927	CE-E-23866-210-130-1 of 2	G6	Open	
HCV-2928	CE-E-23866-210-130-1 of 2	F6	Open	
HCV-2917	CE-E-23866-210-130-1 of 2	G7	Open	
HCV-2918	CE-E-23866-210-130-1 of 2	F7	Open	
HCV-2907	CE-E-23866-210-130-1 of 2	G7	Open	
HCV-2908	CE-E-23866-210-130-1 of 2	F7	Open	
HCV-348	CE-E-23866-210-130-1 of 2	H6	Closed	Also Category B
VA-280	GHDR-11405-M-1	E5	Closed	Also Category A
VA-289	GHDR-11405-M-1	E5	Closed	Also Category A
FW-171	GHDR-11405-M-253	C5	Open	
FW-172	GHDR-11405-M-253	D5	Open	
FW-348	GHDR-11405-M-254	B5	Open	
FW-350	GHDR-11405-M-254	B5	Open	
FW-339	GHDR-11405-M-254	B6	Open	

APPENDIX 2C

JUSTIFICATION FOR EXCEPTION TO
ASME SECTION XI CODE

Category A Valves:

HCV-241	This valve is used for reactor coolant pump control bleed-off isolation. It cannot be stroked when the reactor coolant system is pressurized, because controlled bleed-off flow must be maintained to prevent damage to the reactor coolant pump seals. The valve cannot be partial-stroked because it is either fully open or fully closed.
HCV-206	This valve serves as penetration M-7, isolation. This valve cannot be stroked when the reactor coolant system is pressurized because controlled bleed-off flow must be maintained to prevent damage to the reactor coolant pump seal. The valve cannot be partially-stroked because it is either fully open or fully closed.
TCV-202	This valve is used for RCS loop 2A, letdown isolation and temperature regulation. Stroking of this valve quarterly during operation or at cold shutdowns would result in the terminati n of the charging and letdown flows. This would also isolate the boronmeter, process radiation monitor, and reactor coolant system purification process and would have the potential of causing a reactivity excursion. This valve cannot be partial-stroked because it is either fully open or fully closed.
HCV-204	The function of this valve is for containment penetration M-2, isolation and letdown control. The stroking of this valve quarterly during operation or at cold shutdowns would result in termination of the charging and letdown flows. This would also isolate the boronmeter, process radiation monitor, and reactor coolant system purifcation process. In addition, the potential would exist for a reactivity excursion. This value cannot be partial-stroked because it is either fully open or fully closed.
SI-185	This valve is used to isolate the fill line for safety injection tanks. It has been designated as Category A/E. The valve is locked closed, and therefore is not subject to a stroke test. The valve will be leak-tested in accordance with Category A leak testing requirements.
HCV-2916, 2936, 2956, 2976	The function of these valves is to permit filling and drain ing of safety injection tanks. These valves cannot be stroked because doing so would cause level fluctuations in the safety injection tanks. The level of the safety injection tanks is controlled by Technical Specifications, and stroking the valves may result in a violation of these Technical Specifications.

PCV-742A 742B 742C 742D	These valves are used for containment purge air isolation and are closed during normal operations and cold shutdowns. They are in the position required to fulfill their design functions required to fulfill their design function and when open could provide a direct path for release of contaminants from containment. Therefore, stroking these valves may result in a potential release of contaminants. In addition, valves PCV-742A and 742C cannot be tested in the direction of their design function in accordance with IWV-3420 due to system configuration. The intent of subsection IWV of the Section XI code, to verify operational readiness is met since testing in the direction opposite to the design function will result in a greater leakage than would be experienced in a test in the preferred direction.
HCV-746A	This valve cannot be leak-tested in the direction of its design function in accordance with IWV-3420 due to system configuration. The intent of subsection IWV of the Section XI code, to verify operational readiness is met since testing in the direction opposite to the design function will result in a greater leakage than would be experienced in a test in the preferred direction.
HCV-881 882	The function of these valves is to isolate containment hydrogen purge. Stroking at cold shutdown or quarterly intervals is not advisable, since doing so would provide a direct path for release of containments from the containment.
VA-280 289	The valves serve to isolate containment hydrogen purge and are designated as Category A/E. They meet Category E criteria because they are locked closed. Cycling of these valves would provide a direct path for release of contaminants from the containment during power operation or cold shutdown.
HCV-1559A 1559B	The valves serve to isolate the containment demineralized water line at M-80. Cycling these valves would decrease containment integrity. In addition, these valves are not required to be open during power operation.
HCV-1560A 1560B	These valves function to isolate the fill and makeup demineralized water lines to the pressurizer quench tank. Cycling of these valves would decrease containment integrity. These valves are not required to be open during power operation.
HCV-2504A	This valve serves to isolate the containment reactor coolant system sample link at penetration M-45. This valve cannot be leak-tested in the direction of its design function in accordance with IWV-3420 due to system configuration. The intent of subsection IWV of the Section XI code, to verify operational readiness is met since testing in the direction opposite to the design function will result in a greater leakage than would be experienced in a test in the preferred direction.

