NINE MILE POINT UNIT 1
SECTION XI PUMP AND VALVE
INSERVICE TESTING
PROGRAM PLAN BOOK

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Prepared for

NIAGARA MOHAWK POWER CORPORATION
Syracuse, New York

by

NUCLEAR ENERGY SERVICES, INC.
Danbury, Connecticut 06810

Rev. No.	Date
0	6/30/78
1	12/29/78
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Prepared by _____

Approved by _____
Mgr Proj's/Mgr ISI Eng

_____
QA Mgr

RECORD OF REVISION

Rev No	Date	Description	Reason	Prepared by	Approved by
1	12/29/78	See CRA 564	NMPC Comments	JH	GmG
2	12/14/79	See CRA 1132	NMPC Comments. Corrections to Plan. Reflect as built data. CRA-1132	CJE	GmG

FREQUENCY	NMPC FIELD PROCEDURE	SYSTEM	VALVE NO.	TEST REQUIREMENTS
Cyclic	N1-ISP-25.1	Main Steam	01-01	Leak Rate Test
			01-02	Leak Rate Test
			01-03	Leak Rate Test
			01-04	Leak Rate Test
	N1-ST-C2	Main Steam	NR-108 A thru F	Safety Relief Test
	N1-ST-R8	Main Steam	01-01	Exercising Test, Position Indicating Test
			01-02	Exercising Test, Position Indicating Test
			01-03	Exercising Test, Fail-Safe
			01-04	Exercising Test, Fail-Safe
		Feedwater	31-03	Exercising Test, Position Indicating Test
		"	31-04	Exercising Test, Position Indicating Test
	N1-ST-R8	Shutdown Cooling	38-01	Exercising Test, Position Indicating Test
			38-13	Exercising Test, Position Indicating Test
			38-02	Exercising Test
	N1-MST-C2	Liquid Poison	NP05A	Explosive Test
	"		NP05B	Explosive Test
	N1-ST-Q4	Cleanup	33-01	Position Indicating Test
	"	"	33-02	Position Indicating Test
	N1-ST-Q4	Emergency Condenser	39-05	Exercising Test, Fail-Safe
			39-06	Exercising Test, Fail-Safe
	N1-ST-Q1	Core Spray	40-01	Position Indicating Test
			40-09	Position Indicating Test
			40-10	Position Indicating Test
			40-11	Position Indicating Test

APPENDIX D

GENERAL TEST PROCEDURES

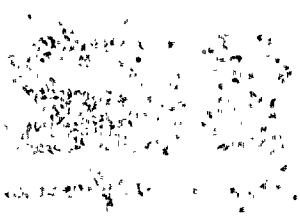
APPENDIX D

GENERAL TEST PROCEDURES

The documents attached in Appendix D cover general guidelines for the inservice testing of safety-related Class 1, 2 and 3 pumps and valves. They provide summaries of Section XI testing requirements, including coverage, type and frequency of tests, acceptable test limits, instrument requirements, data collection, evaluation of data and records.

NES Document No.	Title
NES 81A0410	General Procedure for ASME Section XI Inservice Testing of Pumps
81A0411	General Procedure for ASME Section XI Inservice Testing of Valves, Category A Valve Leak Rate Test
81A0412	General Procedure for ASME Section XI Inservice Testing of Valves, Category A, B, and C Valve Exercising Test
81A0413	General Procedure for ASME Section XI Inservice Testing of Valves, Valve Position Indicator Test
81A0414	General Procedure for ASME Section XI Inservice Testing of Valves, Explosively Actuated Valve Test
81A0415	General Procedure for ASME Section XI Category C Safety and Relief Valve Test

General instructions for data collection and preparation of data sheets, the evaluation of the data, and record management for the pump and valve tests are incorporated into these documents for optional use by Nine Mile Point Unit 1 personnel. These instructions, as well as forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other pump- and valve-specific information, such as hydraulic circuitry, actual test set-up and performance, precautionary measures, etc. are outlined in Field Test Procedures in Appendix F.



NES 81A0410

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GENERAL PROCEDURE
FOR
ASME SECTION XI
INSERVICE TESTING OF PUMPS

for

NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORP.

by
NUCLEAR ENERGY SERVICES, INC.
Danbury, Connecticut 06810

Rev. No.	Date
0	3-20-78
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1	12-14-79	Liquid Poison Pump ID.'s	NMPC P&ID Updated CRA-1129	CJZ	RG

TABLE OF CONTENTS

ATTACHMENTS

GENERAL PROCEDURE FOR ASME SECTION XI INSERVICE TESTING OF PUMPS

1.0 SCOPE

1.1 Test Coverage

1.1.1 This document covers general requirements for the inservice testing of safety-related Class 1, 2 and 3 centrifugal and displacement type pumps which are provided with an emergency power source and are required to perform in shutting down the reactor to the cold shutdown condition or in mitigating the consequences of an accident.

1.1.2 Drivers are excluded except when the pump and driver form an integral unit and the pump bearings are in the driver.

1.1.3 If it has been determined that conformance with certain code requirements is impractical, relief from these requirements may be requested from the Nuclear Regulatory Commission (NRC). Examples of several possible areas where relief may be requested are:

1. Accessibility - Pump inaccessible because of insufficient access provisions.

2. Environmental Conditions Prohibitive - The pump cannot be tested because of safety reasons (i.e. high radiation, high temperature, high humidity, etc.).

3. Instrumentation Not Originally Provided - The installation of proper instrumentation would result in an undue burden or hardship without a compensating increase in the level of plant safety.

1.2 Type of Test

1.2.1 For pumps with constant speed drives the inservice test shall be conducted with the pump operating at nominal motor nameplate speed.

1.2.2 For pumps with variable speed drives the inservice test shall be conducted with the pump operating at the same speed that was used for the Reference Values (see Section 1.3).

1.2.3 Test quantities listed in Section 1.2.4 shall be measured or observed as directed in Section 8.0.

1.2.4 Test quantities required to be measured or observed are:

1. Speed (N)
2. Inlet pressure (Pi)
3. Differential Pressure (ΔP)
4. Flow Rate (Q)
5. Vibration Amplitude (V)
6. Proper lubricant level or pressure
7. Bearing temperature (T_b)

1.3 Reference Values

1.3.1 Reference values are defined as one or more fixed sets of values of the quantities listed in Section 1.2.4 as measured or observed when the equipment is known to be operating acceptably.

1.3.2 All subsequent test results shall be compared to these reference values or to new reference values established in accordance with Section 1.3.6.

1.3.3 Reference values shall be determined from the results of an inservice test which may be run during preoperational testing or from the results of the first inservice test run during power operation.

1.3.4 Reference values shall be at points of operation readily duplicated during subsequent inservice testing.

1.3.5 Prior to the establishment of reference values, all instruments, together with their transmitters where used, shall be calibrated.

1.3.6 Establishment of New Reference Values:

(1) After a pump has been replaced, a new set or sets of reference values shall be determined from the results of the first inservice test run after the pump is put into service.

(2) When repair or routine servicing of the pump has affected a reference value or set of values, a new reference value or set of values shall be determined or the previous value reconfirmed by an inservice test run prior to or within 96 hours after return of the pump to normal service.

(3) Should it be necessary or desirable for some reason other than stated in paragraphs (1) and (2) above to establish an additional set of reference values, an inservice test shall first be run at the conditions of an existing set of reference values and the results analyzed. If operation is satisfactory, a second test run at the new reference conditions shall follow as soon as practical. The results of this test shall establish the additional set of reference values.

1.3.7 Allowable Ranges of Test Quantities:

Allowable ranges of inservice test quantities in relation to the reference values, are tabulated in Table 1.3-1. In the event these ranges cannot be met, the Owner shall specify in the pump record the reduced range limits to allow the pump to fulfill its function, and those limits shall be used in lieu of the ranges given in Table 1.3-1.

1.4 Test Frequency

1.4.1 During normal plant operation an inservice test shall be run on each pump nominally each month.

1.4.2 Pumps that are operated more frequently than every month need not be run or stopped for a special test, provided the plant log shows each such pump was operated at least once every month at the reference conditions and the quantities specified were measured, observed, recorded, and analyzed.

1.4.3 During shutdown periods it is recommended that the monthly test frequency be maintained, although this is not mandatory. If it is not tested during plant shutdown, the pump shall be tested within one week after the plant is returned to normal operation.

1.4.4 Each inservice test shall include the measurement and observation of all quantities (unless specifically exempted from testing per the Program Book) in Section 1.2.4, except bearing temperatures which shall be measured during at least one inservice test each year.

1.5 Duration of Test

1.5.1 When measurement of bearing temperature is not required, each pump shall be run for at least five minutes under conditions as stable as the system permits. At the end of this time at least one measurement or observation of each of the quantities specified shall be made and recorded.

TEST QUANTITY		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
P_i		1	1	1	1	1
ΔP		.93-1.02 ΔP_r	.90-.93 ΔP_r	1.02-1.03 ΔP_r	< .90 ΔP_r	> 1.03 ΔP_r
Q		.94-1.02 Q_r	.90-.94 Q_r	1.02-1.03 Q_r	< .90 Q_r	> 1.03 Q_r
V	$0 \leq V_r \leq 0.5$ mil	0-1 mil	None	1-1.5 mil	None	> 1.5 mil
	$0.5 < V_r \leq 2.0$ mil	0-$2V_r$ mil	None	$2V_r$-$3V_r$ mil	None	> $3V_r$ mil
	$2.0 < V_r \leq 5.0$ mil	0-(2+V_r) mil	None	(2+V_r)-(4+V_r)m	None	> (4+V_r) mil
	$V_r > 5.0$ mil	0-1.4 $V_r$mil	None	1.4V_r-1.8V_rm	None	> 1.8V_r mil
T_b		2	2	2	2	2

[1] P_i shall be within the limits specified by the Owner in the pump record .

[2] T_b shall be within the limits specified by the Owner in the pump record.

Table1.3.1- Allowable Ranges of Test Quantities

1.5.2 When measurement of bearing temperature is required, each pump shall be run until the bearing temperatures stabilize, and then the quantities specified shall be measured or observed and recorded. A bearing temperature shall be considered stable when three successive readings taken at ten minute intervals do not vary by more than 3%.

1.6 Definitions

The principal terms used in this document are defined in the following paragraphs. Applicable symbols, quantities, and units are shown in Table 1-1.

1.6.1 Inservice test - a special test procedure for obtaining information through measurement or observation to determine the operational readiness of a pump. These tests are not designed to establish complete pump performance.

1.6.2 Normal plant operation - the conditions of startup, hot standby, operation within the normal power range, or cool-down and shutdown of the power plant.

1.6.3 Safety-related pumps - those pumps necessary to safely shut down the plant or mitigate the consequences of an accident.

1.6.4 Routine servicing - the performance of planned, preventive maintenance which does not require disassembly of the pump or replacement of pump parts, such as changing oil, flushing the cooling system, adjusting packing, adding packing rings, or mechanical seal maintenance.

1.6.5 System resistance - the hydraulic resistance to flow in a system.

2.0 REFERENCES

2.1 Reference Documents

(1) ASME Boiler and Pressure Vessel code, Section XI, 1974 Edition including the Summer 1975 addenda.

(2) NRC Staff Guidance for preparing pump and valve testing program descriptions and associated relief requests pursuant to 10CFR50.55a (g).

SYMBOL	QUANTITY	UNIT
N	Speed (if variable speed)	rpm
P_i	Inlet pressure	psig
ΔP	Differential pressure	psi
Q	Flow rate	gpm
V	Vibration amplitude	mil
-	Proper lubricant level or pressure	-
T_b	Bearing temperature	^oF

Table 1-1 -Pump Inservice Test Quantities

2.2 Applicable Drawings

All Piping and Instrumentation Drawings, Flow Diagrams and Pump Manuals for the pumps covered by 2.1 (1) above form a part of this document.

2.3 Field Procedures

The specific Field Test Procedures required for the actual performance of the pump tests form a part of this document and are listed in Fig. 5.

3.0 PROCEDURE CERTIFICATION

The general test requirements described in this document comply with Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition including the Summer 1975 addenda, to the extend practical within the limitations of accessibility, environmental conditions, instrumentation and plant safety.

4.0 PERSONNEL QUALIFICATION

The persons conducting and analyzing these tests as well as those responsible for corrective action shall be governed by the Owner's applicable personnel qualifications.

5.0 TEST REQUIREMENTS

5.1 Speed

5.1.1 Tests shall be run with the pump operating at nominal motor nameplate speed for constant speed drives and at a speed adjusted to the reference speed for variable speed drives.

5.1.2 For all pumps directly coupled to motor drivers of either synchronous or induction type, the rotative shaft speed need not be measured. When any other type of driver or a variable speed coupling is used, the rpm of the pump shaft shall be determined by measurement.

5.2 Pressure

5.2.1 If a gage line is such that the presence or absence of liquid could produce a difference of more than ½% in the indicated value of the measured pressure, means shall be provided to assure or determine the presence or absence of liquid as required for the static correction used.

5.2.2 Pressure taps shall be flush with and normal to the wall of the liquid passage.

5.2.3 Pressure taps shall be located in a section of the flow that is expected to have reasonably stable flow as close as practical to the pump.

5.2.4 Any line valves between inlet and discharge pressure taps shall be in an open position during the inservice test.

5.2.5 The differential pressure across a pump shall be determined by the use of either a differential pressure gage or differential pressure transmitter that provide direct measurement of pressure difference, or by taking the difference between the pressure at a point in the inlet pipe, and the pressure at a point in the discharge pipe.

5.3 Flow Rate

In variable resistance systems, the resistance of the system shall be varied until either the measured flow rate or the measured differential pressure, but not both, shall equal the corresponding reference value.

5.4 Vibration

5.4.1 Where practical, at least one displacement vibration amplitude (peak-to-peak composite) shall be read during each inservice test.

5.4.2 The direction of displacement shall be measured in a plane approximately perpendicular to the rotating shaft, and in the horizontal or vertical direction that has the largest deflection for the particular pump installation. The location of the measurement shall be established during the determination of the reference values and indicated with a red dot marker.

5.4.3 The location shall generally be on a bearing housing, or its structural support, provided it is not separated from the pump by any resilient mounting.

(1) On a pump coupled to the driver, the measurement shall be taken on the bearing housing near the coupling.

(2) On close-coupled pumps, the measurement point shall be as close as possible to the inboard bearing.

(3) On reciprocating pumps, the measurement point shall be on the bearing housing of the main pump drive shaft; approximately perpendicular to both the shaft and the line of plunger travel.

5.5 Bearing Temperature

5.5.1 The temperature of all centrifugal pump bearings outside the main flow path and the main shaft bearings of reciprocating pumps shall be measured at points selected to be responsive to changes in the temperature of the bearing.

5.5.2 If the pump is provided with a lubricant heat exchanger, the lubricant temperature, when measured prior to the cooler, may be considered the bearing temperature. Lubricant temperature shall be measured at the cooler outlet for information.

5.6 Pump Fluid Temperature

The temperature of the liquid being pumped may be determined at a fixed point in the system for information. The point shall be located in such a way that the temperature measured is representative of the temperature of the liquid passing through the pump.

5.7 Lubricant

The lubricant level or pressure shall be checked prior to or during each test to ensure that the pump is properly lubricated.

6.0 INSTRUMENT REQUIREMENTS

6.1 Accuracy

6.1.1 All instruments used for the measurement of pressure, differential pressure, flow rate and speed shall have a nominal maximum error of ±2% of full scale.

6.1.2 All instruments used for the measurement of temperature and vibration amplitude shall have a nominal maximum error of ±5% of full scale.

6.2 Range

The full scale range of each instrument shall be not greater than four times the reference value.

6.3 Location

Instruments shall be located at their input source.

6.4 Readout

6.4.1 Instruments shall be read directly or via video transmission, or transmitters may be used.

6.4.2 Instrument outputs may be fed directly into a computer for processing and indication, or digital printout.

6.5 Position

Instruments whose readings are position sensitive shall be either permanently mounted or provision shall be made to duplicate position for each test.

6.6 Damping

6.6.1 Symmetrical damping devices or averaging techniques may be used to reduce instrument fluctuations to within ±2% of the observed reading.

6.6.2 Hydraulic readings may be damped by using gage snubbers or by throttling small valves in instrument lines.

6.6.3 If throttling of small valves is used the operator shall alternately open and close the valve several times to verify unobstructed pressure communication, while observing the instrument reading.

6.7 Vibration Instrumentation

6.7.1 One of the following types of instruments shall be used:

(1) Seismic transducer with transmission to a remote readout location;

(2) a portable vibration indicator that clearly identifies the probe or measurement reference point to permit subsequent duplication in both location and plane;

(3) an appropriately calibrated proximity measuring instrument that is designed for detecting the radial deflection of the rotating shaft or coupling.

6.7.2 The frequency response range of the readout system shall be from one-half minimum speed to at least maximum pump shaft rotational speed.

7.0 CALIBRATION REQUIREMENTS

7.1 All instruments, together with their transmitters where used, shall be calibrated prior to the establishment of reference quantities.

7.2 All new or repaired instruments shall be calibrated prior to test use.

7.3 A system of calibration records shall be used to identify each instrument and its date of calibration, or alternatively each instrument may contain an attached tag or sticker that records the date of last calibration.

7.4 Except as required in sections 7.1 and 7.2, all instruments used for these tests shall be verified for calibration validity on a regular basis as established by the Owner.

8.0 TEST PROCEDURES

The following Sections 8.0, 9.0, and 10.0 include general instructions for the data collection and preparation of data sheets, the evaluation of the data, and record management for the pump tests, and are incorporated into this document for optional use by the plant Owner. These instructions, as well as accompanying forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other pump-specific information, such as hydraulic circuit to be used, actual test set-up and performance, precautionary measures, etc., shall be outlined in Field Test Procedures (see Paragraph 2.3) which are called out by the Pump and Valve Testing Program Plan. All changes in this document and equivalent procedures shall comply with the requirements of Section XI, Subsection IWP, "Inservice Testing of Pumps in Nuclear Power Plants".

8.1 Preparation of Pump Data Sheet

8.1.1 The Pump Data Sheet (Figure 1) or its approved equivalent is to be used for both inservice tests and determination of reference values.

8.1.2 The pump inservice tests shall be numbered consecutively for each pump.

8.1.3 Test data may be transferred from the corresponding Field Test Procedure data sheets.

8.1.4 The following information shall be entered on the Pump Data Sheet:

(1) Pump ID
(2) System
(3) Manufacturer
(4) Model
(5) Serial number
(6) Test number
(7) Test date (from Field Test Procedure)
(8) The Field Test Procedure number and Rev. No.
(9) The Model, serial number, and calibration date of all instruments used in the test. (See Section 8.2.2)

8.2 Data Collection

8.2.1 The pump inservice test shall be run in accordance with the Field Test Procedure called out by the Pump and Valve Inservice Testing Plan.

8.2.2 The instruments used in the pump tests shall be identified as follows:

(1) The instrument model and serial number used for the test shall be checked against the information on the Pump Data Sheet, if recorded.

(2) If the instrument model and serial number on the Pump Data Sheet, if recorded, does not correspond to the numbers of the instruments in the field, the Pump Data Sheet shall be corrected.

(3) If the instrument model and serial number are not entered on the Pump Data Sheet, the numbers from the instruments used in the field for the inservice test shall be recorded.

8.2.3 The calibration date shall be recorded on the Pump Data Sheet.

8.2.4 The speed shall be recorded in rpm.

Note: If the pump is directly coupled to a synchronous or induction type motor, the speed need not be measured. In this case, the nameplate speed shall be entered.

8.2.5 The inlet pressure shall be measured in psig both before pump startup and during test, and shall be entered on lines 1 and 2 respectively in the appropriate box in the Pump Data Sheet. Alternately, for constant level water sources (lake, suppression chamber, storage tank), the water level may be measured in feet while establishing and verifying Reference Data Sets and used as information during subsequent test analyses.

8.2.6 The Differential Pressure shall be measured as the difference between the inlet and outlet pressure and shall be in psi. The differential pressure may be measured by use of either a differential pressure gage or transmitter that provides direct measurement, or by taking the difference between the inlet and outlet pressure. (For constant level water sources, the outlet pressure may be assumed to represent the differential pressure.)

Note: If the pump being tested is installed in a fixed resistance system, it is not required to measure the differential pressure if the flow rate is being measured. In this case, enter "N.A." for the differential pressure.

8.2.7 The flow rate shall be measured as the volumetric flow per unit of time.

Note: If the pump being tested is installed in a fixed resistance system, it is not required to measure the flow rate if the differential pressure is being measured. In this case, enter "N.A." for the flow rate.

8.2.8 The Vibration Amplitude shall be measured using one of the instruments described in Section 6.7 and shall be measured in thousandths of an inch (mil).