HCV-1749	This valve serves to isolate containment penetration M-74, compressed air penetration. This valve cannot be leak-tested in the direction of its design function in accordance with IWV-340 due to system configuration. The intent of subsection IWV of the Section XI code, to verify the operational readiness, is met since testing in the direction opposite to the design function will result in a greater leakage than would be experienced in a test in the preferred direction.
HCV-425A 425B 425C 425D	These valves serve to isolate containment penetrations M-30 and M-53, component cooling system penetrations. Stroking cannot be performed during cold shutdown or at quarterly intervals because failure of these valves in the closed position would terminate cooling to safety injection tanks leakage coolers which would in turn have potential for resulting in hot fluid streams entering ion exchange resins of chemical volume control system, thereby causing damage. These valves cannot be partial-stroked because they are either fully opened or fully closed.
HCV-438A 438B 438C 438D	These valves serve to isolate containment penetrations M-18, and M-19, component cooling system penetrations. Stroke-testing cannot be performed at quarterly intervals or cold shutdown because one or more reactor coolant pumps are in operation at all times and these pumps require lube oil and seal cooling. Stroking of these valves would terminate lube oil and seal cooling. These valves cannot be partial-stroked because they are either fully opened or fully closed.
HCV-467A 467B 467C 467D	These valves serve to isolate containment penetrations M-15, and M-11, component cooling system penetrations. These valves cannot be stroked quarterly because failure of the valve during testing would render the nuclear detector well cooling units inoperable. Should the nuclear detector well cooling units fail, Technical Specification 2.13 could not be met. The valve cannot be partial-stroked because it is either fully opened or fully closed.
HCV-2603B HCV-2604B	Containment isolation to penetrations M-42 and M-43, nitrogen gas header penetrations. These valves cannot be leak-tested in the direction of their design function in accordance with IWV-3420 due to system configuration. The intent of subsection IWV of the Section XI code, to verify the operational readiness, is met since testing in the direction opposite to the design function will result in a greater leakage than would be experienced in a test in the preferred direction.
PCV-1849	This valve serves to isolate instrument air pressure (via penetration M-7) to containment systems. Stroke-testing cannot be performed at cold shutdown or quarterly since instrument air must be available at all times during operation and cold shutdown. The valve cannot be partial-stroked because it is either fully open or fully closed.

Category B Valves:

LCV-101-1 101-2	These valves serve to maintain pressurizer level control. Stroke-testing cannot be performed during cold shutdown or quarterly because doing so would disrupt pressurizer level regulation capabilities. Upsetting pressurizer level regulation could result in RCS overpressurization. These valves cannot be partial-stroked during operation for the same reason.
LCV-218-2	This valve functions to provide volume control tank level control. The valve cannot be stroke-tested in either cold shutdown or quarterly because doing so would terminate charging flow to the reactor coolant system and would have the potential for disrupting pressurizer level regulation. Pressurizer level regulation disruption can lead to reactor coolant system overpressure transients. Partial stroke-testing cannot be performed because the valve is either fully closed or fully opened.
HCV-258 265	These valves serve to isolate concentration boric acid from the charging pump suction header. These valves cannot be cycled during cold shutdown or quarterly because doing so would cause concentrated boric acid to be injected into the reactor coolant system via charging pump suction header gravity feedline. Boration of the primary system during normal operation would cause reactivity transients and possibly shut down the plant and during cold shutdowns would delay startup. These valves cannot be partial-stroked for the same reason.
HCV-268	This valve serves to permit direct feed of concentrated boric acid solution to the charging pump suction header. This valve cannot be stroke-tested during cold shutdown or quarterly because doing so would align concentrated boric acid storage to the charging pump suction header through the boric acid pumps. Boration of the primary system during normal operation would cause reactivity transients and possibly shut down the plant and during cold shutdowns would delay startup. The valve cannot be partial-stroked for the same reason.
HCV-344 345	These valves serve as containment spray isolation. Stroke-testing during cold shutdown or quarterly is not advisable since the potential for spraying down the containment is increased. These valves represent the only boundary between the safety injection pump header and containment spray nozzles. The valves cannot be partial-stroked for the same reason.
HCV-347 348	These valves serve to isolate the shutdown cooling line. They cannot be stroked quarterly because the operation of these valves is inhibited by dual pressure interlocks when the reactor coolant system pressure is greater than 265 psia. Testing during cold shutdown is not prudent since RCS heat removal must then be accomplished utilizing steam generator blowdown which provides marginal heat removal capability.