8.2.9 The Bearing Temperature shall be measured in degrees Fahrenheit.

(1) It is required that the bearing temperature be measured only once a year. Therefore, if the bearing temperature is not being measured, enter "N.A.".

(2) If the bearing temperature is being measured, it is required that the pump be run until three successive readings taken at ten minute intervals do not vary by more than 3%. Only the last 3 readings that comply with this criterion should be recorded.

(3) If the bearing temperature is being determined by measuring the lubricant temperature prior to entering a cooler, then the lubricant temperature at the cooler outlet shall also be recorded for reference. This measurement shall be taken at the same time as the third temperature reading described in (2) above. Enter "N.A." if the Pump is not provided with a lubricant cooler.

8.2.10 The Pump Fluid Temperature shall be measured in degrees Fahrenheit (optional). Enter "N.A." if not measured.

8.2.11 If the lubricant level or pressure cannot be observed, enter "N.A.".

8.2.12 The person(s) responsible for the test shall sign and date the Pump Data Sheet at the completion of the test.

9.0 EVALUATION OF DATA

9.1 Preparation of Pump Reference Data Sheets

9.1.1 The Pump Reference Data Sheets (Figure 2) shall be numbered consecutively for each pump. This number is the Reference Data Set Number.

9.1.2 All information and data from the Pump Data Sheet shall be transferred to the Pump Reference Data Sheet.

9.1.3 The Acceptable Range, Alert Range, and Required Action Range shall be calculated from Table 1.3-1 or equivalent (See Paragraph 1.3.7) and entered on the Pump Reference Data Sheet.

9.1.4 The person(s) responsible for the preparation of the Pump Reference Data Sheet shall sign and date the sheet. The preparation of the Pump Reference Data Sheet shall include a review of the reference values to verify that they represent acceptable pump operation.

9.1.5 If a new set of reference values are established (see Section 1.3.6), the appropirate box on the old Pump Reference Data Sheet shall be checked, the new Reference Date Set Number and the reason(s) for the change shall be entered.

9.2 Preparation of the Pump Analysis Sheet

9.2.1 The Pump Analysis Sheet (Figure 3) shall be completed within 96 hours after completion of the test.

9.2.2 The Pump Analysis Sheet shall have the same Test number as the corresponding Data Sheet.

9.2.3 All information and data from the Pump Data Sheet shall be transferred to the Pump Analysis Sheet. Only the last bearing temperature and inlet pressure readings should be entered.

9.2.4 The latest applicable reference data set number shall be entered on the sheet.

9.2.5 Using the latest Pump Reference Data Sheet, each measured test quantity shall be compared with the corresponding reference value and the applicable boxes on the Pump Analysis Sheet shall be checked.

9.2.6 If all measured test quantities fall within the Acceptable Range, the "Yes" box shall be checked.

9.2.7 If any of the measured test quantities do not fall within the Acceptable Range, the "No" box shall be checked, the corrective action taken described (see Section 9.3), and the Re-test number and date shall be entered.

9.2.8 The person(s) responsible for the analysis shall sign and date the Pump Analysis Sheet. The results of the analysis shall be reflected in the "Test Results" section of the Field Test Procedure.

9.3 Corrective Action

9.3.1 When any measured test quantity falls within the Alert Range the frequency of testing shall be doubled until the cause of the deviation is determined and the condition corrected.

9.3.2 When any measured test quantity falls within the Required Action Range, the pump shall be declared inoperative and not returned to service until the cause of the deviation has been determined and the condition corrected.

9.3.3 Correction can be one of the following:

(1) Replacing the pump
(2) Repairing the pump
(3) An analysis to demonstrate that the condition does not impair pump operability and that the pump will still fulfill its function.

9.3.4 Corrective action per 9.3.3(1) and (2) shall be initiated by filling out a W.R. form as required by the Field Test Procedure.

9.3.5. When any measured test quantity shows deviation greater than the Acceptable Range, the instruments involved may be recalibrated and the test rerun.

9.4 New Reference Values

9.4.1 If in Section 9.3.3 the course of action followed is (1) or (3), a new set of reference values shall be established.

9.4.2 If in Section 9.3.3 the course of action followed is (2), a new set of reference values shall be determined or the old reference values verified by a re-test prior to or within 96 hours after returning the pump to normal service.

10.0 RECORDS

10.1 Pump Summary Sheet

10.1.1 A Pump Summary Sheet (Figure 4) is maintained for each pump to record the current status of the test program.

10.1.2 After each test an entry shall be made on the Pump Summary Sheet which shall include the following:

(1) Test number

(2) Date of test

(3) If any measured test quantity falls in the Required Action Range, that column shall be checked.

(4) If none of the measured test quantities fall in the Required Action Range, but one or more fall in the Alert Range, the Alert Range column shall be checked.

(5) If all measured test quantities fall in the Acceptable Range , that column shall be checked.

(6) Enter any comments if the Alert Range or Required Action Range columns have been checked or to indicate whether the test was run as a retest or to establish a new set of reference values.

(7) Reference Data Set Number used for the comparison for that test.

10.2 Pump and Test Records

10.2.1 The Owner shall maintain at the plant and accessible for audit the following records:

(1) Manufacturer, Model and serial number, or other identification number.

(2) A copy of the manufacturer's acceptance test report, if any, or a summary thereof.

(3) All Pump Summary Sheets.

(4) All Pump Reference Data Sheets.

(5) All Pump Data Sheets (including data sheets from Field Test Procedures).

(6) All Pump Analysis Sheets.

(7) Copies of forms describing corrective action taken, if any.

(8) Pump and Valve Inservice Testing Plan.

ASME SECTION XI INSERVICE TESTING
PUMP DATA SHEET

Pump ID _____ System _____ Test No. _____

Manufacturer _____ Test Date _____
(from Field Test Procedure)

Model _____

Serial No. _____ Field Test
Proc. No./Rev. _____

Measured Parameter			Instrumentation		
			Model & Serial No.	1 ✓	Calibr. Date
Speed	N	_____ rpm			
Inlet Pressure	P_i	1. _____ psig 2. _____ psig			
Differential Pressure	ΔP	_____ psi			
Flow Rate	Q	_____ gpm			
Vibration Amplitude	V	_____ mil			
Bearing Temperatures	T_b	1. _____ °F 2. _____ °F 3. _____ °F			
Lubricant Inlet Temp.	T_i	_____ °F			
Pump Fluid Temperature	T_p	_____ °F			

Note 1 : See Section 8.2.2

Lubricant at proper level or pressure? ☐ Yes ☐ No ☐ N.A.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) Performing Test — Date

FIGURE 1

NUCLEAR ENERGY SERVICES, INC.

ASME SECTION XI INSERVICE TESTING
PUMP REFERENCE DATA SHEET

Pump ID _____ System _____ Ref. Data Set No. _____

Manufacturer _____ Date _____

Model _____ Field Test Proc. No./Rev. _____

Serial No. _____

☐ If box is checked, this Reference Data Set has become VOID.

Refer to Reference Data Set No. _____

Reason(s) for change _____

_____

_____

Measured Parameter	Nominal Value	Acceptable Range	Alert Range		Required Action Range	
			Low	High	Low	High
Inlet Press. Pi	_____ psig					
Diff. Press. ΔP	_____ psi					
Flow Rate. Q	_____ gpm					
Vibr. Ampl. V	_____ mil					
Bearing Temp. Tb	_____ °F					

Ranges are either from Table 1.3-1 or Owner-specified.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) Establishing Reference Data Set — Date

NUCLEAR ENERGY SERVICES, INC.

FIGURE 2

ASME SECTION XI INSERVICE TEST
PUMP ANALYSIS SHEET

Pump ID _____ System _____ Test No. _____

Manufacturer _____ Test Date _____

Model _____ Ref. Data Set No. _____

Serial No. _____ Field Test Proc. No./Rev. _____

Measured Parameter			Comparison with Ref. Values (check applicable boxes)				
			Acceptable Range	Alert Range[1]		Req. Action[2]	
				Low	High	Low	High
Inlet Press.	P_i	_____ psig					
Diff. Press.	ΔP	_____ psi					
Flow Rate	Q	_____ gpm					
Vibr. Ampl.	V	_____ mil					
Bearing Temp.	T_b	_____ ^oF					

(1) If deviations fall within the "Alert Range", the frequency of testing shall be doubled till the cause of deviation is corrected.

(2) If deviations fall within the "Required Action Range", the pump shall be declared inoperative, and not returned to service till corrected.

Review of Data indicates that the pump test parameters are in the Acceptable Range: ☐ Yes ☐ No

If [No], describe corrective action _____ Re-Test No. _____

_____ Re-Test Date _____

_____

Attach "Pump Data Sheet" and "Pump Analysis Sheet" confirming test of operational adequacy subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) performing analysis — Date

NUCLEAR ENERGY SERVICES, INC

FIGURE 3

ASME SECTION XI INSERVICE TESTING
PUMP SUMMARY SHEET

Pump ID _____ System _____ Page _____

Manufacturer _____

Model _____

Serial No. _____ Field Test Proc. No. _____

Test No.	Test Date	Test Successful		Req'd Action Range	Comments	Ref. Data Set No.
		Accep. Range	Alert Range			

NUCLEAR ENERGY SERVICES, INC.

FIGURE 4

FIELD TEST PROCEDURES FOR NINE MILE POINT UNIT 1
SECTION XI PUMP INSERVICE TESTING

Pump Description	Pump ID	Field Test Procedure No.
Core Spray	# 111	NI-ST-Q1
	112	
	121	
	122	
Core Spray Topping	# 111	NI-ST-Q1
	112	
	121	
	122	
Containment Spray	# 111	NI-ST-Q6
	112	
	121	
	122	
Containment Spray Raw Water	# 111	NI-ST-Q6
	112	
	121	
	121	
Liquid Poison	NP02A	NI-ST-MI
	NP02B	
CRD Pumps	# 11	NI-ST-Q2
	12	
Diesel Cooling Raw Water	# 102	NI-ST-M4
	103	

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FIGURE 5

NUCLEAR ENERGY SERVICES, INC.

NES 81A0411

#2

GENERAL PROCEDURE
FOR
ASME SECTION XI
INSERVICE TESTING OF VALVES
CATEGORY A VALVE LEAK RATE TEST

for
NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORP.

by
NUCLEAR ENERGY SERVICES, INC.
Danbury, Connecticut 06810

Rev. No	Date
0	3-22-78
1	12-14-79

Prepared by Albert A. Hoch

Approved by K. F. Schmidt
Mgr. Proj's/ISI Eng.

L. Quinn
QA Mgr.

81A0411

RECORD OF REVISION

Rev. No.	Date	Description	Reason	Prep'd by	App'd by
1	12-14-79	Delete Quality Group "D" Valves	Per NMPC Comment CRA-1130	CJZ	GMG

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General Procedure for ASME Section XI
Inservice Testing of Valves
Category A Valve Leak Rate Test

1.0 SCOPE

1.1 Test Coverage

1.1.1 This document covers the general requirements for inservice leak rate testing of safety related Class 1, 2, and 3 Category A valves, which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident..

1.1.2 The following are exempt from testing:

1) valves which function in the course of plant operation in a manner that demonstrates functionally adequate seat tightness (in such cases, the valve record shall provide the basis for the conclusion that operational observations constitute satisfactory demonstration).

2) valves used only for operating convenience, such as manual vent, drain, instrument, and test valves, and valves used only for maintenance;

3) valves used for system control such as pressure regulating valves;

4) external control and protection systems responsible for sensing plant conditions and providing signals for valve operation.

1.1.3 If it can be determined that conformance with certain code requirements is impractical, relief from these requirements may be requested from the commission. Examples of several possible areas where relief may be granted are:

1) Accessibility - Valve inaccessible because of insufficient access provisions.

2) Environmental Conditions Prohibitive - Because of safety reasons (i.e. high radiation, high temperature, high humidity, etc.) the valve cannot be tested.

3) Instrumentation Not Originally Provided - the installation of proper instrumentation would result in an undue burden or hardship without a compensating increase in the level of plant safety.

4) Valve testing during plant operation could put the plant in an unsafe condition.

1.2 Type of Test

Category A active and passive valves shall be leak-tested.

1.3 Test Frequency

1.3.1 Tests shall be conducted at the same (or greater) frequency as scheduled refueling outages, but not less than once every two years.

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

1.4 Acceptable Limits of Performance Parameters

1.4.1 Valve leakage rates shall be compared to permissible leakage rates specified by the Owner. Alternately, the following rates shall be permissible:

1) for water, at function pressure differential, 30D ml/hr,
2) for air, at function pressure differential, 7.5D standard cu ft/day

D is the nominal valve size in inches.

1.4.2 For check valves, use double the values listed in 1.4.1 (1) and (2) above.

1.5 Definitions

1.5.1 Cagetory A - valves for which seat leakage is limited to a specific maximum amount in the closed position of fullfillment of their function.

1.5.2 Inservice test - a special test procedure for obtaining information through measurement or observation to determine the operational readiness of a valve.

1.5.3 Maintenance - routine valve servicing or work on a valve undertaken to correct or prevent an abnormal or unsatisfactory condition.

1.5.4 Safety Related - those valves necessary to safely shutdown the plant or mitigate the consequences of an accident.

1.5.5 Active valves - valves which are required to change position to accomplish a specific safety-related function.

1.5.6 Passive valves - valves which are not required to change position to accomplish a specific safety-related function.

2.0 REFERENCES

2.1 Reference Documents

1) ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition including the Summer 1975 addenda.

2) NRC Staff Guidance for preparing pump and valve testing program descriptions and associated relief requests pursuant to 10 CFR 50.55a(g).

2.2 Applicable Drawings

All Piping and Instrumentation Drawings, Flow Diagrams and Valve Manuals for the valves covered by 2.1 (1) above form a part of this document.

2.3 Field Procedures

The specific Field Test Procedures required for the actual performance of the tests form a part of this document.

3.0 PROCEDURE CERTIFICATION

The test requirements described in this document comply with Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition including the Summer 1975 addenda, to the extent practical within the limitations of accessibility, environmental conditions, instrumentation and plant safety.

4.0 PERSONNEL QUALIFICATIONS

The persons performing these tests shall be governed according to the Owner's applicable personnel qualifications.

5.0 TEST REQUIREMENTS

5.1 Valve seat leakage tests shall be made with the pressure differential in the same direction as when the valve is performing its function, with the following exceptions:

1) Globe-type valves may be tested with pressure under the seat.
2) Butterfly valves may be tested in either direction, provided their seat construction is designed for sealing against pressure on either side.

3) Gate valves with two-piece disks may be tested by pressurizing them between the seats.

4) Valves (except check valves) may be tested in either direction if the function differential pressure is 15 psi (100 kPa) or less.

5) Leakage tests involving pressure differentials lower than function pressure differentials are permitted in those types of valves in which service pressure will tend to diminish the overall leakage channel opening, as by pressing the disk into or onto the seat with greater force. Gate valves, check valves, and globe-type valves having function pressure differential applied over the seat, are examples of valve applications satisfying this requirement.

Note: When leakage tests are made in such cases using pressures lower than function maximum pressure differential, the observed leakage shall be adjusted to function maximum pressure differential value. This adjustment shall be made by calculation appropriate to the test media and the ratio between test and function pressure differential, assuming leakage to be directly proportional to the pressure differential to the one-half power.

6) Valves not qualifying for reduced pressure testing as defined in (5) above shall be leak-tested at full maximum function pressure differential, with adjustment by calculation if needed to compensate for a difference between service and test media.

5.2 The test medium shall be specified by the Owner.

6.0 INSTRUMENT REQUIREMENTS

There are no specific instrumentation requirements in Section XI for these tests. Any instrumentation required for the performance of these tests shall be specified by the Owner and defined in the Field Test Procedures (see Paragraph 2.3).

7.0 CALIBRATION REQUIREMENTS

Any instrumentation required shall be calibrated in accordance with the Owners specifications.

8.0 TEST PROCEDURES

The following Sections 8.0, 9.0, and 10.0 include general instructions for the data collection and preparation of data sheets, the evaluation of the data, and record management for the valve tests, and are incorporated into this document for optional use by the plant Owner. These instructions, as well as accompanying forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other valve specific information, such as hydraulic circuit to be used, actual test set-up and performance, precautionary measures, etc., shall be outlined in Field Test Procedures (see Parahraph 2.3) which are called out by the Pump and Valve Testing Program Plan. All changes in this document and equivalent procedures shall comply with the requirements of Section XI, Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants".

8.1 Preparation of the Leak Rate Test Data Sheet

8.1.1 The leak Rate Test Data Sheet (Figure 1) is to be used for recording and analyzing the data for the leak rate test of Category A valves.

8.1.2 The Leak Rate Tests shall be numbered consecutively for each valve.

8.1.3 Prior to the performance of the leak rate test, the following information shall be entered on the Leak Rate Test Data Sheet:

1) Valve identification including size and type.
2) System
3) Manufacturer
4) Model
5) Test number
6) Date of the leak rate test
7) The Field Test Procedure number and Rev.

8.2 Data Collection

8.2.1 The valve leak rate test shall be run in accordance with the Field Test Procedure specified by the Pump and Valve Inservice Testing Plan.

8.2.2 Valve seat leakage may be determined by one of the following:

1) draining the line, closing the valve, bringing one side to test pressure, and measuring leakage through a downstream telltale connection, or

2) by measuring the feed rate required to maintain pressure between two valves or between two seats of a gate valve, provided the total apparent leak rate is charged to the valve or gate valve seat being tested, and that the conditions required by Paragraph 5.1 are satisfied.

8.2.3 In Part 1 of the Leak Rate Data Sheet, record the measured leak rate, the test pressure differential, and the temperature of the test medium.

9.0 EVALUATION OF DATA

9.1 Analysis of Leakage Rates

9.1.1 In Part 1 of the Valve Leak Rate Data Sheet, enter the permissible leak rate specified in accordance with Paragraph 1.4.

9.1.2 If the valve is smaller than six inches, enter under Summary of Results the following:

1) Results of the test

2) If valve failed the test, describe the corrective action taken (see Paragraph 9.2) and the Re-test number and date.

3) The dated signature(s) of the person(s) responsible for the test.

9.1.3 If the valve is six inches or larger Parts 2 and 3 shall be completed.

9.1.4 In Part 2 divide the difference between the maximum permissible leak rate and the measured leak rate by the difference between the maximum permissible leak rate and the measured leak rate from the previous test. This number is "R". Check the box that indicates the valve of R.

9.1.5 Part 3 is to be filled in only if there are 3 previous tests that meet the following criteria:

1) the last 3 tests have passed
2) the last 2 tests show an increase in leak rate.

9.1.6 If the criteria in Section 9.1.5 are met, plot the last 3 or more leak rates against time and determine the projected leak rate for the next leak test. Check the box indicating if the projection is above or below 1.1 x Maximum Permissible Rate.

9.1.7 Under Summary of Results check the boxes indicating the results of Parts 1, 2, and 3 where applicable.

9.1.8 If any one of the Parts of the test failed, record the corrective action taken (see Paragraph 9.2) and the Re-test number and date.

9.1.9 The valve Leak Rate Test Data Sheet shall be signed and dated by the person(s) responsible for the test.

9.2 Corrective Action

9.2.1 If a valve fails Parts 1 or 3 of the test, the valve shall be repaired or replaced. A re-test shall be run to show acceptable operation.

9.2.2 If a valve fails Part 2 of the test, the test frequency shall be doubled. The tests shall be scheduled to coincide with a cold shutdown until corrective action is taken, at which time the original test frequency shall be resumed.

10.0 RECORDS

10.1 Valve Summary Sheet

10.1.1 A Valve Summary Sheet (Figure 2) is maintained for each value to record the current status of the test program.

10.1.2 After each test an entry shall be made on the Valve Summary Sheet which will include the following:

1) Test number
2) Date of test
3) Check if the valve passed or failed the test
4) Enter any explanatory comments

10.2 Valve and Test Records

10.2.1 The Owner shall maintain at the plant and accessible for audit the following records:

1) All Value Summary Sheets
2) Field Test Procedures
3) Limiting values of observed parameters
4) All Valve Leak Rate Test Data Sheets
5) Preoperational test and examination results and manufacturer's functional test results, if any.

ASME SECTION XI INSERVICE TESTING
CATEGORY A VALVE LEAK RATE TEST (LRT) DATA SHEET

Valve ID _____ Size _____ Type _____

System _____ Manufacturer _____ Model: _____

Test No. LRT-_____ Date _____ Field Test Proc. No./Rev. _____

PART 1 Leakage Measurement

Test ΔP _____ psi Medium Temp. _____ °F

Permissible Leak Rate : _____ ml/h (water) _____ scfd (air)

Measured Leak Rate: _____ ml/h (water) _____ scfd (air)

If Valve < 6", go to SUMMARY. If Valve ≥ 6", complete Parts 2 and 3.

PART 2 Margin Calculation

$$R = \frac{MR - LR}{MR - PR} = \frac{\quad - \quad}{\quad - \quad} =$$

MR Maximum Permissible Leak Rate
LR Measured Leak Rate (This Test)
PR Measured Leak Rate (Previous Test)

Check one : ☐ $R > 0.5$ (Pass)

☐ $R \leq 0.5$ (Fail)

PART 3 Projection Calculation

Estimate projected rate for next test if:

(1) At least 3 successive tests have passed, and
(2) Leakage rates increase with time.

Projected leak rate for next test (check one) : ☐ Not Applicable

☐ _____ ml/h (water)
_____ scfd (air)

Check one : ☐ Projection below 1.1 x MR (Pass)

☐ Projection above 1.1 x MR (Fail)

(over)

Fig. 1

CATEGORY A VALVE LEAK RATE TEST (LRT) DATA SHEET (Cont.)

SUMMARY OF RESULTS

Review of Data indicates that valve leak parameters are within allowable limits :

		Pass	Fail
	PART 1 Leakage Measurement	☐	☐
Valve ≥6" only	PART 2 Margin Calculation	☐	☐
Valve ≥6" only	PART 3 Projection Calculation	☐	☐

If [F], describe corrective action _____

_____

_____

[1] Re-Test No. LRT-_____ Re-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 1-1

ASME SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Field Test
Proc. No./Rev. _____ Page _____

Test No.[1]	Date	Pass	Fail	Remarks

(1) LRT Leak Rate Test
ET Exercising Test
PIT Position Indicator Test
SRT Safety Relief Test
XT Explosive Test

Fig. 2

FIELD TEST PROCEDURES FOR NINE MILE POINT UNIT 1

SECTION XI INSERVICE TESTING

CATEGORY A LEAK RATE TEST

System	Valve ID	Field Test Procedure No.
Main Steam	01-01	N1-ISP-25.1
	01-02	↓
	01-03	
	01-04	
Emergency Condenser	39-11	N1-ISP-25.2
	39-12	↓
	39-13	
	39-14	
Head Spray	34-01	N1-ISP-25.2
Shutdown Cooling	38-01	N1-ISP-25.2
	38-02	↓
	38-12	
	38-13	
Cleanup	33-01	N1-ISP-25.2
	33-02	↓
	33-04	
	33-05	

1

Fig. 3

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2

GENERAL PROCEDURE
FOR
ASME SECTION XI
INSERVICE TESTING OF VALVES
CATEGORY A B AND C VALVE EXERCISING TEST

for

NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORPORATION

by

NUCLEAR ENERGY SERVICES, INC.
Danbury, Connecticut 06810

Rev. No.	Date
0	3-22-78
1	12-14-79

Prepared by Albert C. Newell

Approved by L F Schmidt
Mgr. Proj's/ISI Eng.

G. D. Wynn
QA Mgr.

81A0412

RECORD OF REVISION

Rev. No.	Date	Description	Reason	Prep'd by	App'd by
1	12-14-79	Delete Quality Group D Valves	Per NMPC Comment CRA-1131	CJR	GHG

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ATTACHMENTS

GENERAL PROCEDURE FOR ASME SECTION XI
INSERVICE TESTING OF VALVES
CATEGORY A, B, AND C VALVE EXERCISING TEST

1.0 SCOPE

1.1 Test Coverage

1.1.1 This document covers general requirements for the inservice exercising testing of active safety-related Class 1 , 2 , and 3 Category A and B valves and Category C check valves, which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident.

1.1.2 The following valves are exempted from testing:

1. Valves used only for operating convenience, such as manual vent, drain, instrument, and test valves, and valves used only for maintenance.

2. External control and protection systems responsible for sensing plant conditions and providing signals for valve operation.

3. Valves used for system control such as pressure regulating valves.

4. Passive valves.

1.1.3 If it has been determined that conformance with certain code requirements is impractical, relief from these requirements may be requested from the commission. Examples of several possible areas where relief may be granted are:

1. Accessibility - Valve inaccessible because of insufficient access provisions.

2. Environmental Conditions Prohibitive - Because of safety reasons (i.e. high radiation, high temperature, high humidity, etc.) the valve cannot be tested.

3. Instrumentation Not Originally Provided - The installation of proper instrumentation would result in an undue burden or hardship without a compensating increase in the level of plant safety.

4. Valve cycling during plant operation could put the plant in an unsafe condition.

1.2 Type of Test

1.2.1 Valves shall be exercised to the position required to fulfill their function.

1.2.2 If only limited operation is practical during plant operation, the valve shall be part-stroke exercised during plant operation and full-stroked during each cold shutdown.

1.2.3 Valves that cannot be exercised during plant operation shall be specifically identified by the Owner and shall be full-stroke exercised during cold shutdowns.

1.3 Test Frequency

1.3.1 Category A and B valves and Category C check valves shall be exercised at least once every 3 months, with the exceptions defined in Paragraphs 1.2.2 and 1.2.3.

1.3.2 Full-stroke exercising during cold shutdowns for all valves not full-stroke exercised during plant operation shall be on a frequency determined by the intervals between shutdowns as follows:

1. For shutdown intervals of 3 months or longer, exercise during each shutdown.

2. For intervals of less than 3 months, full-stroke exercise is not required unless 3 months have passed since last shutdown exercise.

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

1.3.4 Valves which operate in the course of plant operation at a frequency which would satisfy the exercising requirements of Paragraph 1.3.1 need not be additionally exercised, provided the observations otherwise required for testing are made, analyzed and recorded.

1.3.5 If valves are in a system that is out of service, exercising is not required for such valves except 30 days prior to the return of the system to service.

1.4 Acceptable Limits of Performance Parameters

The limiting value of full stroke time of each power-operated valve shall be specified by the Owner.

1.5 Definitions

1.5.1 Category A - valves for which seat leakage is limited to a specific maximum amount in the closed position of fulfillment of their function.

1.5.2 Category B - valves for which seat leakage in the closed position is inconsequential for fulfillment of their function.

1.5.3 Category C - valves which are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves).

1.5.4 Exercising - the demonstration based on direct or indirect visual or other positive indication that the moving parts of a valve function satisfactorily.

1.5.5 Inservice test - a special test procedure for obtaining information through measurement or observation to determine the operational readiness of a valve.

1.5.6 Maintenance - routine valve servicing or work on a valve undertaken to correct or prevent an abnormal or unsatisfactory condition.

1.5.7 Safety-related - those valves necessary to safely shutdown the plant or mitigate the consequences of an accident.

1.5.8 Active valves - valves which are required to change position to accomplish a specific safety-related function.

1.5.9 Passive valves - valves which are not required to change position to accomplish a specific safety-related function.

2.0 REFERENCES

2.1 Reference Documents

1. ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition including the Summer 1975 addenda.

2. NRC Staff Guidance for preparing pump and valve testing program descriptions and associated relief requests pursuant to 10 CFR 50.55a(g).

2.2 Applicable Drawings

All Piping and Instrumentation Drawings, Flow Diagrams and Valve Manuals for the valves covered by 2.1(1) above form a part of this document.

2.3 Field Procedures

The specific Field Test Procedures required for the actual performance of the tests form a part of this document and are listed in Figure 3.

3.0 PROCEDURE CERTIFICATION

The test requirements described in this document comply with Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition including the Summer 1975 addenda, to the extent practical within the limitations of accessibility, environmental conditions, instrumentation and plant safety.

4.0 PERSONNEL QUALIFICATION

The persons performing these tests shall be governed according to the Owner's applicable personnel qualifications.

5.0 TEST REQUIREMENTS

5.1 Category A and B Valves - Exercising Procedure

5.1.1 Valves shall be exercised to the position required to fulfill their function.

5.1.2 The necessary valve disk movement shall be determined by exercising the valve while observing an appropriate indicator which signals the required change of disk position, or observing indirect evidence such as changes in system pressure, flow rate, level, or temperature which reflect disk position.

5.2 Category A and B Power-Operated Valves

The stroke time for all power-operated valves shall be measured whenever such a valve is full-stroke tested.

5.3 Category A and B Fail-Safe Valves

Valves with fail-safe actuators shall be tested by observing the operation of the valves upon loss of actuator power.

5.4 Category C Valves - Exercising Procedure

5.4.1 Check valves shall be exercised to the positions required to fulfill their function.

5.4.2 Normally Open Valves

1. Valves that are normally open during plant operation and whose function is to prevent reversed flow shall be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow.

2. Confirmation that the disk is on its seat shall be by visual observation, by an electrical signal initiated by a position indicating device, by observation of appropriate pressure indications in the system, or by other positive means.

5.4.3 Normally Closed Valves

1. Valves normally closed during plant operation, whose function is to open on reversal of pressure differential, shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated, or a mechanical opening force is applied to the disk.

2. Confirmation that the disk moves away from the seat shall be by visual observation, by electrical signal initiated by a position indicating device, by observation of substantially free flow through the valve as indicated by appropriate pressure indications in the system, or by other positive means.

3. This test may be made with or without flow through the valve.

4. If it is made without flow through the valve, a mechanical exerciser shall be used to move the disk. The force or torque delivered to the disk by the exerciser must be limited to no more than 10% of the equivalent force or torque represented by the minimum emergency condition pressure differential acting on the disk, or 200% the actual observed force or torque required to perform the exercise on the valve when new and in good operating condition, whichever is less. The disk movement shall be sufficient to prove that the disk moves freely off the seat.

5. For swing or tilting disk type valves, if the test is made by use of fluid flow through the valve, the pressure differential for equivalent flow shall be no greater than that observed during the preoperational test.

6. For other types of check valves, it shall be shown that disk movement is sufficient to provide a flow area of no less than 50% of the area of the seat port, or to permit flow adequate for the function of the valve.

6.0 INSTRUMENT REQUIREMENTS

This document does not specify the use of any instruments. If instruments are required for the performance of these tests, they shall be specified by the Owner.

7.0 CALIBRATION REQUIREMENTS

Any instruments required shall be calibrated in accordance with the Owner's specifications.

8.0 TEST PROCEDURES

The following Sections 8.0, 9.0 and 10.0 include general instructions for the data collection and preparation of data sheets, the evaluation of the data, and record management for the valve tests, and are incorporated into this document for optional use by the plant Owner. These instructions, as well as accompanying forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other valve-specific information, such as hydraulic circuit to be used, actual test set-up and performance, precautionary measures, etc., shall be outlined in Field Test Procedures (see Paragraph 2.3) which are called out by the Pump and Valve Testing Program Plan. All changes in this document and equivalent procedures shall comply with the requirements of Section XI, Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants".

8.1 Preparation of the Exercising Test Data Sheet

8.1.1 The Exercising Test Data Sheet (Figure 1) is to be used for recording data for Category A and B valves and Category C check valves exercising test.

8.1.2 The exercising tests shall be numbered consecutively for each valve.

8.1.3 Test data may be transferred from the corresponding Field Test Procedure data sheets.

8.1.4 The following information shall be entered on the Exercising Test Data Sheet:

1. Valve identification including size, type and category.

2. System.

3. Manufacturer.

4. Model.

5. Test Number.

6. The Test Date (from Field Test Procedure)

7. The Field Test Procedure Number and Revision.

8.2 Data Collection

8.2.1 The valve exercising test shall be run in accordance with the Field Test Procedure specified by the Pump and Valve Inservice Testing Plan.

8.2.2 In Part 1 check the appropriate boxes:

1. The test is a part-stroke or full-stroke test.

2. The stroke test is successful (exhibited the required change of valve disk position) or not.

8.2.3 For power-operated valves record in Part 2 the measured stroke time. The stroke time shall be measured to the nearest second or 10% of the maximum allowable stroke time, whichever is less.

8.2.4 For fail-safe valves enter in Part 3 if the valve responded properly on loss of actuator power.

9.0 EVALUATION OF DATA

9.1 Category C Check Valve

9.1.1 On the Exercising Test Data Sheet indicate under Summary of Results, Part 1 if the valve passed the test.

9.1.2 If the valve failed the test, describe the corrective action taken (see Section 9.4) and record the retest number and date.

9.1.3 The Exercising Test Data Sheet shall include the dated signature of the person(s) responsible for the test. The results of the analysis shall be reflected in the "Test Results" section of the Field Test Procedure.

9.2 Category A and B Power-Operated Valve

9.2.1 On the Exercising Test Data Sheet, enter under Part 2 the limiting value of the stroke time.

9.2.2 Check the appropriate box indicating if the measured stroke time was shorter or longer than the limiting time.

If the measured stroke time was longer than the limiting time, the valve has failed the test.

9.2.3 If the measured stroke time was shorter than the limiting time, then the rate of increase in stroke time must be measured.

9.2.3.1 Divide the measured stroke time from this test by the measured stroke time from the previous test. This number if R.

9.2.3.2 Check the appropriate box for the value of R dependent on the limiting stroke time.

9.2.4 On the Exercising Test Data Sheet indicate under Summary of Results the results of Parts 1 and 2.

9.2.5 If the valve failed any part of the test, describe the corrective action taken (see Section 9.4) and record the retest number and date.

9.2.6 The Exercising Test Data Sheet shall include the dated signature of the person(s) responsible for the test. The results of the analysis shall be reflected in the "Test Results" section of the Field Test Procedure.

9.3 Category A and B Fail-Safe Valves

9.3.1 On the Exercising Test Data Sheet used for the test indicate under Summary of Results the results of Part 3.

9.3.2 If the valve failed the test, describe the corrective action taken (see Section 9.4) and record the retest number and date.

9.3.3 The Exercising Test Data Sheet shall include the dated signature of the person(s) responsible for the test. The results of the analysis shall be reflected in the "Test Results" section of the Field Test Procedure.

9.4 Corrective Action

9.4.1 If a valve fails to exhibit the required change of valve disk position by this testing, corrective action shall be initiated immediately by filling out W.R. form as required by the Field Test Procedure.

9.4.2 If the condition is not, or cannot be corrected within 24 hours, the valve shall be declared inoperative.

9.4.3 When corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup.

9.4.4 A retest showing acceptable operation shall be run following any required corrective action before the valve is returned to service.

9.4.5 If a power-operated valve fails the Stroke Time Increase Calculation of Part 2 on the Exercising Test Data Sheet, the test frequency shall be increased to once each month until the condition is corrected.

10.0 RECORDS

10.1 Valve Summary Sheet

10.1.1 A Valve Summary Sheet (Figure 2) is maintained for each valve to record the current status of the test program.

10.1.2 After each test an entry shall be made on the Valve Summary Sheet which will include the following:

1. Test Number.
2. Date of Test.
3. Check if the valve passed or failed the test.
4. Enter any explanatory comments.

10.2 Valve and Test Records

10.2.1 The Owner shall maintain at the plant and accessible for audit the following records:

1. All Valve Summary Sheets.
2. Field Test Procedures.
3. Limiting values of observed parameters.
4. All Exercising Test Data Sheets (including data sheets from Field Test Procedures).
5. Preoperational test and examination results and manufacturer's functional test results, if any.

ASME SECTION XI INSERVICE TESTING
CATEGORY A AND B VALVE AND CATEGORY C CHECK VALVE
EXERCISING TEST (ET) DATA SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Test No. ET-_____ Date _____ (from Field Test Procedure) Field Test Proc. No./Rev. _____

PART 1 Stroke Test

☐ Part-stroke test ☐ Test successful

☐ Full-stroke test ☐ Test not successful

If Category C Check Valve, go to SUMMARY OF RESULTS

PART 2 Power-operated Valve (Category A and B only)

i. Stroke Time Measurement

Measured Stroke Time _____ sec

Limiting Value of Stroke Time _____ sec

☐ Measured stroke time shorter than or equal to limiting time (Pass)

☐ Measured stroke time longer than limiting time (Fail)

ii. Increase in Stroke Time

$R = \frac{\text{Measured stroke time (this test)} \_\_\_\_\_ \text{sec}}{\text{Measured stroke time (previous)} \_\_\_\_\_ \text{sec}} =$

If Limiting Stroke Time $\leq$ 10 sec, check one :

$R < 1.5$ ☐ (Pass)

$R \geq 1.5$ ☐ (Fail)

If Limiting Stroke Time $>$ 10 sec, check one :

$R < 1.25$ ☐ (Pass)

$R \geq 1.25$ ☐ (Fail)

PART 3 Fail-Safe Valve (Category A and B only) .

Did valve test satisfactorily on loss of actuator power ?

☐ Yes ☐ No

(over)

NUCLEAR ENERGY SERVICES INC.

Fig.1

EXERCISING TEST (ET) DATA SHEET (Cont.)

SUMMARY OF RESULTS

Review of Data indicates that the valve exercising test is satisfactory :

		Yes	No
PART 1	(Stroke Test, Category A, B, and C)	☐	☐
PART 2	(Power-operated, Category A and B)		
	Stroke Time	☐	☐
	Increase in Stroke Time	☐	☐
PART 3	(Fail-Safe, Category A and B)	☐	☐

If [No], describe corrective action _____

_____

_____

Re-test No. ET-_____ Re-Test Date _____ [1]

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

FIELD TEST PROCEDURES FOR NINE MILE POINT UNIT 1

SECTION XI CATEGORY A, B, AND C

VALVE EXERCISING TEST

System	Valve ID	Field Test Procedure No.
Core Spray	81-01	N1-ST-Q1
	81-02	
	81-21	
	81-22	
	40-05	
	40-06	
	93-51	
	93-52	
	40-02	
	40-12	
	40-01	
	40-09	
	40-10	
	40-11	
Reactor Cleanup	33-01	N1-ST-Q4
	33-02	
	33-04	
Emergency Condenser	39-09	N1-ST-Q4
	39-10	
	39-07	
	39-08	
	39-05	
	39-06	
	39-11	
	39-12	
	39-13	
	39-14	
Shutdown Cooling	38-01	N1-ST-R8
	38-02	
	38-13	

1

Figure 3

System	Valve ID	Field Test Procedure No.
Containment Spray and Raw Water	80-01	N1-ST-Q5
	80-02	
	80-21	
	80-22	
	93-25	
	93-26	
	93-27	
	93-28	
	93-49	
	93-50	
	80-15	
	80-16	
	80-35	
	80-36	
Main Steam	01-01 (7% Test)	N1-ST-V4
	01-02	
	01-03	
	01-04	
Feedwater	31-03 (7% Test)	N1-ST-V4
	31-04	"
Main Steam	01-01 (Full Stroke)	N1-ST-R8
	01-02	
	01-03	
	01-04	
Feedwater	31-03 (Full Stroke)	N1-ST-R8
	31-04	"
Emerg. Cond. Make Up	60-17	N1-ST-M2
	60-18	"

Figure 3 (cont.)

NES 81A0413

GENERAL PROCEDURE
FOR
ASME SECTION XI
INSERVICE TESTING OF VALVES
VALVE POSITION INDICATOR TEST

for

NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORPORATION

by

NUCLEAR ENERGY SERVICES, INC.
Danbury, Connecticut 06810

Rev. No.	Date
0	3-22-78

Prepared by Albert C. Kroell

Approved by K. P. Schmidt
Mgr. Proj's/ISI Eng.

QA Mgr.

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GENERAL PROCEDURE FOR ASME SECTION XI
INSERVICE TESTING OF VALVES
VALVE POSITION INDICATOR TEST

1.0 SCOPE

1.1 Test Coverage

1.1.1 This document covers the general requirements for inservice Position Indicator Verification Test of safety-related Class 1, 2, and 3 valves with remote position indicators and which perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident.

1.1.2 The following valves are exempted from testing:

1. Valves used only for operating convenience, such as manual vent, drain, instrument, and test valves, and valves used only for maintenance.

2. External control and protection systems responsible for sensing plant conditions and providing signals for valve operation.

3. Valves used for system control such as pressure regulating valves.

1.1.3 If it has been determined that conformance with certain code requirements is impractical, relief from these requirements may be requested from the Commission. Examples of several possible areas where relief may be granted are:

1. Accessibility - Valve inaccessible because of insufficient access provisions.

2. Environmental Conditions Prohibitive - Because of safety reasons (i.e. high radiation, high temperature, high humidity, etc.) the valve cannot be tested.

3. Instrumentation Not Originally Provided - The installation of proper instrumentation would result in an undue burden or hardship without a compensating increase in the level of plant safety.

4. Valve cycling during plant operation could put the plant in an unsafe condition.

1.2 Type of Test

Valves with remote position indicators, which during plant operation are inaccessible for direct observation, shall be visually observed to verify that remote valve indications accurately reflect valve operation.

1.3 Test Frequency

1.3.1 A visual observation shall be made at each scheduled refueling outage with at least one observation being made every 2 years.

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

1.4 Definitions

1.4.1 Inservice test - a special test procedure for obtaining information through measurement or observation to determine the operational readiness of a valve.

1.4.2 Maintenance - routine valve servicing or work on a valve undertaken to correct or prevent an abnormal or unsatisfactory condition.