HCV-400A, B, C, & D 401A, B, C, & D 402A B, C, & D 403A B, C, & D	These valves serve to isolate component cooling to containment air cooling and filtering units. They cannot be cycled quarterly because doing so would terminate component cooling to air cooling and filtering units in containment.
HCV-1041A 1042A	These valves serve to isolate the main steam headers. They cannot be tested quarterly during operation because doing so would isolate steam flow in the steam generators and result in a turbine and reactor trip. The valves cannot be partial-stroked because they are either fully opened or fully closed.
HCV-1041C 1042C	These valves serve to provide a pathway from the steam generator to a steam dump and by-pass valves in the event that the main steam isolation valves close. These valves are also used to pre-heat the turbine and related steam system during startup. Cycling of these valves on a quarterly basis during operation would cause the main steam isolation valves to close, causing the turbine to trip and resulting in a reactor trip. The valve cannot be partial-stroked for the same reason.
HCV-1387A 1387B 1388A 1388B	These valves serve to isolate steam generator blowdown. They cannot be stroke-tested during operation quarterly because doing so would terminate steam generator blowdown and distrupt all volatile chemistry control. They cannot be partial-stroked because they are fully opened or fully closed.
HCV-1385 1386	These valves serve to isolate main feedwater to the steam generators. Quarterly stroke-testing cannot be performed during operation because doing so would isolate feedwater to steam generators resulting in a reactor trip. These valves cannot be partial-stroked because they are either fully opened or fully closed
HCV-2605A 2605B 2607A 2607B	These valves serve as containment isolation valves to isolate steam generator blowdown sampling lines. Stroke-testing cannot performed quarterly during operation because doing so would terminate blowdown sample line flow. The steam generator blowdown activity monitor is on the sample line. Technical Specification 2.9(1)d requires that blowdown activity shall be continuously monitored by the steam generator blowdown sample monitoring system. Partial-stroking cannot be performed since these valves are either fully opened or fully closed.

Category C Valves:

CH-198	This valve functions to prevent back-flow to the charging pump discharging pump discharge header. The valve is normally open and there is no way that back-seating can be tested on reversal of flow due to system piping arrangements. Partial strok-testing cannot be performed for the same reason.
SI-159 160	According to the Commission's letter dated June 29, 1981: C "The U.S. NRC has granted relief from certain requirements C of the ASME Code, Section XI, . . . The relief consists C of exemption from performing valve exercising at each C cold shutdown for check valves SI-159 & 160. In lieu C of this, the licensee has visually inspected SI-159 and C 160 . . (in 1980 & 1981)". C This relief expires September 26, 1983. C
SI-139 140	These valves function to prevent back-flow to the safety injection and refueling water tank. They will be part-stroked exercised every three months and full-stroke exercised at refueling outages. Full-stroke testing cannot be performed during cold shutdown or quarterly during operation because doing so would require safety injection to the containment or reactor coolant system. A safety injection to the reactor coolant system during operation would cause uncontrolled boration and would introduce a thermal shock to the system. The recirculation line that are used for testing the LPSI and HPSI pumps for partial-stroking aren't large enough to fully open the check valves.
SI-102 108 111 121 129 135 143 149	These valves function to prevent back-flow to high pressure and low pressure safety injection pumps and containment spray pumps. They cannot be testing during operation quarterly or at cold shutdowns because doing so would disrupt safeguard system alignment, and safety injection into the containment or the reactor system would be required for valve testing. Partial stroking cannot be performed for the same reasons.
SI-100 113	These valves serve to prevent back-flow from high pressure pressure headers to main safety injection headers. They cannot be fully tested during operation quarterly or during cold shutdowns since to do so would require a safety injection to the reactor coolant system. Partial-stroking quarterly is possible since these pumps can be placed in a minimum recirculation mode of operation.

SI-207
211
215
219

These valves function to isolate reactor coolant pump leakage flow from the safety injection tanks. These valves cannot be stroke-tested during cold shutdowns or quarterly during operation as to do so would cause drainage of the safety injection tanks. Technical Specifications require safety injection tank levels to be maintained. The valves cannot be partial-stroked for the same reason.

SI-208
212
216
220

These valves function to prevent back-flow from the reactor coolant system throgh the safety injection system. These valves cannot be tested during cold shutdowns or quarterly during operation because to do so would introduce cold charging water to the reactor coolant system causing thermal shock. The valves cannot be partial-stroked for the same reasons noted above.

SI-194
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These valves function to prevent back-flow through the safety injection pump discharge headers. These valves cannot be stroke-tested during cold shutdowns or quarterly during operation because to do so using the safety injection system would require introducing cold water into the reactor coolant system causing thermal shock and possibly a reactor excursion. To do so using the chemical volume control system would disrupt charging and letdown flow to the reactor coolant system causing chemical and volume control to the system to be disrupted.

SI-175
176

These valves serve to prevent back-flow from the containment spray headers. These valves cannot be tested to the open position since to do so could cause spray in containment. No stroking the valves poses no safety impact for the following reasons:

1. Adequate heat removal from containment can be achived during a DBA by use of only one containment spray header with three containment spray pumps. Hence, only one of the check valves is required to open.

2. The containment air filtration and cooling system is fully redundant to the containment spray system.

3. The containment air filtration and cooling system contains redundant components. During a DBA, sufficient iodine removal is achieved with 50% of the system operating and sufficient pressure reduction accomplished with any three air coolers operating.

APPENDIX 3

Abbreviations

A	addition
C	change
CS	cold shutdown
EX	exceptions
FAI	fail as is
FC	fail closed
FO	fail open
FTB	fail to bypass
LC	locked closed
NA	not applicable
NC	normally closed
NO	normally open
RO	refueling outage
Q	quarterly

Definitions and Clarifications

Inservice testing at cold shutdown: Valve testing should commence not later than 48 hours after shutdown and continue until complete or plant is ready to return to power. Completion of all valve testing is not a pre-requisite to return to power. Any testing not completed at one cold shutdown should be performed during subsequent cold shutdown to meet the code required testing frequency.

Exception: A deviation from a requirement of ASME IX and applicable addenda due to the impracticality of the requirement within the meaning of 10 CFR 50.55a.

REFERENCES

(1) American Society of Mechanical Engineers Boiler and Pressure Vessel Code, July 1, 1974, Edition of Section XI through the Summer 1975 Addenda.

(2) American Society of Mechanical Engineers Boiler and Pressure Vessel Code, July 1, 1974, Edition of Section V through the Summer 1975 Addenda.

TABLE 1.1
COMPONENTS, PARTS, AND METHODS OF EXAMINATION

Item No.	Examination Category Table IWB-2500	Components and Parts to be Examined	Method
		Reactor Vessel	
B1.1	B-A	Longitudinal and circumferential shell welds in cor. region	Volumetric
B1.2*	B-B	Longitudinal and circumferential welds in shell (other than othse of Category B-A and B-C)	Volumetric
B1.3	B-C	Vessel-to-flange and head-to-flange circumferential welds	Volumetric
B1.4	B-D	Primary nozzle-to-vessel welds and nozzle inside radiused section	Volumetric
B1.5	B-E	Vessel penetrations, including control rod drive and instrumentation penetrations	Visual (IWA-5000)
B1.6	B-F	Nozzle-to-safe end welds	Volumetric & Surface
B1.7	B-G-1	Closure studs, in place	Volumetric
B1.8	B-G-1	Closure studs and nuts, when removed	Volumetric & Surface
B1.9	B-G-1	Ligaments between threaded stud holes	Volumetric
B1.10	B-G-1	Closure washers, bushing	Visual
B1.11	B-G-2	Pressure-retaining bolting	Visual
B1.13	B-I-1	Closure Head Cladding	1) Visual & Surface or 2) Volumetric
B1.14	B-I-1	Vessel Cladding	Visual
B1.15	B-N-1	Vessel Interior	Visual
B1.17	B-N-3	Core support structures	Visual
B1.18	B-O	Control rod drive housings	Volumetric
B1.19	B-P	Exempted components	Visual (IWA-5000)
		Pressurizer	
B2.1	B-B	Longitudinal and circumferential welds	Volumetric
B2.2	B-D	Nozzle-to-vessel welds and nozzle-to-vessel radiused section	Volumetric
B2.3	B-E	Heater penetrations	Visual (IWA-5000)
B2.4	B-F	Nozzle-to-safe end welds	Volumetric & Surface
B2.8	B-H	Integrally-welded vessel supports	Visual
B2.9	B-I-2	Vessel cladding	Visual
B2.10	B-P	Exempted components	Visual (IWA-5000)
B2.11	B-G-2	Pressure-retaining bolting	Visual

*Flow baffles allow internal access to only 25% of the meridional welds.