1.4.3 Safety-related - those valves necessary to safely shutdown the plant or mitigate the consequences of an accident.

2.0 REFERENCES

2.1 Reference Documents

1. ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition including the Summer 1975 addenda.

2. NRC Staff Guidance for preparing pump and valve testing program descriptions and associated relief requests pursuant to 10 CFR 50.55a(g).

2.2 Applicable Drawings

All Piping and Instrumentation Drawings, Flow Diagrams and Valve Manuals for the valves covered by 2.1(1) above form a part of this document.

2.3 Field Procedures

The specific Field Test Procedures required for the actual performance of the tests form a part of this document.

3.0 PROCEDURE CERTIFICATION

The test requirements described in this document comply with Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition including the Summer 1975 addenda, to the extent practical within the limitations of accessibility, environmental conditions, instrumentation and plant safety.

4.0 PERSONNEL QUALIFICATION

The persons performing these tests shall be governed according to the Owner's applicable personnel qualifications.

5.0 TEST REQUIREMENTS

Valves with remote position indicators, which during plant operation are inaccessible for direct observation, shall be visually observed to verify that remote valve indications accurately reflect valve operation.

6.0 INSTRUMENT REQUIREMENTS

There are no specific instrumentation requirements in Section XI for this test. Any instruments required for the performance of these tests shall be specified by the Owner, and defined in the Field Test Procedures (see Paragraph 2.3).

7.0 CALIBRATION REQUIREMENTS

Any instruments required shall be calibrated in accordance with the Owner's specifications.

8.0 TEST PROCEDURES

The following Sections 8.0, 9.0, and 10.0 include general instructions for the data collection and preparation of data sheets, the evaluation of the data, the record management for the valve tests, and are incorporated into this document for optional use by the plant Owner. These instructions, as well as accompanying forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other valve-specific information, such as hydraulic circuit

to be used, actual test set-up and performance, precautionary measures, etc., shall be outlined in Field Test Procedures (see Paragraph 2.3) which are called out by the Pump and Valve Testing Program Plan. All changes in this document and equivalent procedures shall comply with the requirements of Section XI, Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants".

8.1 Preparation of the Valve Position Indicator Test Data Sheet

8.1.1 The Valve Position Indicator Test Data Sheet (Figure 1) is to be used for recording the data for the position indicator test.

8.1.2 The data sheet shall be numbered consecutively for each valve.

8.1.3 Prior to the performance of the position indicator test, the following information shall be entered on the data sheet:

1. Valve identification including size, type and category.
2. System.
3. Manufacturer.
4. Model.
5. Test Number.
6. Date of test.
7. The Field Test Procedure Number and Revision.

8.2 Data Collection

8.2.1 The valve position indicator test shall be run in accordance with the Field Test Procedure specified by the Pump and Valve Inservice Testing Plan.

8.2.2 The verification that the remote valve indicator accurately reflects the valve operation shall be made by visual observation.

9.0 EVALUATION OF DATA

9.1 Record on the data sheet if the remote valve indicator accurately reflects the valve operation.

9.2 If the valve indicator fails the test, it shall be repaired or replaced before the valve is returned to service.

9.3 Record any corrective action taken, the Retest Number and Date.

9.4 The data sheet shall be signed and dated by the person(s) responsible for the test.

10.0 RECORDS

10.1 Valve Summary Sheet

10.1.1 A Valve Summary Sheet (Figure 2) is maintained for each valve to record the current status of the test program.

10.1.2 After each test an entry shall be made on the Valve Summary Sheet which will include the following:

1. Test Number.
2. Date of test.
3. Check if the valve passed or failed the test.
4. Enter any explanatory comments.

10.2 Valve and Test Records

10.2.1 The Owner shall maintain at the plant and accessible for audit the following records:

1. All Valve Summary Sheets.
2. Field Test Procedures.
3. Limiting valves of observed parameters.
4. All Position Indicator Test Data Sheets.
5. Preoperational test and examination results and manufacturer's functional test results.

ASME SECTION XI INSERVICE TESTING
VALVE POSITION INDICATOR TEST (PIT) DATA SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Test No. PIT-_____ Test Date _____ Field Test Proc. No./Rev. _____

Remote valve indications accurately reflect valve operation :

☐ Yes ☐ No

If [No], describe corrective action _____

_____

_____

[1] Re-Test No. PIT-_____ Re-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 1

ASME SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Field Test
Proc. No./Rev. _____ Page _____

Test No.[1]	Date	Pass	Fail	Remarks

(1) LRT Leak Rate Test
ET Exercising Test
PIT Position Indicator Test
SRT Safety Relief Test
XT Explosive Test

Fig. 2

FIELD TEST PROCEDURES FOR NINE MILE POTNT UNIT 1

VALVE POSITION INDICATOR TEST

System	Valve ID	Field Test Procedure No.
Core Spray	40-01	N1-ST-Q1
	40-09	
	40-10	
	40-11	
Cleanup	33-01	N1-ST-Q4
	33-02	"
Shutdown Cooling	38-01	N1-ST-R8
	38-13	"
Main Steam	01-01	N1-ST-R8
	01-02	"
Feedwater	31-03	N1-ST-R8
	31-04	"

Figure 3

NES 81A0414

GENERAL PROCEDURE
FOR
ASME SECTION XI
INSERVICE TESTING OF VALVES
EXPLOSIVELY ACTUATED VALVE TEST

for
NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORP.

by
NUCLEAR ENERGY SERVICES, INC
Danbury, Connecticut 06810

Rev. No	Date
0	3-22-78

Prepared by Albert E. Noell

Approved by
Mgr. Proj's/ISI Eng.

QA Mgr.

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General Procedure for ASME Section XI
Explosively Actuated Valve Test

1.0 SCOPE

1.1 Test Coverage

1.1.1 This document covers the general requirements for inservice explosively actuated valve test of safety-related Class 1, 2, and 3 Category D valves, which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident:

1.1.2 If it has been determined that conformance with certain code requirements is impractical, relief from these requirements may be requested from the Commission. Examples of several possible areas where relief may be granted are:

1) Accessibility - Valve inaccessible because of insufficient access provisions.

2) Environmental Conditions Prohibitive - Because of safety reasons (i.e. high radiation, high temperature, high humidity, etc.) the valve cannot be tested.

3) Valve testing during plant operation could put the plant in an unsafe condition.

1.2 Type of Test

Charges in explosively actuated valves shall be removed and fired.

1.3 Test Frequency

1.3.1 At least 20% of the charges in the explosively actuated valves shall be removed, fired, and replaced every 2 years with charges from a fresh batch.

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

1.4 Definitions

1.4.1 Category D - valves which are actuated by an energy source capable of only one operation, such as rupture disks or explosive-actuated valves.

1.4.2 Inservice test - a special test procedure for obtaining information through measurement or observation to determine the operational readiness of a valve.

1.4.3 Maintenance - routine valve servicing or work on a valve undertaken to correct or prevent an abnormal or unsatisfactory condition.

1.4.4 Safety Related - those valves necessary to safely shutdown the plant or mitigate the consequences of an accident.

2.0 REFERENCES

2.1 Reference Documents

1) ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition including the Summer 1975 addenda.

2) NRC Staff Guidance for preparing pump and valve testing program descriptions and associated relief requests pursuant to 10 CFR 50.55a(g).

2.2 Applicable Drawings

All Piping and Instrumentation Drawings, Flow Diagrams and Valve Manuals for the valves covered by 2.1 (1) above form a part of this document.

2.3 Field Procedures

The specific Field Test Procedures required for the actual performance of the tests form a part of this document.

3.0 PROCEDURE CERTIFICATION

The test requirements described in this document comply with Section XI of the ASME Boiler and Pressure Vessel Code, 1974, to the extent practical within the limitations of accessibility, environmental condition, instrumentation and plant safety.

4.0 PERSONNEL QUALIFICATION

The persons performing these tests shall be governed according to the Owner's applicable personnel qualifications.

5.0 TEST REQUIREMENTS

5.1 At least 20% of the charges in explosively actuated valves shall be removed, fired and replaced every 2 years with charges from a fresh batch.

5.2 A sample charge from the fresh batch shall have been tested satisfactorily.

5.3 In no case shall the charges in such valves be older than 10 years.

6.0 INSTRUMENT REQUIREMENTS

There are no specific instrumentation requirements in Section XI for this test. Any instrumentation required for the performance of these tests shall be specified by the Owner and defined in the Field Test Procedure (see Paragraph 2.3).

7.0 CALIBRATION REQUIREMENTS

Any instruments required shall be calibrated in accordance with the Owner's specifications.

8.0 TEST PROCEDURES

The following Sections 8.0, 9.0, and 10.0 include general instructions for the data collection and preparation of data sheets, the evaluation of the data, and record management for the valve tests, and are incorporated into this document for optional use by the plant Owner. These instructions, as well as accompanying forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other valve specific information, such as hydraulic circuit to be used, actual test set-up and performance, precautionary measures, etc., shall be outlined in Field Test Procedures (see Paragraph 2.3) which are called out by the Pump and Valve Testing Program Plan. All changes in this document and equivalent procedures shall comply with the requirements of Section XI, Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants".

8.1 Preparation of Explosively Actuated Valve Test Data Sheet

8.1.1 The Explosively Actuated Valve Test Data Sheet (Figure 1) is to be used for recording data for the category D Explosively Actuated Valve Test.

8.1.2 The tests shall be numbered consecutively for each valve.

8.1.3 Prior to the performance of the test, the following information shall be entered on the data sheet:

1) Valve identification including size, type, and category.
2) System
3) Manufacturer
4) Model
5) Test Number
6) Date of the test
7) The Field Test Procedure number and revision.

8.2 Data Collection

8.2.1 The Explosively Actuated Valve Test shall be run in accordance with the Field Test Procedure specified by the Pump and Valve Inservice Testing Plan.

8.2.2 Remove the explosive charges record the batch number and fire the charge.

8.2.3 Check the box indicating if the charge fired or failed.

8.2.4 Record the batch number of the replacement charge which shall be from a fresh batch.

NOTE: A sample charge from the fresh batch shall have been tested satisfactorily.

9.0 EVALUATION OF DATA

9.1 Analysis of Test Results

If any of the charges tested failed to fire, record the corrective action (see Section 9.2) re-test number and data. The data sheet shall be signed and dated by the person(s) responsible for the test.

9.2 Corrective Action

If a charge fails to fire, all charges with the same batch number shall be removed, destroyed and replaced with charges from a fresh batch from which a sample charge shall have been tested satisfactorily.

10.0 RECORDS

10.1 Valve Summary Sheet

10.1.1 A valve Summary Sheet (Figure 2) is maintained for each valve to record the current status of the test program.

10.1.2 After each test an entry shall be made on the Valve Summary Sheet which will include the following:

1) Test number
2) Date of test
3) Check if the valve passed or failed the test
4) Enter any explanatory comments, including the batch number of the charge installed in the valve after each test.

10.2 Valve and Test Records

10.2.1 The Owner shall maintain at the plant and accessible for audit the following records:

1) All Valve Summary Sheets (Figure 2)
2) Field Test Procedures
3) Explosively Actuated Valve Test Data Sheets (Figure 1)
4) Preoperational test and examination results and manufacturers functional test results.

ASME SECTION XI INSERVICE TESTING
CATEGORY D EXPLOSIVELY ACTUATED VALVE TEST (XT) DATA SHEET

Valve ID _____ Size _____ Type _____

System _____ Manufacturer _____ Model _____

Test No. XT-_____ Test Date _____ Field Test Proc. No./Rev. _____
(from field test procedure)

Number of Old Charge(s) Tested _____ , Batch No. _____

☐ Charge Fired

☐ Charge Failed to Fire

Batch No. _____ of Replacement Charge(s)

If any charge(s) failed to fire, describe corrective action _____

_____

_____

[1]Re-Test No. XT-_____ Re-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 1

ASME SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Field Test
Proc. No./Rev. _____ Page _____

Test No.[1]	Date	Pass	Fail	Remarks

(1) LRT Leak Rate Test
ET Exercising Test
PIT Position Indicator Test
SRT Safety Relief Test
XT Explosive Test

Fig. 2

FIELD TEST PROCEDURES FOR NINE MILE POINT UNIT 1

SECTION XI EXPLOSIVE VALVE TESTING

System	Valve ID	Field Test Procedure No.
Liquid Poison	EV-NP05A EV-NP05B	N1-MST-C2

Fig. 3

NES 81A0415

GENERAL PROCEDURE
FOR
ASME SECTION XI
CATEGORY C SAFETY AND RELIEF VALVE TEST

for

NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORPORATION

by

NUCLEAR ENERGY SERVICES, INC.
Danbury, Connecticut 06810

Rev. No.	Date
0	3/22/78

Prepared by Albert C. Roehl

Approved by K. Schmidt
Mgr Proj's/ISI Eng.

QA Mgr.

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GENERAL PROCEDURE FOR ASME SECTION XI CATEGORY C SAFETY AND RELIEF VALVE TEST

1.0 SCOPE

1.1 Test Coverage

1.1.1 This document covers the general requirements for the safety and relief valve testing of safety-related Class 1, 2, and 3 Category C valves, which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident.

1.1.2 The following valves are exempted from testing:

1. Valves used only for operating convenience, such as test valves and valves used only for maintenance.

2. External control and protection systems responsible for sensing plant conditions and providing signals for valve operation.

3. Valves used for system control such as pressure regulating valves.

1.1.3 If it has been determined that conformance with certain code requirements is impractical, relief from these requirements may be requested from the commission. Examples of several possible areas where relief may be granted are:

1. Accessibility - Valve inaccessible because of insufficient access provisions.

2. Environmental Conditions Prohibitive - Because of safety reasons (i.e. high radiation, high temperature, high humidity, etc.) the valve cannot be tested.

3. Instrumentation Not Originally Provided - The installation of proper instrumentation would result in an undue burden or hardship without a compensating increase in the level of plant safety.

4. Valve testing during plant operation could put the plant in an unsafe condition.

1.2 Type of Test

Safety and relief valve set points shall be tested.

1.3 Test Frequency

1.3.1 Valves shall be tested at the end of each time period as defined in Table 1.3-1.

TABLE 1.3-1

TESTING SCHEDULE

Time Period	Number of Valves to be Tested
Startup through first refueling	Minimum of N_1[1]/60 X total valves in this category
First refueling through second refueling	Additional valves to make cumulative tested at least N_2[1]/60 X total valves in this category
Second refueling through third refueling, etc.	Additional valves to make cumulative tested at least N_3[1]/60 X total valves in this category, etc.

NOTE:
(1) N_1, N_2, N_3, etc., is the number of months from start-up to first refueling, second refueling, third refueling, etc. When N is a number larger than 60, all valves which have not been tested during the preceeding 5 year period shall be tested. The following period shall then be considered to be the same as "startup to first refueling" for purposes of determining test frequency, with the added requirement that at each refueling all valves which have not been tested during the preceeding 5 year period shall be tested. The subsequent period will be considered the same as the first refueling to the second refueling, etc., with N determined by counting months from the new starting point.

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

1.4 Definitions

1.4.1 Category C - valves which are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves).

1.4.2 Inservice test - a special test procedure for obtaining information through measurement or observation to determine the operational readiness of a valve.

1.4.3 Maintenance - routine valve servicing or work on a valve undertaken to correct or prevent an abnormal or unsatisfactory condition.

1.4.4 Safety-related - those valves necessary to safely shutdown the plant or mitigate the consequences of an accident.

2.0 REFERENCES

2.1 Reference Documents

1. ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition including the Summer 1975 addenda.

2. NRC Staff Guidance for preparing pump and valve testing program desceiptions and associated relief requests pursuant to 10 CFR 50.55a(g).

3. ASME PTC 25.2 - 1966.

2.2 Applicable Drawings

All Piping and Instrumentation Drawings, Flow Diagrams and Valve Manuals for the valves covered by 2.1(1) above form a part of this document.

2.3 Field Procedures

The specific Field Test Procedures required for the actual performance of the tests form a part of this document.

3.0 PROCEDURE CERTIFICATION

The test requirements described in this document comply with Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition including the Summer 1975 addenda, to the extent practical within the limitations of accessibility, environmental conditions, instrumentation and plant safety.

4.0 PERSONNEL QUALIFICATION

The persons performing these tests shall be governed according to the Owner's applicable personnel qualifications.

5.0 TEST REQUIREMENTS

Safety valve and relief valve set points shall be tested in accordance with ASME PTC 25.2 - 1966. Bench testing, with suitable hydraulic or pneumatic equipment, or testing in place with hydraulic or pneumatic assist equipment is an acceptable method under PTC 25.2 - 1966. Valves so tested are not required to be additionally leak tested in accordance with the Valve Leak Rate Test procedure.

6.0 INSTRUMENT REQUIREMENTS

There are no specific instrumentation requirements in Section XI for this test. Any instrumentation required for the performance of these tests shall be specified by the Owner.

7.0 CALIBRATION REQUIREMENTS

Any instruments required shall be calibrated in accordance with the Owner's specifications.

8.0 TEST PROCEDURES

The following Sections 8.0, 9.0 and 10.0 include general instructions for the data collection and preparation of data sheets, the evaluation of the data, and record management for the valve tests, and are incorporated into this document for optional use by the plant Owner. These instructions, as well as accompanying forms, may be modified or replaced by approved equivalents to accommodate existing plant surveillance and maintenance procedures that fully comply with the requirements of Section XI. Other valve-specific information, such as hydraulic circuit to be used, actual test set-up and performance, precautionary measures, etc., shall be outlined in Field Test Procedures (see Paragraph 2.3) which are called out by the Pump and Valve Testing Program Plan. All changes in this document and equivalent procedures shall comply with the requirements of Section XI, Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants".

8.1 Preparation of the Safety and Relief Valve Test Data Sheet

8.1.1 The Safety and Relief Valve Test Data Sheet (Figure 1) is to be used for recording the data for the safety and relief valve test.

8.1.2 The tests shall be numbered consecutively for each valve.

8.1.3 Prior to the performance of the safety and relief valve test, the following information shall be entered on the Safety and Relief Valve Test Data Sheet:

1. Valve identification including size and type.
2. System.
3. Manufacturer.
4. Model.
5. Test Number.
6. Date of the test.
7. The Field Test Procedure Number and Revision.

8.2 Data Collection

8.2.1 The safety and relief valve test shall be run in accordance with the Field Test Procedure specified by the Pump and Valve Inservice Testing Plan.

8.2.2 Safety and relief valve set points shall be tested in accordance with ASME PTC 25.2 - 1966 or approved equivalent.

8.2.3 Record on the data sheet the pressure required to lift the valve.

9.0 EVALUATION OF DATA

9.1 Analysis of Test Results

9.1.1 On the data sheet enter the allowable range of the valve set point.

9.1.2 If the valve failed to operate properly, describe the corrective action taken (see Section 9.2).

9.1.3 The Safety and Relief Valve Test Data Sheet shall be signed and dated by the Person(s) responsible for the test.

9.2 Corrective Action

9.2.1 A valve failing to function properly during the test shall be repaired or replaced.

9.2.2 When any valve in a system fails to function properly during a regular test, additional valves in the system shall be tested as determined by an arbitrary assumption that a 12 month operating period has passed to another refueling, and the additional valves shall be tested to make the cumulative total tested at least N/60 X total valves in this category, where N now includes the additional 12 months (see Table 1.3-1 for definition of N). If any of these additional valves fails to function properly on test, then all valves in the system in this category shall be tested.

10.0 RECORDS

10.1 Valve Summary Sheet

10.1.1 A Valve Summary Sheet (Figure 2) is maintained for each valve to record the current status of the test program.

10.1.2 After each test an entry shall be made on the Valve Summary Sheet which will include the following:

1. Test Number.
2. Date of test.
3. Check if the valve passed or failed the test.
4. Enter any explanatory comments.

10.2 Valve and Test Records

10.2.1 The Owner shall maintain at the plant and accessible for audit the following records:

1. All Valve Summary Sheets.
2. Field Test Procedures.
3. Limiting valves of observed parameters.
4. All Safety and Relief Valve Test Data Sheets.
5. Preoperational test and examination results and manufacturer's functional test results.

ASME SECTION XI INSERVICE TESTING
CATEGORY C SAFETY AND RELIEF VALVE (SRT) DATA SHEET

Valve ID _____ Size _____ Type _____

System _____ Manufacturer _____ Model _____

Test No. SRT-_____ Test Date _____ Field Test Proc. No./Rev. _____

☐ Valve Tested In-Place

☐ Valve Bench-Tested

Pressure required to lift valve _____ psig

Allowable range of set-point _____ - _____ psig

Review of Data indicates that the valve tested satisfactorily :

☐ Yes ☐ No

If [No], describe corrective action _____

_____

_____

[1] Re-Test No. SRT-_____ Te-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and title(s) of Person(s) responsible for Test — Date

Fig. 1

NUCLEAR ENERGY SERVICES, INC.

ASME SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Field Test
Proc. No./Rev. _____ Page _____

Test No.[1]	Date	Pass	Fail	Remarks

(1) LRT Leak Rate Test
ET Exercising Test
PIT Position Indicator Test
SRT Safety Relief Test
XT Explosive Test

Fig. 2

TABLE OF CONTENTS

1. INTRODUCTION AND BASES

This Program Book has been prepared to fulfill the Pump and Valve Inservice Testing requirements for the Nine Mile Point Nuclear Station Unit 1 operated by Niagara Mohawk Power Corporation.

The 1974 and later editions of ASME Code, Section XI incorporate the requirements for operational testing of certain pumps and valves within a nuclear power plant. The Code of Federal Regulations, under 10 CFR 50.55a, requires that the first pump and valve test period be initiated at the start of the next regular 40-month period in a series of such periods beginning at the start of facility commercial operation. The next 40-month period has been established to start in December 1979 for Nine Mile Point Unit 1, which dictates that the Pump and Valve Testing Program be submitted to NRC by June 1979.

According to 10 CFR 50.55a; the edition of the Code applicable to the Pump and Valve Plan would be the one in effect 6 months prior to the start of the next 40-month period. However, as of this writing, the 1975 Summer Addenda is the latest edition of the code endorsed by the NRC. Accordingly, the plan complies to the edition of the code currently approved by the NRC and will be revised, as necessary, to meet the requirements of the new edition, as they are received and endorsed by the NRC.

It should be noted that Nine Mile Point Unit 1 was designed and constructed prior to the adoption of the ASME Code. As a result, certain examinations stipulated by the Code cannot be performed since the plant system and component design does not accommodate them. All pumps and valves that cannot be tested to the full extent of Section XI requirements, due to location, function, design and/or instrumentation, are identified and the reasons for noncompliance fully described using the standard formats recommended by the NRC in the "Guidance for Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55a(g)" attached to their letter of January 5, 1978 to Niagara Mohawk.

The classification is basically provided by Part 50.2(v) of Title 10 of the Code of Federal Regulations for Quality Group A and by NRC Regulatory Guide 1.26 (Rev. 3, February 1976) for Quality Groups B and C.

This Program Book is self contained. Included are instructions for setting up a Section XI Pump and Valve testing schedule and for the integration of the Section XI requirements with the plant Technical Specifications Surveillance testing tasks. The pumps and valves selected are listed in standard formats; reliefs are detailed in the Relief Request sheets; general pump and valve testing procedures and component-specific field test procedures as well as a description of the recording requirements are provided.

2. TEST PLAN DESCRIPTION

According to 10 CFR 50.55a(g), the Section XI Pump and Valve Inservice Testing Program requires to be initiated at the start of the next regular 40-month period subsequent to September 1, 1976, in a series of such periods beginning at the start of the facility commercial operation. The next such period has been established to start in December 1979 for Nine Mile Point Unit 1.

This Plan has been prepared in accordance with the requirements of the ASME Section XI, 1974 edition, up to and including 1975 Summer Addenda, the latest endorsed by the NRC. The Plan shall be revised to comply to the code currently approved by the NRC prior to its implementation in December 1979 and shall be in effect for the first 20-month period. The Plan shall be updated thereafter every 20 months to the edition of the code in effect prior to the start of each 20-month period.

The requirements and record formats for inservice testing of Class 1, 2 and 3 (corresponding to Quality Group A, B, and C respectively) pumps and valves installed at Nine Mile Point Unit 1 have been defined per Section XI, Subsections IWP and IWV, as well as per NRC recommendations in "Guidance for Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55a(g)".

The integration of the Section XI Pump and Valve Testing requirements with the existing plant maintenance and surveillance programs has received primary consideration in the preparation of this Plan. This will assure elimination of duplication of effort and thus reduce the impact on manpower requirements, exposure rates and scheduling that would be caused by the introduction of a new parallel but separate program. To that goal, existing pump and valve procedures were reviewed and adapted with appropriate modifications, and new procedures written in similar formats where no existing ones could be used. Thus, in most cases, because of the unification of the plant's current Technical Specification surveillance testing requirements with the Section XI Pump and Valve Testing needs, one test activity on the components will achieve satisfactory compliance in both programs.

The specific Section XI requirements have been summarized in General Testing Procedures, which also include forms to be used to summarize pump and valve testing status and all supporting documentation. By reference, component-specific Field Test Procedures are part of the General Test Procedures. The Field Test Procedures are the sole documents needed to set up, perform and record the actual field testing and have

been modified to accommodate all special requirements defined in the General Test Procedures.

The General Test Procedures and all attached forms are primarily designed for program control, analysis and comparison, establishment of reference values, and documentation compliance. Test data, wherever required to be entered, will be transferred from data sheets used in the Field Test Procedures. The results of all analyses shall be reflected back in the "Test Results" section of the Field Test Procedures. All corrective action (repair or replacement of components) shall be initated by filling out a Work Request (WR) form as required by the Field Test Procedure.

3. PUMP AND VALVE INSERVICE TESTING PROGRAM BOOK

The following sections comprise the Nine Mile Point Unit 1 Pump and Valve Inservice Testing Program Book and are discussed in detail in their corresponding Appendices.

3.1 Pump and Valve List

Addressed in the Program are Quality Groups A,B and C pumps that are provided with an emergency power source and all safety-related Quality Group A,B and C Valves. Safety-related components are those pumps and valves necessary to safely shut down the plant or mitigate the consequences of an accident. Quality Group A,B and C system boundaries have been established in accordance with Niagara Mohawk Power Corporation ~~Production Plant Engineering~~ DP 020 Mechanical Q-List. 2

Appendix A identifies the selected pumps and valves with all additional information, including relief requests, required by the "NRC Staff Guidance".

3.2 Valve Relief Requests

Appendix B includes detailed information to support requests for relief from testing requirements for each affected valve. Accessibility, high radiation level, high temperature, lack of instrumentation, impractibility of testing during plant operation are examples of relief bases.

3.3 Test Schedules

Detailed pump and valve testing schedules are presented in Appendix C. The schedules are for a 20-month interval starting in December 1979 through August 1981. Other information such as parameters to be tested, applicable General Test Procedures and Field Test Procedures are also incorporated.

3.4 General Testing Procedures

NES has prepared general testing procedures for Section XI requirements for pumps and each category or type of valve specified. Appendix D presents the General Testing Procedures to be used in the Nine Mile Point Unit 1 Pump and Valve Testing Program in conjunction with component-specific Field Test Procedures.

3.5 Records

Appendix E discusses the Section XI recordkeeping and documentation requirements for the Pump and Valve Testing Program.

3.6 Field Test Procedures

All pump- and valve-specific Field Test Procedures are incorporated in Appendix F. These procedures are either existing Nine Mile Point testing procedures, with minor modifications and additions as necessary, or new procedures written in similar format to satisfy Section XI requirements not accommodated by existing procedures. These Field Test Procedures are to be used in the actual testing of components.

APPENDIX A

PUMP AND VALVE LIST

APPENDIX A

PUMP AND VALVE LIST

The lists for safety-related Quality Group A,B and C pumps provided with an emergency power source and safety-related Quality Group A,B and C valves are presented in this Appendix. The standard format recommended by the NRC Staff in their "Guidance for Preparing Pump and Valve Testing Program Descriptions and associated Relief Requests Pursuant to 10 CFR 50.55a(g)". has been used to provide the required information.

In the pump list, the test parameters to be measured and the test frequency are identified. Footnotes 1 through 9 refer to deviations and exceptions to the code requirements and are further discussed below:

(1) For pumps with constant speed drives, speed is not measured since test will be performed at nominal motor nameplate speed as allowed by Section XI, IWP-3100.

(2) For water sources with essentially constant water levels, inlet pressure Pi will not be measured. The water level may be measured while establishing and verifying Reference Data sets and used as information during subsequent test analysis.

(3) For fixed resistance systems, it is not required to measure differential pressure as the flow rate is being measured as allowed by Section XI, IWP-3100.

(4) Conversely, the flow rate need not be measured if the differential pressure is recorded. For constant level water sources, the outlet pressure may be assumed to represent the differential pressure.

(5) Pump bearings are not accessible for vibration measurements in submerged pumps. Motor current may be measured as alternate testing.

(6) Bearing temperatures are not measurable for submerged pumps where the pumped fluid is used as the bearing cooler. These pumps are not provided with built-in bearing temperature measuring devices.

(7) For pumps cooled by the pumped fluid, the observation of the lubricant level to the pump motor is offered as alternate testing.

(8) In view of satisfactory pump surveillance testing performance in the past, quarterly inservice testing is considered to be adequate. Liquid Poison pumps and the Diesel Cooling Raw Water pumps will be tested on a monthly basis as required by Section XI, IWP-3400.

(9) On all pumps, bearing temperatures are measured once a year as stipulated by Section XI, IWP-3300.

The following abbreviations have been used in the valve list.

Valve Type		Normal Position	
G	Gate / Globe	O	Open
R	Relief	C	Closed
SC	Swing Check	LO	Locked Open
E	Explosive	LC	Locked Closed

Actuator Type

MO-AC	AC current Motor Operated
MO-DC	DC current Motor Operated
AO	Air-piston Operated
EM	Electro-Mechanical
SA	Self-Actuated
AD	Air-Diaphram
M	Manual
E	Explosive

Test Requirement

LRT	Leak Rate Test
ET	Exercising Test (including stroke time, unless otherwise noted)
ET/P	Part-stroke Exercising Test
PIT	Position Indicator Test
SRT	Safety/Relief Test
XT	Explosive Test
FST	Fail Safe Test

All relief requests from valve testing requirements are documented in the NRC-recommended standard formats in Appendix B.

LIST OF PUMPS FOR INSERVICE TESTING

System	Pump ID	P&ID	Quality Group	Freq.	Measured Parameter							Field Test Proc. No.
					N	P_i	ΔP	Q	V	T_b	Lube	
Core Spray	111, 112, 121, 122	18007	B	Q[8]	1	2	3	✓	✓	6	7	N1-ST-Q1
Core Spray Topping	111, 112, 121, 122	18007	B	Q[8,9]	1	2	3	✓	✓	✓	✓	N1-ST-Q1
Containment Spray	111, 112, 121, 122	18012	B	Q[8]	1	2	3	✓	✓	6	7	N1-ST-Q6
Cont. Spray Raw Water	111, 112, 121, 122	18012	C	Q[8]	1	2	3	✓	5	6	7	N1-ST-Q6
Liq. Poison	NP 02A NP 02B	18019	B	M[9]	✓	✓	✓	✓	✓	✓	✓	N1-ST-M1
CRD Pumps	11, 12	18016	B	Q[8,9]	1	2	3	✓	✓	✓	✓	N1-ST-Q2
Diesel Cooling Raw Water	102, 103	---	C	M	1	✓	✓	4	5	6	7	N1-ST-M4

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[1]Constant speed drive, test at nominal nameplate speed.
[2]Constant P_i assumed, water level recorded for reference.
[3]Fixed resistance system, flow to be measured only.
[4]Fixed resistance system, discharge pressure to be measured only.
[5]Submerged pump, bearing not accessible for vibration measurement.
[6]Submerged pump, bearing temperature not measurable.
[7]Pump bearings cooled by pumped fluid. Lube level to motor to be observed as alternate testing.
[8]Exception to monthly, quarterly considered adequate in view of past pump surveillance testing performance.
[9]Bearing temperatures measured once a year.

SYSTEM Main Steam . P&ID NO. 18002 . PAGE 1

Valve No.	Quality Group	Coordinates	Valve Category A	B	C	D	E	Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
01-01	B		✓					24"	G	MO-AC	O	LRT, ET PIT	✓	Stroke time = 10 sec, Leak limit = 12.9 scfh @ 22 psig, 7% part-stroke exercising test.
01-02	B		✓					24"	G	MO-AC	O	LRT, ET PIT	✓	Stroke time = 10 sec, Leak limit = 12.9 scfh @ 22 psig, 7% part-stroke exercising test.
01-03	B		✓					24"	G	AO	O	LRT, ET FST	✓	Stroke time = 10 sec, Leak limit = 12.9 scfh @ 22 psig, 7% part-stroke exercising test.
01-04	B		✓					24"	G	AO	O	LRT, ET FST	✓	Stroke time = 10 sec, Leak limit = 12.9 scfh @ 22 psig, 7% part-stroke exercising test.
NR-108A	B				✓			6"	R	EM	C	SRT		
NR-108B	B				✓			6"	R	EM	C	SRT		
NR-108C	B				✓			6"	R	EM	C	SRT		
NR-108D	B				✓			6"	R	EM	C	SRT		
NR-108E	B				✓			6"	R	EM	C	SRT		
NR-108F	B				✓			6"	R	EM	C	SRT		
34-01	B			✓				2"	G	MO-AC	C	ET	✓	
34-02	B				✓			2"	SC	--	C	ET	✓	

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SYSTEM Closure Head Relief P&ID NO. 18002 P/ 2

Valve Serial No.	Quality Group	Coordinates	Valve Category A	B	C	D	E	Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
N7A	B				✓			6"	R	SA	C	SRT		Setpoint = 1218 psig ±1%
N7B	B				✓			6"	R	SA	C	SRT		Setpoint = 1227 psig ±1%
N7C	B				✓			6"	R	SA	C	SRT		Setpoint = 1236 psig ±1%
N7D	B				✓			6"	R	SA	C	SRT		Setpoint = 1227 psig ±1%
N7E	B				✓			6"	R	SA	C	SRT		Setpoint = 1236 psig ±1%
N7F	B				✓			6"	R	SA	C	SRT		Setpoint = 1218 psig ±1%
N7G	B				✓			6"	R	SA	C	SRT		Setpoint = 1227 psig ±1%
N7H	B				✓			6"	R	SA	C	SRT		Setpoint = 1245 psig ±1%
N7J	B				✓			6"	R	SA	C	SRT		Setpoint = 1218 psig ±1%
N7K	B				✓			6"	R	SA	C	SRT		Setpoint = 1236 psig ±1%
N7M	B				✓			6"	R	SA	C	SRT		Setpoint = 1218 psig ±1%
N7N	B				✓			6"	R	SA	C	SRT		Setpoint = 1245 psig ±1%
N7U	B				✓			6"	R	SA	C	SRT		Setpoint = 1254 psig ±1%
N7R	B				✓			6"	R	SA	C	SRT		Setpoint = 1254 psig ±1%
N7S	B				✓			6"	R	SA	C	SRT		Setpoint = 1245 psig ±1%
N7T	B				✓			6"	R	SA	C	SRT		Setpoint = 1254 psig ±1%

(2)

SYSTEM Feedwater P&ID NO. 18005 PAGE 3

Valve No.	Quality Group	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
31-03	B			✓				18"	G	MO-AC	0	ET, PIT	✓	Stroke time = 10 sec, 7% part-stroke exercising test.
31-04	B			✓				18"	G	MO-AC	0	ET, PIT	✓	Stroke time = 10 sec, 7% part-stroke exercising test.
31-01	B				✓			18"	SC	--	0	ET	✓	
31-02	B				✓			18"	SC	--	0	ET	✓	

SYSTEM Reactor Cleanup P&ID NO. 18009 PA 4

Valve No.	Quality Group	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
33-02	B			✓				6"	G	MO-AC	0	ET, PIT		Stroke time = 18 sec.
33-04	B			✓				6"	G	MO-DC	0	ET		Stroke time = 18 sec.
33-01	B			✓				6"	G	MO-AC	0	ET, PIT		Stroke time = 18 sec.
33-03	B				✓			6"	SC	--	0	ET	✓	

NUCLEAR ENERGY SERVICES INC

SYSTEM. Shutdown Cooling P&ID NO. 18018 PAGE 5

Valve No.	Quality Group	Coordinates	Valve Category A	B	C	D	E	Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
38-01	B			✓				14"	G	MO-AC	C	ET, PIT	✓	Stroke time = 40 sec
38-02	B			✓				14"	G	MO-DC	C	ET	✓	Stroke time = 40 sec
38-13	B			✓				14"	G	MO-AC	C	ET, PIT	✓	Stroke time = 40 sec
38-12	B				✓			14"	SC	--	C	ET	✓	

SYSTEM Emergency Condenser P&ID NO. 18017 PAGE 6

Valve No.	Quality Groups	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
39-09	B			✓				10"	G	MO-AC	O	ET		Stroke time = 38 sec.
39-10	B			✓				10"	G	MO-AC	O	ET		Stroke time = 38 sec.
39-07	B			✓				10"	G	MO-DC	O	ET		Stroke time = 38 sec.
39-08	B			✓				10"	G	MO-DC	O	ET		Stroke time = 38 sec.
39-05	B			✓				10"	G	AO	C	ET, FST	✓	Stroke time = 60 sec.
39-06	B			✓				10"	G	AO	C	ET, FST	✓	Stroke time = 60 sec.
60-17	B			✓				4"	G	AD	C	ET		No limit on stroke time
60-18	B			✓				4"	G	AD	C	ET		No limit on stroke time
39-03	B				✓			10"	SC	--	-	ET	✓	
39-04	B				✓			10"	SC	--	-	ET	✓	
60-11	B						✓	4"	G	M	LO	--		
60-12	B						✓	4"	G	M	LO	--		
														Deleted
														Deleted
														Deleted
														Deleted

NUCLEAR ENERGY SERVICES, INC.

SYSTEM Emergency Condenser (continued) P&ID NO. 18017 PAGE 7

Valve No.	QUALITY GROUP	Coordinates	Valve Category A	B	C	D	E	Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
39-11	B			✓				1"	G	AD	O	ET, FST		Stroke Time = 5 sec
39-12	B			✓				1"	G	AD	O	ET, FST		Stroke time = 5 sec
39-13	B			✓				1"	G	AD	O	ET, FST		Stroke time = 5 sec
39-14	B			✓				1"	G	AD	O	ET, FST		Stroke time = 5 sec

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SYSTEM Core Spray P&ID NO. 18007 PAGE 8

Valve No.	QUALITY GROUP	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
81-01	B			✓				14"	G	MO-AC	O	ET		Stroke time = 90 sec.
81-02	B			✓				14"	G	MO-AC	O	ET		Stroke time = 90 sec.
81-21	B			✓				14"	G	MO-AC	O	ET		Stroke time = 90 sec.
81-22	B			✓				14"	G	MO-AC	O	ET		Stroke time = 90 sec.
81-07	B				✓			12"	SC	--	-	ET	✓	
81-08	B				✓			12"	SC	--	-	ET	✓	
81-27	B				✓			12"	SC	--	-	ET	✓	
81-28	B				✓			12"	SC	--	-	ET	✓	
40-03	B				✓			12"	SC	--	-	ET	✓	
40-13	B				✓			12"	SC	--	-	ET	✓	
40-05	B			✓				6"	G	MO-AC	C	ET		Stroke time = 25 sec.
40-06	B			✓				6"	G	MO-AC	C	ET		Stroke time = 25 sec.
93-51	B			✓				12"	G	MO-AC	C	ET		No limit on stroke time.
93-52	B			✓				12"	G	MO-AC	C	ET		No limit on stroke time.
40-02	B			✓				12"	G	MO-AC	O	ET		Stroke time = 25 sec.
40-12	B			✓				12"	G	MO-AC	O	ET		Stroke time = 25 sec.
40-01	B			✓				12"	G	MO-AC	C	ET, PIT		Stroke time = 25 sec.
40-09	B			✓				12"	G	MO-AC	C	ET, PIT		Stroke time = 25 sec.
40-10	B			✓				12"	G	MO-AC	C	ET, PIT		Stroke time = 25 sec.
40-11	B			✓				12"	G	MO-AC	C	ET, PIT		Stroke time = 25 sec.