TABLE 1.1 - (Continued)
COMPONENTS, PARTS, AND METHODS OF EXAMINATION

Item No.	Examination Category Table IWB-2500	Components and Parts to be Examined	Method
		Heat Exchangers and Steam Generators	
B3.1	B-B	Longitudinal and circumferential welds including tube sheet-to-head or shell welds on the primary side	Volumetric
B3.2	B-D	Nozzle-to-head welds and nozzle inside radiused section on the primary side	Volumetric
B3.3	B-F	Nozzle-to-safe end welds	Volumetric & Surface
B3.7	B-H	Integrally-welded vessel supports	Volumetric
B3.8	B-I-2	Vessel cladding	Visual
B3.9	B-P	Exempted components	Visual (IWA-5000)
B3.10	B-G-2	Pressure-retaining bolting	Visual
		Piping Pressure Boundary	
B4.5	B-J	Circumferential and longitudinal pipe welds	Volumetric
B4.6	B-J	Branch pipe connection welds exceeding six in. diameter	Volumetric
B4.7	B-J	Branch pipe connectionn welds six in. diameter and smaller	Surface
B4.8	B-J	Socket welds	Surface
B4.9	B-K-1	Integrally welded supports	Volumetric
B4.10	B-K-2	Support components	Visual
B4.11	B-P	Exempted components	Visual (IWA-5000)
B4.12	B-G-2	Pressure-retaining bolting	Visual
		Pump Pressure Boundary	
B5.1	B-G-1	Pressure-retaining bolts and studs, in place	Volumetric
B5.2	B-G-1	Pressure-retaining bolts and studs, when removed	Volumetric & Surface
B5.3	B-G-1	Pressure-retaining bolting	Visual
B5.4	B-K-1	Integrally-welded supports	Volumetric
B5.5	B-K-2	Support components	Visual
B5.6	B-L-1	Pump Casing Welds	Visual
B5.7	B-L-2	Pump Casings	Visual
B5.8	B-P	Exempted components	Visual (IWA-5000)
B5.9	B-G-2	Pressure-retaining bolting	Visual

TABLE 1.1 - (Continued)
COMPONENTS, PARTS, AND METHODS OF EXAMINATION

Item No.	Examination Category Table IWB-2500	Components and Parts to be Examined	Method
		Valve Pressure Boundary	
B6.4	B-K-1	Integrally welded supports	Volumetric
B6.5	B-K-2	Support components	Visual
B6.6	B-M-1	Valve Body Welds	Volumetric
B6.7	B-M-2	Valve bodies	Visual
B6.8	B-P	Exempted components	Visual (IWA-5000)
B6.9	B-G-2	Pressure-retaining bolting	Visual

TABLE 1.2
COMPONENTS, PARTS, AND METHODS OF EXAMINATION

Item No.	Examination Category Table IWB-2525	Components and Parts to be Examined	Method
		Pressure Vessels	
C1.1	C-A	Circumferential butt welds	Volumetric
C1.2	C-B	Nozzle-to-vessel welds	Volumetric
C1.3	C-C	Integrally-welded supports	Surface
C1.4	C-D	Pressure-retaining bolting	Visual and either surface or volumetric
		Piping	
C2.1	C-F,C-G	Circumferential butt welds	Volumetric
C2.2	C-F,C-G	Longitudinal weld joints in fittings	Volumetric
C2.3	C-F,C-G	Branch pipe-to-pipe weld joints	Volumetric
C2.4	C-D	Pressure-retaining bolting	Visual and either surface or volumetric
C2.5	C-E-1	Integrally-welded supports	Surface
C2.6	C-E-2	Support components	Visual
		Pumps	
C3.1	C-F,C-G	Pump casing welds	Volumetric
C3.2	C-D	Pressure-retaining bolting	Visual and either surface or volumetric
C3.3	C-E-1	Integrally-welded supports	Surface
C3.4	C-E-2	Support components	Visual
		Valves	
C4.1	C-F,C-G	Valve body welds	Volumetric
C4.2	C-D	Pressure-retaining bolting	Visual and either surface or volumetric
C4.3	C-E-1	Integrally-welded supports	Surface
C4.4	C-E-2	Support components	Visual