SYSTEM Core Spray (continued) P&ID NO. 18007 PAGE 9

Valve No.	QUALITY GROUP	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
81-73	B				✓			3/4"	R	SA	C	SRT		Setpoint = 75 psig.
81-74	B				✓			3/4"	R	SA	C	SRT		Setpoint = 75 psig.
81-75	B				✓			3/4"	R	SA	C	SRT		Setpoint = 75 psig.
81-76	B				✓			3/4"	R	SA	C	SRT		Setpoint = 75 psig.
81-11	B				✓			12"	R	SA	C	SRT		Setpoint = 320 psig.
81-31	B				✓			12"	R	SA	C	SRT		Setpoint = 320 psig.
81-77	B				✓			3/4"	R	SA	C	SRT		Setpoint = 60 psig.
81-78	B				✓			3/4"	R	SA	C	SRT		Setpoint = 60 psig.
81-79	B				✓			3/4"	R	SA	C	SRT		Setpoint = 60 psig.
81-80	B				✓			3/4"	R	SA	C	SRT		Setpoint = 60 psig.
81-09	B						✓	12"	G	M	LO	--		
81-10	B						✓	12"	G	M	LO	--		
81-29	B						✓	12"	G	M	LO	--		
81-30	B						✓	12"	G	M	LO	--		

SYSTEM Containment Spray and Raw Water P&ID NO. 18012 PA 10

Valve No.	QUALITY GROUP	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
80-01	B			✓				12"	G	MO-AC	0	ET		Stroke time = 70 sec.
80-02	B			✓				12"	G	MO-AC	0	ET		Stroke time = 70 sec.
80-21	B			✓				12"	G	MO-AC	0	ET		Stroke time = 70 sec.
80-22	B			✓				12"	G	MO-AC	0	ET		Stroke time = 70 sec.
93-25	C			✓				12"	G	MO-AC	0	ET		No limit on stroke time.
93-26	C			✓				12"	G	MO-AC	0	ET		No limit on stroke time.
93-27	C			✓				12"	G	MO-AC	0	ET		No limit on stroke time.
93-28	C			✓				12"	G	MO-AC	0	ET		No limit on stroke time.
93-49	B			✓				12"	G	MO-AC	C	ET		No limit on stroke time.
93-50	B			✓				12"	G	MO-AC	C	ET		No limit on stroke time.
80-06	B				✓			12"	SC	--	-	ET	✓	
80-26	B				✓			12"	SC	--	-	ET	✓	
80-05	B				✓			I2"	SC	--	-	ET	✓	
80-25	B				✓			12"	SC	--	-	ET	✓	
80-08	B						✓	12"	G	M	LC	--		
80-28	B						✓	12"	G	M	LC	--		
80-07	B						✓	12"	G	M	LC	--		
80-27	B						✓	12"	G	M	LC	--		

Valve No.	QUALITY GROUP	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
80-17	B				✓			12"	SC	--	-	ET	✓	
80-37	B				✓			12"	SC	--	-	ET	✓	
80-18	B				✓			12"	SC	--	-	ET	✓	
80-38	B				✓			12"	SC	--	-	ET	✓	
80-19	B				✓			3"	SC	--	-	ET	✓	
80-39	B				✓			3"	SC	--	-	ET	✓	
80-66	B				✓			3"	SC	--	-	ET	✓	
80-68	B				✓			3"	SC	--	-	ET	✓	
93-09	C				✓			12"	SC	--	-	ET	✓	
93-10	C				✓			12"	SC	--	-	ET	✓	
93-11	C				✓			12"	SC	--	-	ET	✓	
93-12	C				✓			12"	SC	--	-	ET	✓	
93-13	C						✓	12"	G	M	LO	--		
93-14	C						✓	12"	G	M	LO	--		
93-15	C						✓	12"	G	M	LO	--		
93-16	C						✓	12"	G	M	LO	--		
93-17	C						✓	12"	G	M	LO	--		
93-18	C						✓	12"	G	M	LO	--		
93-19	C						✓	12"	G	M	LO	--		
93-20	C						✓	12"	G	M	LO	--		

Valve No.	QUALITY GROUP	Coordinates	Valve Category A	B	C	D	E	Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
80-67	B				✓			3"	SC	--	--	ET	✓	
80-65	B				✓			3"	SC	--	--	ET	✓	
80-15	B			✓				12"	G	AO	O	ET		Stroke time = 60 sec.
80-16	B			✓				12"	G	AO	O	ET		Stroke time = 60 sec.
80-35	B			✓				12"	G	AO	O	ET		Stroke time = 60 sec.
80-36	B			✓				12"	G	AO	O	ET		Stroke time = 60 sec.

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Valve No.	QUALITY GROUP	Coordinates	Valve Category A	B	C	D	E	Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
NP05-A	B					✓		1½"	E	E	C	XT		
NP05-B	B					✓		1½"	E	E	C	XT		
NP04-A	B				✓			1"	R	SA	C	SRT		Setpoint = 1400 psig.
NP04-B	B				✓			1"	R	SA	C	SRT		Setpoint = 1400 psig.
42.1-02	B				✓			1½"	SC	--	-	ET	✓	
42.1-03	B				✓			1½"	SC	--	-	ET	✓	
41-05	B						✓	2½"	G	M	LO	--		
42-03	B						✓	1½"	G	M	LO	--		
42-04	B						✓	1½"	G	M	LO	--		
42-13	B						✓	1½"	G	M	LO	--		
42-14	B						✓	1½"	G	M	LO	--		
41-07	B						✓	2½"	G	M	LO	--		
41-11	B						✓	2½"	G	M	LO	--		
42-17	B						✓	1.5"	G	M	LO	--		
42-18	B						✓	1.5"	G	M	LO	--		
42.1-01	B						✓	1.5"	G	M	LO	--		
42-19	B				✓			1.5"	SC	-	-	ET	✓	
42-20	B				✓			1.5"	SC	-	-	ET	✓	

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Valve No.	QUALITY GROUP	Coordinates	Valve Category					Size (inches)	Valve Type	Actuator Type	Normal Position	Test Requirements	Relief Requests	Remarks
			A	B	C	D	E							
DG-CW1	C				✓			4"	SC			ET	✓	
DG-CW2	C				✓			4"	SC			ET	✓	
DG-CW3	C				✓			4"	SC			ET	✓	
DG-CW4	C				✓			4"	SC			ET	✓	

APPENDIX B

VALVE RELIEF REQUESTS

APPENDIX B

VALVE RELIEF REQUESTS

Appendix B contains requests for relief from testing requirements for valves that are affected. The detailed information is presented in standard forms to document that the burden in complying with the code requirements is not justified by the increased level of safety obtained from the testing.

The majority of the relief requests are for the exercising of nontestable swing check valves in Nine Mile Point Unit 1. These valves do not have the necessary instrumentation needed to comply with code requirements. In some cases, however, the adequate closing of the valve will be demonstrated during the inservice testing of an associated pump.

Full-stroke valve cycling in the Main Steam and Feedwater systems during nominal power level operations could subject the plant to undesirable operating conditions such as high pressure and/or high flux scram. A 7% bi-weekly part-stroke exercising test is proposed as alternate testing with full-stroke exercising and stroke time measurements performed during each refueling outage.

Category A leak valve testing will be conducted in accordance with Appendix J to 10 CFR 50 subject to NRC concurrence with planned modifications and NRC approval for exemptions from Appendix J (see Attachment A to letter from G. K. Rhode "Request for Exemption", dated March 3, 1977). Appendix J to 10 CFR 50 imposes detailed and restrictive requirements on leak rate testing to assure containment integrity. Appendix J is recognized by the NRC as the governing regulation for containment leak rate testing. Since all Category A valves are containment isolation valves, Niagara Mohawk believes a duplicate leak rate testing program would be unnecessary. This Program Book incorporates only the MSIV's as Category A valves. For the other Category A valves, the Nine Mile Point Unit 1 Appendix J submittal and its testing programs become the implementing documents. ⚠

RELIEF REQUEST BASIS

Valve ID	:	01-01	P&ID: 18002
System	:	Nuclear Steam System	
Valve Category	:	A	
Quality Group	:	B	

2

Function : Main Steam Blocking Valve

Test Requirement : Full stroke exercising test and stroke time verification quarterly.

Basis for Relief : Valve cannot be full stroked during normal plant operation.

Alternate Testing : The valve will be 7% part-stroked bi-weekly. Full stroke testing and stroke time verification will be performed during each refueling outage.

RELIEF REQUEST BASIS

Valve ID	:	01-02	P&ID: 18002
System	:	Nuclear Steam System	
Valve Category	:	A	
Quality Group	:	B	

2

Function	:	Main Steam Blocking Valve
Test Requirement	:	Full stroke exercising and stroke time verification quarterly.
Basis for Relief	:	Valve cannot be full stroked during normal plant operations.
Alternate Testing	:	The valve will be 7% part-stroked bi-weekly. Full stroke testing and stroke time verification will be performed during each refueling outage.

RELIEF REQUEST BASIS

Valve ID	:	01-03	P&ID: 18002
System	:	Nuclear Steam System	
Valve Category	:	A	
Quality Group	:	B	
Function	:	Main Steam Blocking Valve	
Test Requirement	:	Full stroke exercising and stroke time verification quarterly.	
Basis for Relief	:	Valve cannot be full stroked during normal plant operations.	
Alternate Testing	:	The valve will be 7% part-stroked bi-weekly. Full stroke testing and stroke time verification will be performed during each refueling outage.	

2

RELIEF REQUEST BASIS

Valve ID	:	01-04	P&ID: 18002
System	:	Nuclear Steam System	
Valve Category	:	A	
Quality Group	:	B	
Function	:	Main Steam Blocking Valve	
Test Requirement	:	Full stroke exercising and stroke time verification.	
Basis for Relief	:	Valve cannot be full stroked during normal plant operations.	
Alternate Testing	:	The valve will be 7% part-stroked bi-weekly. Full stroke testing and stroke time verification will be performed during each refueling outage.	

2

RELIEF REQUEST BASIS

Valve ID	:	31-01	P&ID: 18005
System	:	Feed Water	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow out of the reactor vessel into the feed system.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing : No alternate test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	31-02	P&ID: 18005
System	:	Feed Water	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow out of the reactor vessel into the feed system.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing : No alternate test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	31-03	P&ID: 18005
System	:	Feed Water	
Valve Category	:	B	
Quality Group	:	B	

Function : Feedwater blocking valve

Test Requirement : Full stroke exercising test and stroke time verification quarterly.

Basis for Relief : Valve cannot be full stroked during normal operation.

Alternate Testing : This valve will be 7% part-stroked bi-weekly. Full stroke testing and stroke time verification will be performed during each refueling outage.

RELIEF REQUEST BASIS

Valve ID	: 31-04	P&ID: 18005
System	: Feed Water	
Valve Category	: B	
Quality Group	: B	

2

Function	: Feedwater blocking valve
Test Requirement	: Full stroke exercising test and stroke time verification quarterly.
Basis for Relief	: Valve cannot be full stroked during normal operation.
Alternate Testing	: This valve will be 7% part-stroked bi-weekly. Full stroke testing and stroke time verification will be performed during each refueling outage.

RELIEF REQUEST BASIS

Valve ID	:	33-03	P&ID: 18009
System	:	Reactor Cleanup	
Valve Category	:	C	1
Quality Group	:	B	2

Function : Prevent system back flow out of reactor vessel and into reactor cleanup system.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing : This valve will be integrated leak rate tested each refueling outage. This will also provide an indication of adequate operability of the valve. 1

RELIEF REQUEST BASIS

Valve ID	:	34-01	P&ID: 18002
System	:	Nuclear Steam System	
Valve Category	:	B	
Quality Group	:	B	

Function : Head Spray outside isolation.

Test Requirement : Full stroke exercising test and stroke time verification quarterly.

Basis for Relief : This valve is a normally closed passive component with no safety-related function.

Alternate Testing : The valve shall be integrated leak-tested every refueling outage.

RELIEF REQUEST BASIS

Valve ID	:	34-02 P&ID: 18002
System	:	Nuclear Steam System
Valve Category	:	C Check Valve
Quality Group	:	B
Function	:	Prevent back flow from reactor vessel into Head Spray system.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing	:	No alternate exercising test is proposed.

2

RELIEF REQUEST BASIS

Valve ID	:	38-01	P&ID: 18018
System	:	Shutdown Cooling	
Valve Category	:	B	
Quality Group	:	B	

1 2

Function : Shutdown Cooling isolation valve.

Test Requirement : Full stroke exercising test and stroke time verification quarterly.

Basis for Relief : The valve cannot be opened during normal plant operations without the danger of allowing high pressure water into the low pressure shutdown cooling system.

Alternate Testing : The valve will be exercised fully each refueling outage.

RELIEF REQUEST BASIS

Valve ID : 38-02 P&ID: 18018

System : Shutdown Cooling

Valve Category : B

Quality Group : B

Function : Isolation valve.

Test Requirement : Full stroke exercising test and stroke time verification quarterly.

Basis for Relief : The valve cannot be opened during normal plant operations without the danger of allowing high pressure water into the low pressure shutdown cooling system.

Alternate Testing : The valve will be exercised fully each refueling outage.

RELIEF REQUEST BASIS

Valve ID	:	38-12 P&ID: 18018
System	:	Shutdown Cooling
Valve Category	:	C
Quality Group	:	B
Function	:	Prevent back flow from reactor vessel to shutdown cooing system.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing	:	The valve will be integrated leak rate tested each refueling outage. This will also provide an indication of adequate operability of the valve.

RELIEF REQUEST BASIS

Valve ID	:	38-13	P&ID: 18018
System	:	Shutdown Cooling	
Valve Category	:	B	
Quality Group	:	B	

Function : Isolation valve.

Test Requirement : Full stroke exercising test and stroke time verification.

Basis for Relief : The valve cannot be opened during normal plant operations without the danger of allowing high pressure water into the low pressure shutdown cooling system.

Alternate Testing : The valve will be exercised fully each refueling outage.

RELIEF REQUEST BASIS

Valve ID	:	39-03 P&ID: 18017
System	:	Emergency Cooling
Valve Category	:	C Check Valve
Quality Group	:	B
Function	:	Prevent back flow into the emergency cooling return line from the reactor vessel.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing	:	No alternate testing is proposed.

2

RELIEF REQUEST BASIS

Valve ID	: 39-04	P&ID: 18017
System	: Emergency Cooling	
Valve Category	: C Check Valve	
Quality Group	: B	

Function : Prevent back flow into the emergency cooling return line from the reactor vessel.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID : 39-05 P&ID: 18017

System : Emergency Cooling

Valve Category : B

Quality Group : B

Function : Outside Isolation Valve

Test Requirement : Exercising of the valve from its normal closed position to the open position required to fulfill its function.

Basis for Relief : The opening of this valve during plant operation would cause cold water from the emergency cooling piping to enter the reactor vessel with a potential for scram.

Alternate Testing : The valve will be exercised during each refueling outage.

RELIEF REQUEST BASIS

Valve ID	: 39-06	P&ID: 18017
System	: Emergency Cooling	
Valve Category	: B	
Quality Group	: B	
Function	: Outside Isolation Valve	
Test Requirement	: Exercising of the valve from its normal closed position to the open position required to fulfill its function.	
Basis for Relief	: The opening of this valve during plant operation would cause cold water from the emergency cooling piping to enter the reactor vessel with a potential for scram.	
Alternate Testing	: The valve will be exercised during each refueling outage.	

RELIEF REQUEST BASIS

Valve ID	:	40-03	P&ID: 18007
System	:	Core Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : Prevent back flow from the Reactor Vessel to an idle Core Spray loop or to Containment Spray Raw Water, when the other Core Spray loop is in service.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	40-13	P&ID: 18007
System	:	Core Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : Prevent back flow from the Reactor Vessel to an idle Core Spray loop or to Containment Spray Raw Water, when the other Core Spray loop is in service.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	42-19 P&ID: 18019
System	:	Liquid Poison
Valve Category	:	C Check Valve
Quality Group	:	B

Function : To prevent back flow when Liquid Poison pump #11 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	42-20	P&ID: 18019
System	:	Liquid Poison	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow when Liquid Poison pump #12 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	42.1-02	P&ID: 18019
System	:	Liquid Poison	
Valve Category	:	C Check Valve	
Quality Group	:	B	

2

Function : Prevent back leadage from reactor vessel back to the liquid poison system.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	42.1-03 P&ID: 18019
System	:	Liquid Poison
Valve Category	:	C Check Valve
Quality Group	:	B

Function : Prevent back leakage from reactor vessel to the liquid poison system.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-05	P&ID: 18012
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow when Containment Spray pump #121 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-06 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B

Function : To prevent back flow when the Containment Spray pump #111 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-17 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B
Function	:	To prevent back flow from Drywell spargers to balance of system when redundant loop is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-18	P&ID: 18007
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow from Drywell spargers to balance of system when redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-19	P&ID: 18012
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow from Torus spargers to balance of system when redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-25 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B

Function : To prevent back flow when the Containment Spray pump #122 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-26 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B
Function	:	Prevent back flow when Containment Spray pump #112 is idle and the balance of system is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-37	P&ID: 18012
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow from the Drywell spargers to the balance of the system when redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-38	P&ID: 18012
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow from Drywell spargers to balance of system when redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-39 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B

2

Function : To prevent back flow from Torus Spargers to balance of system when redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-65 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B

Function : To prevent back flow from the Torus spargers to the balance of the system when the redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-66 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B

2

Function	:	To prevent back flow from the Torus spargers to the balance of the system when the redundant loop is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-67	P&ID: 18012
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow from the Torus spargers to the balance of the system when redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	80-68 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	B

Function : To prevent back flow from the Torus spargers to the balance of the system when the redundant loop is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	: 81-07	P&ID: 18007
System	: Core Spray	
Valve Category	: C Check Valve	
Quality Group	: B	

Function : To prevent back flow when Core Spray pump #121 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing : The operability of this valve will be demonstrated during the Core Spray Pump #122 inservice testing quarterly.

RELIEF REQUEST BASIS

Valve ID	:	81-08	P&ID: 18007
System	:	Core Spray	
Valve Category	:	C Check Valve	
Quality Group	:	B	

Function : To prevent back flow when Core Spray pump #122 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing : The operability of this valve will be demonstrated during the Core Spray Pump #121 inservice testing quarterly.

RELIEF REQUEST BASIS

Valve ID	:	81-27 P&ID: 18007
System	:	Core Spray
Valve Category	:	C Check Valve
Quality Group	:	B
Function	:	To prevent back flow when Core Spray pump #111 is idle and the balance of the system is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing	:	The operability of this valve will be demonstrated during the Core Spray Pump #112 inservice testing quarterly.

RELIEF REQUEST BASIS

Valve ID	:	81-28 P&ID: 18007
System	:	Core Spray
Valve Category	:	C Check Valve
Quality Group	:	B

Function : To prevent back flow when Core Spray pump #112 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: The operability of this valve will be demonstrated during the Core Spray Pump #111 inservice testing quarterly.

RELIEF REQUEST BASIS

Valve ID	:	93-09 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	C
Function	:	To prevent back flow when the Containment Spray Raw Water pump #121 is idle and the balance of the system is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	93-10	P&ID: 18012
System	:	Containment Spray	
Valve Category	:	C Check Valve	
Quality Group	:	C	

Function : To prevent back flow when Containment Spray Raw Water pump #111 is idle and the balance of the system is operating.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	93-11 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	C
Function	:	To prevent back flow when the Containment Spray Raw Water pump #122 is idle and the balance of the system is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	93-12 P&ID: 18012
System	:	Containment Spray
Valve Category	:	C Check Valve
Quality Group	:	C
Function	:	To prevent back flow when Containment Spray Raw Water pump #112 is idle and balance of system is operating.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	DG-CW1	P&ID: OP-45-4
System	:	Emergency Diesel Cooling Water	
Valve Category	:	C Check Valve	
Quality Group	:	C	

2

Function	:	Prevent back flow through the Diesel Generator Unit 103 Heat Exchanger when Unit 102 is operational.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	DG-CW2 P&ID: OP-45-3
System	:	Emergency Diesel Cooling Water
Valve Category	:	C Check Valve
Quality Group	:	C

Function : Prevent back flow through the Diesel Generator Unit 102 Heat Exchanger when Unit 103 is operational

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	DG-CW3 P&ID: OP-45-4
System	:	Emergency Diesel Cooling Water
Valve Category	:	C Check Valve
Quality Group	:	C
Function	:	Prevent back flow through the Diesel Generator Unit 103 Heat Exchanger when Unit 102 is operational.
Test Requirement	:	Exercising of the valve from its normal open position to the closed position required to fulfill its function.
Basis for Relief	:	This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.
Alternate Testing:		No alternate exercising test is proposed.

RELIEF REQUEST BASIS

Valve ID	:	DG-CW-4 P&ID: OP-45-3
System	:	Emergency Diesel Cooling Water
Valve Category	:	C Check Valve
Quality Group	:	C

Function : Prevent back flow through the Diesel Generator Unit 102 Heat Exchanger when Unit 103 is operational.

Test Requirement : Exercising of the valve from its normal open position to the closed position required to fulfill its function.

Basis for Relief : This valve does not have an attached position indicating device (local or remote), nor does the system have adequate sensing devices to give secondary indications of the valve position. To provide the necessary testing devices would not improve the reliability or the safety of the valve to a level that would warrant the cost of installation.

Alternate Testing: No alternate exercising test is proposed.

APPENDIX C

TEST SCHEDULES

APPENDIX C

TEST SCHEDULES

The pump inservice testing frequency is the Pump List of Appendix A. Appendix C presents the testing requirements and frequencies for the inservice testing of valves. These tables are intended to provide scheduling information for Nine Mile Point Unit 1 operating personnel in integrating Section XI Pump and Valve Inservice Testing requirements with Technical Specification surveillance testing programs.

Table C-1 lists all required valve testing grouped by system. Valve ID's, test frequencies, field test procedures and test limits are specified.

Table C-2 reorganizes the same information by frequency and field test procedures.

The schedules presented here are applicable to a 20-month period starting in December 1979 and ending in August 1981. The program will be updated to applicable Code addenda for subsequent 20-month intervals.

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE	
Main Steam	01-01	A	LRT	Leak=12.9 scfh @ 22 psig	C	N1-ISP-25.1	81A0411	
			ET/p	7% part-stroke	Wb	N1-ST-V4	81A0412	
			ET	Stroke time=10 sec	C	N1-ST-R8	81A0412	
			PIT		C	N1-ST-R8	81A0413	
	01-02	A	LRT	Leak=12.9 scfh @ 22 psig	C	N1-ISP-25.1	81A0411	
			ET/p	7% part-stroke	Wb	N1-ST-V4	81A0412	
			ET	Stroke time=10 sec	C	N1-ST-R8	81A0412	
			PIT		C	N1-ST-R8	81A0413	
	01-03	A	LRT	Leak=12.9 scfh @ 22 psig	C	N1-ISP-25.1	81A0411	
			ET/p	7% part-stroke	Wb	N1-ST-V4	81A0412	
			ET, FST	Stroke time=10 sec	C	N1-ST-R8	81A0412	⚠1
	01-04	A	LRT	Leak=12.9 scfh @22 psig	C	N1-ISP-25.1	81A0411	
			ET/p	7% part-stroke	Wb	N1-ST-V4	81A0412	
			ET, FST	Stroke time=10 sec	C	N1-ST-R8	81A0412	⚠1
	NR-108A	C	SRT	Setpoint=1090 psig	C	N1-ST-C2	81A0415	
	NR-108B	C	SRT	Setpoint=1090 psig	C	N1-ST-C2	81A0415	
	NR-108C	C	SRT	Setpoint=1095 psig.	C	N1-ST-C2	81A0415	⚠1
	NR-108D	C	SRT	Setpoint=1095 psig	C	N1-ST-C2	81A0415	
	NR-108E	C	SRT	Setpoint=1100 psig	C	N1-ST-C2	81A0415	
	NR-108F	C	SRT	Setpoint=1100 psig	C	N1-ST-C2	81A0415	

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

TABLE C-1

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Main Steam	N7A *	C	SRT	Setpoint=1218 psig	2C	by NMPC	81A0415
	N7B	C	SRT	Setpoint=1227 psig	2C	by NMPC	81A0415
	N7C	C	SRT	Setpoint=1236 psig	2C	by NMPC	81A0415
	N7D	C	SRT	Setpoint=1227 psig	2C	by NMPC	81A0415
	N7E	C	SRT	Setpoint=1236 psig	2C	by NMPC	81A0415
	N7F	C	SRT	Setpoint=1218 psig	2C	by NMPC	81A0415
	N7G	C	SRT	Setpoint=1227 psig	2C	by NMPC	81A0415
	N7H	C	SRT	Setpoint=1245 psig	2C	by NMPC	81A0415
	N7J	C	SRT	Setpoint=1218 psig	2C	by NMPC	81A0415
	N7K	C	SRT	Setpoint=1236 psig	2C	by NMPC	81A0415
	N7M	C	SRT	Setpoint=1218 psig	2C	by NMPC	81A0415
	N7N	C	SRT	Setpoint=1245 psig	2C	by NMPC	81A0415
	N7U	C	SRT	Setpoint=1254 psig	2C	by NMPC	81A0415
	N7R	C	SRT	Setpoint=1254 psig	2C	by NMPC	81A0415
	N7S	C	SRT	Setpoint=1245 psig	2C	by NMPC	81A0415
	N7T	C	SRT	Setpoint=1254 psig	2C	by NMPC	81A0415

* This test should be scheduled by the valve serial no.'s, not by flange locations.

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Feedwater	31-03	B	ET/p	7% part-stroke	Wb	N1-ST-V4	81A0412
			ET	Stroke time=10 sec	C	N1-ST-R8	81A0412
			PIT		C	N1-ST-R8	81A0413
	31-04	B	ET/p	7% part-stroke	Wb	N1-ST-V4	81A0412
			ET	Stroke time=10 sec	C	N1-ST-R8	81A0412
			PIT		C	N1-ST-R8	81A0413

[1]
- LRT — Leak Rate Test
- ET/p — Part-stroke Exercising Test
- ET — Full-stroke Exercising Test
- SRT — Safety Relief Test
- PIT — Position Indicator Test
- FST — Fail Safe Test
- XT — Explosive Test

[2]
- C — Cyclic (every scheduled refueling outage)
- 2C. — Once every two Cycles
- Q — Quarterly
- Wb — Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Reactor Cleanup	33-01	B	ET	Stroke time=18 sec	Q	N1-ST-Q4	81A0412
			PIT		C	N1-ST-Q4	81A0413
	33-02	B	ET	Stroke time=18 sec	Q	N1-ST-Q4	81A0412
			PIT		C	N1-ST-Q4	81A0413
	33-04	B	ET	Stroke time=18 sec	Q	N1-ST-Q4	81A0412

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Shutdown Cooling	38-01	B	ET	Stroke time=40 sec	C	N1-ST-R8	81A0412
			PIT		C	N1-ST-R8	81A0413
	38-13	B	ET	Stroke time=40 sec	C	N1-ST-R8	81A0412
			PIT		C	N1-ST-R8	81A0413
	38-02	B	ET	Stroke time=40 sec	C	N1-ST-R8	81A0412

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Emergency Condenser	39-09	B	ET	Stroke time=38 sec	Q	N1-ST-Q4	81A0412
	39-10	B	ET	Stroke time=38 sec	Q	N1-ST-Q4	81A0412
	39-07	B	ET	Stroke time=38 sec	Q	N1-ST-Q4	81A0412
	39-08	B	ET	Stroke time=38 sec	Q	N1-ST-Q4	81A0412
	39-05	B	ET,FST	Stroke time=60 sec	C	N1-ST-Q4	81A0412
	39-06	B	ET,FST	Stroke time=60 sec	C	N1-ST-Q4	81A0412
	Deleted						
	Deleted						
	Deleted						
	Deleted						
	39-11	B	ET,FST	Stroke Time = 5 sec	Q	N1-ST-Q4	81A0412

[1] LRT Leak Rate Test
ET/p Part-stroke Exercising Test
ET Full-stroke Exercising Test
SRT Safety Relief Test
PIT Position Indicator Test
FST Fail Safe Test
XT Explosive Test

[2] C Cyclic (every scheduled refueling outage)
2C Once every two Cycles
Q Quarterly
Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Emergency Condenser	39-12	B	ET,FST	Stroke time=5 sec	Q	N1-ST-Q4	81A0412
	39-13	B	ET,FST	Stroke time=5 sec	Q	N1-ST-Q4	81A0412
	39-14	B	ET,FST	Stroke time=5 sec	Q	N1-ST-Q4	81A0412
Emerg. Cond Make Up	60-17	B	ET	No limit on stroke time	Q	N1-ST-M2	81A0412
	60-18	B	ET	No limit on stroke time	Q	N1-ST-M2	81A0412

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C. Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Core Spray	81-01	B	ET	Stroke time=90 sec	Q	N1-ST-Q1	81A0412
	81-02	B	ET	Stroke time=90 sec	Q	N1-ST-Q1	81A0412
	81-21	B	ET	Stroke time=90 sec	Q	N1-ST-Q1	81A0412
	81-22	B	ET	Stroke time=90 sec	Q	N1-ST-Q1	81A0412
	40-05	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
	40-06	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
	40-02	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
	40-12	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
	40-01	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
			PIT		C	N1-ST-Q1	81A0413
	40-09	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
			PIT		C	N1-ST-Q1	81A0413
	40-10	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
			PIT		C	N1-ST-Q1	81A0413
	40-11	B	ET	Stroke time=25 sec	Q	N1-ST-Q1	81A0412
			PIT		C	N1-ST-Q1	81A0413
	93-51	B	ET	No stroke time limit	Q	N1-ST-Q1	81A0412
	93-52	B	ET	No stroke time limit	Q	N1-ST-Q1	81A0412

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Core Spray	81-73	C	SRT	Setpoint=75 psig	2C	by NMPC	81A0415
	81-74	C	SRT	Setpoint=75 psig	2C	by NMPC	81A0415
	81-75	C	SRT	Setpoint=75 psig	2C	by NMPC	81A0415
	81-76	C	SRT	Setpoint=75 psig	2C	by NMPC	81A0415
	81-11	C	SRT	Setpoint=320 psig	2C	by NMPC	81A0415
	81-31	C	SRT	Setpoint=320 psig	2C	by NMPC	81A0415
	81-77	C	SRT	Setpoint=60 psig	2C	by NMPC	81A0415
	81-78	C	SRT	Setpoint=60 psig	2C	by NMPC	81A0415
	81-79	C	SRT	Setpoint=60 psig	2C	by NMPC	81A0415
	81-80	C	SRT	Setpoint=60 psig	2C	by NMPC	81A0415

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Containment Spray	80-01	B	ET	Stroke time=70 sec	Q	N1-ST-Q5	81A0412
	80-02	B	ET	Stroke time=70 sec	Q	N1-ST-Q5	81A0412
	80-21	B	ET	Stroke time=70 sec	Q	N1-ST-Q5	81A0412
	80-22	B	ET	Stroke time=70 sec	Q	N1-ST-Q5	81A0412
	80-15	B	ET	Stroke time=60 sec	Q	N1-ST-Q5	81A0412
	80-16	B	ET	Stroke time=60 sec	Q	N1-ST-Q5	81A0412
	80-35	B	ET	Stroke time=60 sec	Q	N1-ST-Q5	81A0412
	80-36	B	ET	Stroke time=60 sec	Q	N1-ST-Q5	81A0412

[1]
- LRT — Leak Rate Test
- ET/p — Part-stroke Exercising Test
- ET — Full-stroke Exercising Test
- SRT — Safety Relief Test
- PIT — Position Indicator Test
- FST — Fail Safe Test
- XT — Explosive Test

[2]
- C — Cyclic (every scheduled refueling outage)
- 2C — Once every two Cycles
- Q — Quarterly
- Wb — Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Containment Spray Raw Water	93-25	B	ET	No stroke time limit	Q	N1-ST-Q5	81A0412
	93-26	B	ET	No stroke time limit	Q	N1-ST-Q5	81A0412
	93-27	B	ET	No stroke time limit	Q	N1-ST-Q5	81A0412
	93-28	B	ET	No stroke time limit	Q	N1-ST-Q5	81A0412
	93-49	B	ET	No stroke time limit	Q	N1-ST-Q5	81A0412
	93-50	B	ET	No stroke time limit	Q	N1-ST-Q5	81A0412

[1]
- LRT — Leak Rate Test
- ET/p — Part-stroke Exercising Test
- ET — Full-stroke Exercising Test
- SRT — Safety Relief Test
- PIT — Position Indicator Test
- FST — Fail Safe Test
- XT — Explosive Test

[2]
- C — Cyclic (every scheduled refueling outage)
- 2C — Once every two Cycles
- Q — Quarterly
- Wb — Bi-weekly

SYSTEM	VALVE ID	CAT.	TEST[1] REQ'S	TEST LIMITS	FREQ[2]	NMPC FIELD TEST PROCEDURE	NES GENERAL PROCEDURE
Liquid Poison	NP05A	D	XT		C	N1-MST-C2	81A0414
	NP05B	D	XT		C	N1-MST-C2	81A0414
	NP04A	C	SRT	Setpoint=1400 psig	2C	by NMPC	81A0415
	NP04B	C	SRT	Setpoint=1400 psig	2C	by NMPC	81A0415

[1]
- LRT Leak Rate Test
- ET/p Part-stroke Exercising Test
- ET Full-stroke Exercising Test
- SRT Safety Relief Test
- PIT Position Indicator Test
- FST Fail Safe Test
- XT Explosive Test

[2]
- C Cyclic (every scheduled refueling outage)
- 2C Once every two Cycles
- Q Quarterly
- Wb Bi-weekly

FREQUENCY	NMPC FIELD PROCEDURE	SYSTEM	VALVE NO.	TEST REQUIREMENTS
Quarterly	N1-ST-Q4	Cleanup	33-01	Exercising Test
			33-02	Exercising Test
			33-04	Exercising Test
		Emergency Condenser	39-09	Exercising Test
			39-10	Exercising Test
			39-07	Exercising Test
			39-08	Exercising Test
				Deleted
				Deleted
				Deleted
				Deleted
			39-11	Exercising Test, Fail-Safe Test
			39-12	Exercising Test, Fail-Safe Test
			39-13	Exercising Test, Fail-Safe Test
			39-14	Exercising Test, Fail-Safe Test
	N1-ST-Q1	Core Spray	81-01	Exercising Test
			81-02	Exercising Test
			81-21	Exercising Test
			81-22	Exercising Test
			40-05	Exercising Test
			40-06	Exercising Test
			40-02	Exercising Test
			40-12	Exercising Test
			40-01	Exercising Test
			40-09	Exercising Test
			40-10	Exercising Test
			40-11	Exercising Test
			93-51	Exercising Test
			93-52	Exercising Test

TABLE C-2

FREQUENCY	NMPC FIELD PROCEDURE	SYSTEM	VALVE NO.	TEST REQUIREMENTS
Quarterly (continued)	N1-ST-Q5	Containment Spray	80-01	Exercising Test
			80-02	Exercising Test
			80-21	Exercising Test
			80-22	Exercising Test
			80-15	Exercising Test
			80-16	Exercising Test
			80-35	Exercising Test
			80-36	Exercising Test
		Containment Spray Raw Water	93-25	Exercising Test
			93-26	Exercising Test
			93-27	Exercising Test
			93-28	Exercising Test
			93-49	Exercising Test
			93-50	Exercising Test
	N1-ST-M2	Emerg. Cond Make Up	60-17	Exercising Test
			60-18	Exercising Test

FREQUENCY	NMPC FIELD PROCEDURE	SYSTEM	VALVE NO.	TEST REQUIREMENTS
Bi-weekly	N1-ST-V4	Main Steam	01-01	Part-stroke Exercising Test
			01-02	Part-stroke Exercising Test
			01-03	Part-stroke Exercising Test
			01-04	Part-stroke Exercising Test
		Feedwater	31-03	Part-stroke Exercising Test
		"	31-04	Part-stroke Exercising Test

FREQUENCY	NMPC FIELD PROCEDURE	SYSTEM	VALVE NO.	TEST REQUIREMENTS
Every 2 Cycles	by NMPC	Main Steam	N7A	Safety Relief Test
			N7B	
			N7C	
			N7D	
			N7E	
			N7F	
			N7G	
			N7H	
			N7J	
			N7K	
			N7M	
			N7N	
			N7U	
			N7R	
			N7S	
			N7T	
	by NMPC	Core Spray	81-73	Safety Relief Test
			81-74	
			81-75	
			81-76	
			81-11	Safety Relief Test
			81-31	
			81-77	
			81-78	
			81-79	
			81-80	
		Liquid Poison	NP04A	Safety Relief Test
			NP04B	Safety Relief Test

FIELD TEST PROCEDURES FOR NINE MILE POINT UNIT 1

SECTION XI SAFETY AND RELIEF VALVE TEST

System	Valve No.	Field Test Procedure No.
Main Steam	NR-108A	N1-ST-C2
	NR-108B	↓
	NR-108C	
	NR-108D	
	NR-108E	
	NR-108F	
	N7A	Bench-test by NMPC
	N7B	↓
	N7C	
	N7D	
	N7E	
	N7F	
	N7G	
	N7H	
	N7J	
	N7K	
	N7L	
	N7M	
	N7N	
	N7U	
	N7R	
	N7S	
	N7T	↓
Liquid Poison	NP04A	Proc. by NMPC
	NP04B	"
Core Spray	81-73	Proc. by NMPC
	81-74	↓
	81-75	
	81-76	
	81-11	
	81-31	
	81-77	
	81-78	
	81-79	
	81-80	↓

Figure 3

APPENDIX E

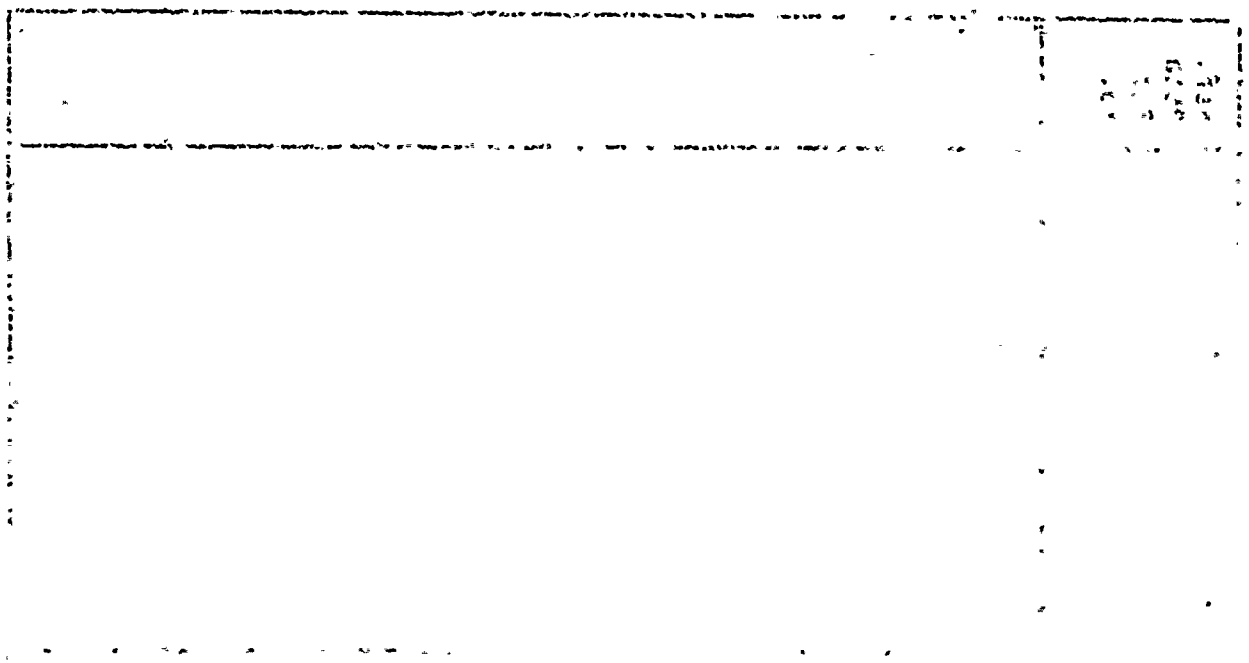
RECORDS

Per Section XI, IWP-6000 and IWV-6000, summaries of the in-service testing programs for all pumps and valves should be maintained in a format that portray their current status. Section XI also requires the maintenance of test records, component records and records of corrective action. The General Test Procedures of Appendix D include forms that are designed to fulfill these requirements and primarily intended for program control, analysis and comparison, establishment of reference values, and documentation compliance. Test data, wherever required to be entered, may be transferred from data sheets used in the Field Test Procedures. The results of the analyses will be reflected back in the "Test Results" section of the Field Test Procedures.

The following forms are attached to Appendix E and are duplicated from appropriate General Testing Procedures of Appendix D.

Figure 1 Pump Summary Sheet
Figure 2 Pump Data Sheet
Figure 3 Pump Reference Data Sheet
Figure 4 Pump Analysis Sheet

Figure 5 Valve Summary Sheet
Figure 6 Valve Leak Rate Test Sheet
Figure 7 Exercising Test Data Sheet
Figure 8 Valve Position Indicator Test Data Sheet
Figure 9 Category D Explosively Activated Valve Test Sheet
Figure 10 Category C Safety and Relief Valve Test Data Sheet



ASME SECTION XI INSERVICE TESTING
PUMP SUMMARY SHEET

Pump ID _____ System _____ Page _____

Manufacturer _____

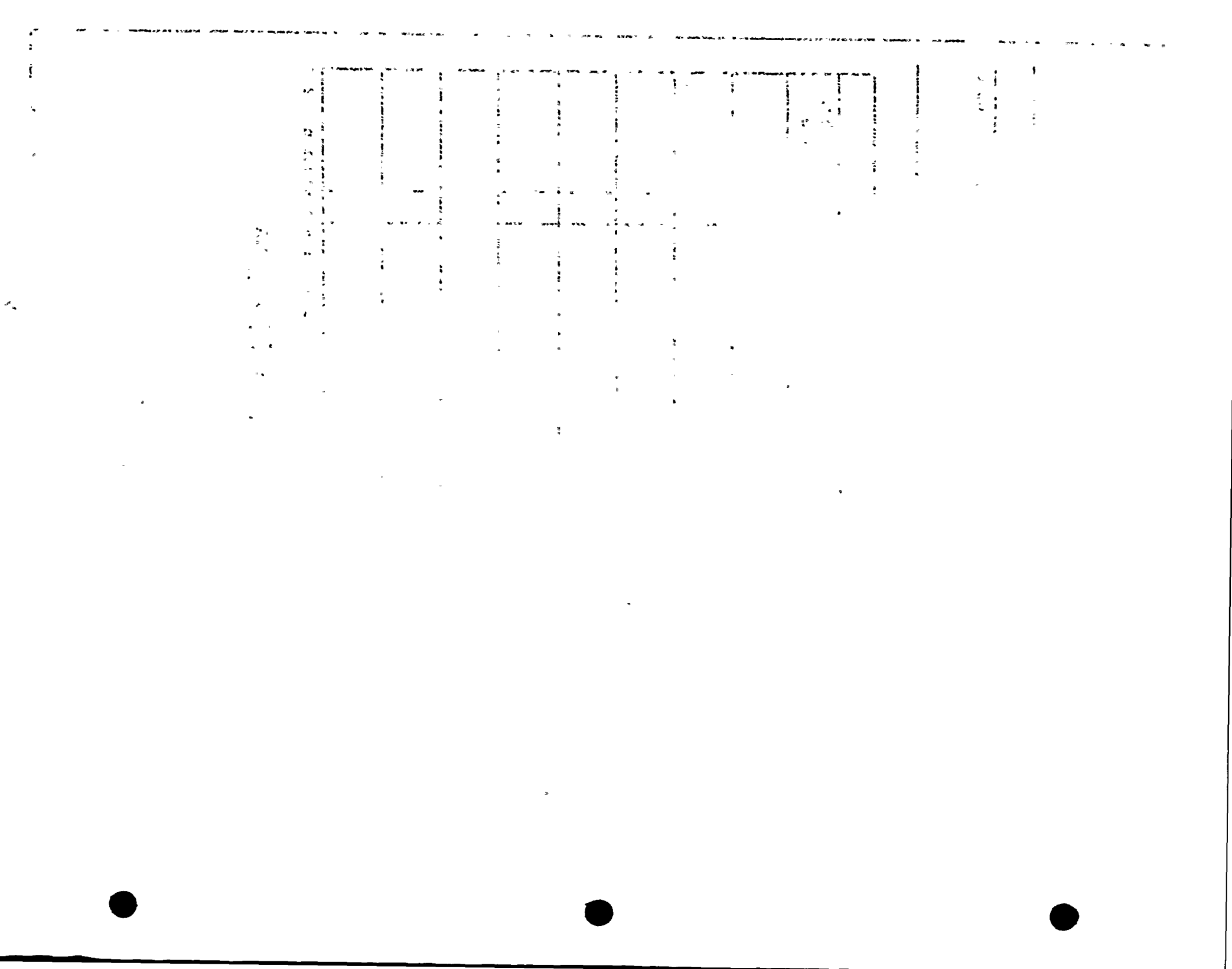
Model _____

Serial No. _____ Field Test Proc. No. _____

Test No.	Test Date	Test Successful		Req'd Action Range	Comments	Ref. Data Set No.
		Accep. Range	Alert Range			

NUCLEAR ENERGY SERVICES INC

FIGURE 1



ASME SECTION XI INSERVICE TESTING
PUMP DATA SHEET

Pump ID _____ System _____ Test No. _____

Manufacturer _____ Test Date _____
(from Field Test Procedure)

Model _____ Field Test
Proc. No./Rev. _____

Serial No. _____

Measured Parameter			Instrumentation		
			Model & Serial No.	[1] ✓	Calibr. Date
Speed	N	_____ rpm			
Inlet Pressure	P_i	1. _____ psig 2. _____ psig			
Differential Pressure	ΔP	_____ psi			
Flow Rate	Q	_____ gpm			
Vibration Amplitude	V	_____ mil			
Bearing Temperatures	T_b	1. _____ °F 2. _____ °F 3. _____ °F			
Lubricant Inlet Temp.	Ti	_____ °F			
Pump Fluid Temperature	T_p	_____ °F			

Note 1 : See Section 8.2.2

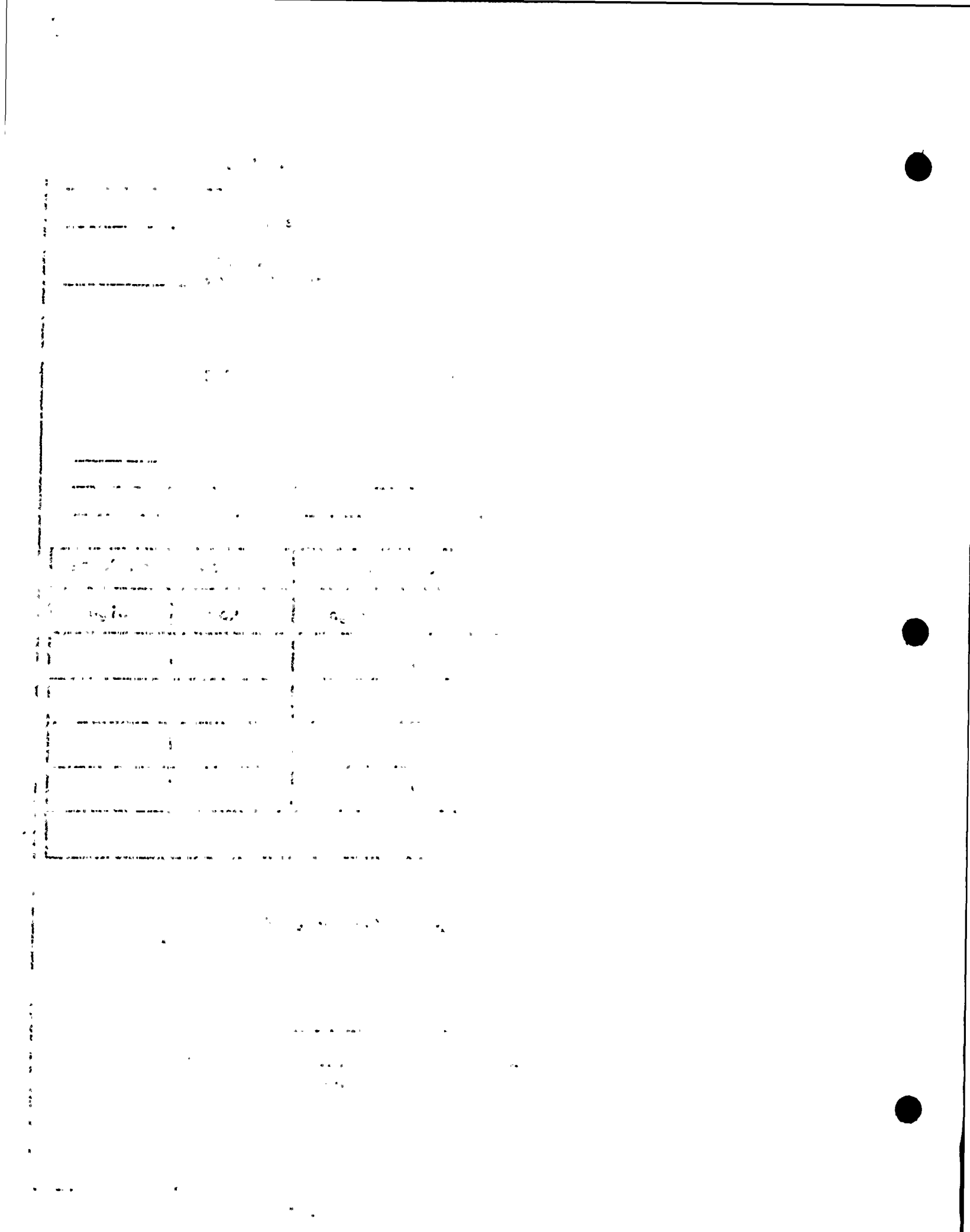
Lubricant at proper level or pressure? ☐ Yes ☐ No ☐ N.A.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) Performing Test — Date

FIGURE 2



ASME SECTION XI INSERVICE TESTING
PUMP REFERENCE DATA SHEET

Pump ID _____ System _____ Ref. Data Set No. _____

Manufacturer _____ Date _____

Model _____ Field Test Proc. No./Rev. _____

Serial No. _____

☐ If box is checked, this Reference Data Set has become VOID.

Refer to Reference Data Set No. _____

Reason(s) for change _____

Measured Parameter	Nominal Value	Acceptable Range	Alert Range		Required Action Range	
			Low	High	Low	High
Inlet Press. P_i	_____ psig					
Diff. Press. ΔP	_____ psi					
Flow Rate Q	_____ gpm					
Vibr. Ampl. V	_____ mil					
Bearing Temp. T_b	_____ ^0F					

Ranges are either from Table 1.3-1 or Owner-specified.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) Establishing Reference Data Set — Date

NUCLEAR ENERGY SERVICES, INC

FIGURE 3

ASME SECTION XI INSERVICE TEST
PUMP ANALYSIS SHEET

Pump ID _____ System _____ Test No. _____

Manufacturer _____ Test Date _____

Model _____ Ref. Data Set No. _____

Serial No. _____ Field Test Proc. No./Rev. _____

Measured Parameter		Comparison with Ref. Values (check applicable boxes)				
		Acceptable Range	Alert Range[1]		Req. Action[2]	
			Low	High	Low	High
Inlet Press. P_i	_____psig					
Diff. Press. ΔP	_____ psi					
Flow Rate Q	_____ gpm					
Vibr. Ampl. V	_____ mil					
Bearing Temp. T_b	____ ^oF					

(1) If deviations fall within the "Alert Range", the frequency of testing shall be doubled till the cause of deviation is corrected.

(2) If deviations fall within the "Required Action Range", the pump shall be declared inoperative, and not returned to service till corrected.

Review of Data indicates that the pump test parameters are in the Acceptable Range: ☐ Yes ☐ No

If [No], describe corrective action _____ Re-Test No. _____

_____ Re-Test Date _____

_____

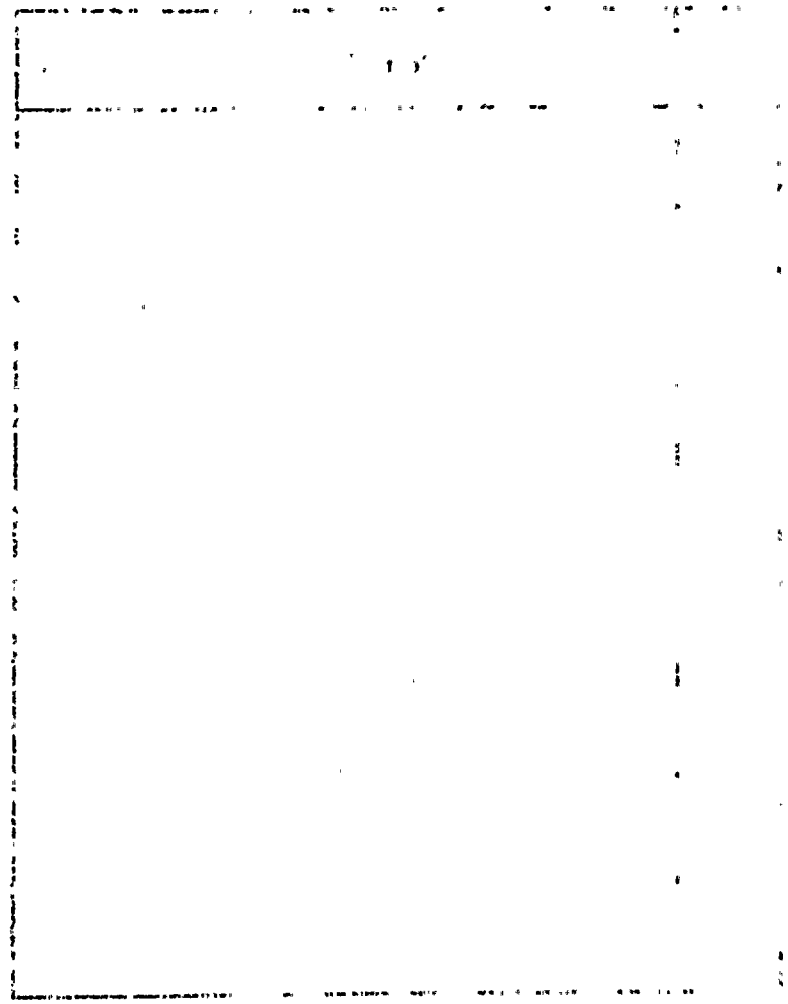
Attach "Pump Data Sheet" and "Pump Analysis Sheet" confirming test of operational adequacy subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) performing analysis — Date

FIGURE 4



ASME SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Field Test
Proc. No./Rev. _____ Page _____

Test No.[1]	Date	Pass	Fail	Remarks

(1) LRT Leak Rate Test
ET Exercising Test
PIT Position Indicator Test
SRT Safety Relief Test
XT Explosive Test

Fig. 5

ASME SECTION XI INSERVICE TESTING
CATEGORY A VALVE LEAK RATE TEST (LRT) DATA SHEET

Valve ID _____ Size _____ Type _____

System _____ Manufacturer _____ Model _____

Test No. LRT-_____ Date _____ Field Test
Proc. No./Rev. _____

PART 1 Leakage Measurement

Test ΔP _____ psi Medium Temp. _____ °F

Permissible Leak Rate : _____ ml/h (water) _____ scfd (air)

Measured Leak Rate: _____ ml/h (water) _____ scfd (air)

If Valve < 6", go to SUMMARY. If Valve ≥ 6", complete Parts 2 and 3.

PART 2 Margin Calculation

$$R = \frac{MR - LR}{MR - PR} = \frac{\quad}{\quad} =$$

MR Maximum Permissible Leak Rate
LR Measured Leak Rate (This Test)
PR Measured Leak Rate (Previous Test)

Check one : ☐ $R > 0.5$ (Pass)

☐ $R \leq 0.5$ (Fail)

PART 3 Projection Calculation

Estimate projected rate for next test if:

(1) At least 3 successive tests have passed, and
(2) Leakage rates increase with time.

Projected leak rate for next test (check one) : ☐ Not Applicable

☐ _____ ml/h (water)
_____ scfd (air)

Check one : ☐ Projection below 1.1 x MR (Pass)

☐ Projection above 1.1 x MR (Fail)

(over)

Fig. 6

CATEGORY A VALVE LEAK RATE TEST (LRT) DATA SHEET (Cont.)

SUMMARY OF RESULTS

Review of Data indicates that valve leak parameters are within allowable limits :

			Pass	Fail
	PART 1	Leakage Measurement	☐	☐
Valve ≥6" only	PART 2	Margin Calculation	☐	☐
	PART 3	Projection Calculation	☐	☐

If [F], describe corrective action _____

_____

_____

[1] Re-Test No. LRT-_____ Re-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 6.1

ASME SECTION XI INSERVICE TESTING
CATEGORY A AND B VALVE AND CATEGORY C CHECK VALVE
EXERCISING TEST (ET) DATA SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Test No. ET-_____ Date _____ (from Field Test Procedure) Field Test Proc. No./Rev. _____

PART 1 Stroke Test

☐ Part-stroke test ☐ Test successful

☐ Full-stroke test ☐ Test not successful

If Category C Check Valve, go to SUMMARY OF RESULTS

PART 2 Power-operated Valve (Category A and B only)

i. Stroke Time Measurement

Measured Stroke Time _____ sec

Limiting Value of Stroke Time _____ sec

☐ Measured stroke time shorter than or equal to limiting time (Pass)

☐ Measured stroke time longer than limiting time (Fail)

ii. Increase in Stroke Time

$R = \frac{\text{Measured stroke time (this test) } \_\_\_\_ \text{ sec}}{\text{Measured stroke time (previous) } \_\_\_\_ \text{ sec}} =$

If Limiting Stroke Time $\leq$ 10 sec, check one :

$R < 1.5$ ☐ (Pass)

$R \geq 1.5$ ☐ (Fail)

If Limiting Stroke Time $>$ 10 sec, check one :

$R < 1.25$ ☐ (Pass)

$R \geq 1.25$ ☐ (Fail)

PART 3 Fail-Safe Valve (Category A and B only)

Did valve test satisfactorily on loss of actuator power ?

☐ Yes ☐ No

(over)

EXERCISING TEST (ET) DATA SHEET (Cont.)

SUMMARY OF RESULTS

Review of Data indicates that the valve exercising test is satisfactory :

	Yes	No
PART 1 (Stroke Test, Category A, B, and C)	☐	☐
PART 2 (Power-operated, Category A and B)		
Stroke Time	☐	☐
Increase in Stroke Time	☐	☐
PART 3 (Fail-Safe, Category A and B)	☐	☐

If [No], describe corrective action _____

_____

_____

Re-test No. ET-_____ Re-Test Date _____ [1]

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 7.1

ASME SECTION XI INSERVICE TESTING
VALVE POSITION INDICATOR TEST (PIT) DATA SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Test No. PIT-_____ Test Date _____ Field Test Proc. No./Rev. _____

Remote valve indications accurately reflect valve operation :

☐ Yes ☐ No

If [No], describe corrective action _____

_____

_____

[1] Re-Test No. PIT-_____ Re-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 8

Date

ASME SECTION XI INSERVICE TESTING
CATEGORY D EXPLOSIVELY ACTUATED VALVE TEST (XT) DATA SHEET

Valve ID _____ Size _____ Type _____

System _____ Manufacturer _____ Model _____

Test No. XT-_____ Test Date _____ (from field test procedure) Field Test Proc. No./Rev. _____

Number of Old Charge(s) Tested _____ , Batch No. _____

☐ Charge Fired

☐ Charge Failed to Fire

Batch No. _____ of Replacement Charge(s)

If any charge(s) failed to fire, describe corrective action _____

_____

_____

[1]Re-Test No. XT-_____ Re-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and Title(s) of Person(s) responsible for Test — Date

Fig. 9

Yes ☐ No

Date

ASME SECTION XI INSERVICE TESTING
CATEGORY C SAFETY AND RELIEF VALVE (SRT) DATA SHEET

Valve ID _____ Size _____ Type _____

System _____ Manufacturer _____ Model _____

Test No. SRT-_____ Test Date _____ Field Test Proc. No./Rev. _____

☐ Valve Tested In-Place

☐ Valve Bench-Tested

Pressure required to lift valve _____ psig

Allowable range of set-point _____ - _____ psig

Review of Data indicates that the valve tested satisfactorily :

☐ Yes ☐ No

If [No], describe corrective action _____

_____

_____

[1] Re-Test No. SRT-_____ Te-Test Date _____

(1) Attach Data Sheet confirming test of satisfactory operation subsequent to corrective action taken.

1. _____ _____

2. _____ _____

Signature(s) and title(s) of Person(s) responsible for Test — Date

Fig. 10

APPENDIX F

FIELD TEST PROCEDURES

The following Nine Mile Point Field Test Procedures are part of the Pump and Valve Inservice Testing Program.

Procedure No.	Title
N1-ST-Q1	Core Spray Pumps and Motor Operated Valves Operability Test
N1-ST-Q6	Containment Spray and Raw Water Pumps Operability Test
N1-ST-Q2	Control Rod Drive Pumps Flow Rate Test
N1-ST-M1	Liquid Poison Pump Flow Rate Discharge Pressure Test
N1-ST-M4	Emergency Diesel Generators Manual Start and One Hour Rated Load Test
N1-ST-Q4	Reactor Coolant System Isolation Valves Exercising Test
N1-ST-R8	Reactor Coolant and Primary Containment Isolation Valves Timing
N1-ST-Q5	Primary Containment Isolation Valves Exercising
N1-MST-C2	Liquid Poison Squib Valves Test Firing and Inspection
N1-ST-V4	Feedwater and Main Steam Line Power Operated Isolated Isolation Valves Exercise Test
N1-ST-C2	Manual Opening of the Solenoid-Actuated Pressure Relief Valves and Flow Verification
N1-ISP-25.1	Main Steam Isolation Valves Leak Rate Tests
N1-ST-M2	Emergency Cooling System Makeup Tank Level Control Valves Exercise Tests

ASME SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

Valve ID _____ Size _____ Type _____ Category _____

System _____ Manufacturer _____ Model _____

Field Test
Proc. No. _____ Page _____

Test No.[1]	Date	Pass	Fail	Remarks

(1) LRT Leak Rate Test
ET Exercising Test
PIT Position Indicator Test
SRT Safety Relief Test
XT Explosive Test

Fig.2

[illegible] SECTION XI INSERVICE TESTING
VALVE SUMMARY SHEET

[illegible] Test

[illegible] Size _____ Type _____ Category _____

[illegible] Manufacturer _____ Model _____

No. _____ Page _____

Status

[illegible] Position	Frequency	Remarks

[illegible] Indicator Test
[illegible] Relief Test
[illegible] Active Test

Page _____