

SOUTH CAROLINA ELECTRIC AND GAS COMPANY  
VIRGIL C. SUMMER NUCLEAR STATION  
NUCLEAR OPERATIONS

**UNCONTROLLED  
COPY**

GENERAL TEST PROCEDURE

GTP-001

GENERAL PROCEDURE FOR INSERVICE TESTING OF PUMPS

REVISION 4

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SAFETY RELATED

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## 1.0 PURPOSE

- 1.1 The purpose of this procedure is to define the general rules and requirements for testing of safety related ASME Code Class 1, 2, and 3 pumps which are provided with an emergency power source in accordance with subsection IWP of Reference 2.1.1.

## 2.0 REFERENCES AND GLOSSARY

### 2.1 References

- 2.1.1 ASME Boiler and Pressure Vessel Code, Section XI, 1977 Edition through Summer 1978 addenda.
- 2.1.2 Virgil C. Summer Nuclear Station Technical Specifications
- 2.1.3 Control Of Station Surveillance Test Activities, SAP-134
- 2.1.4 Development, Review, and Approval of Procedures, Revisions, Changes; SAP-139
- 2.1.5 Inservice Inspection Program, SAP-145
- 2.1.6 Control and Calibration of Measuring and Test Equipment, SAP-141
- 2.1.7 Preservice Inspection Program, AP-014

### 2.2 Glossary

- 2.2.1 ANII - Authorized Nuclear Inservice Inspector
- 2.2.2 AP - Administrative Procedure
- 2.2.3 CHAMPS - Comprehensive Handling and Maintenance Program System
- 2.2.4 GTP - General Test Procedure
- 2.2.5 ISI - Inservice Inspection
- 2.2.6 SOP - System Operating Procedure
- 2.2.7 STP - Surveillance Test Procedure
- 2.2.8 STTS - Surveillance Test Task Sheet
- 2.2.9 Symbols - the various symbols used in this procedure to define pump parameters are listed on Attachment II.

### 3.0 RESPONSIBILITIES

3.1 The ISI Coordinator or his designee may perform engineering evaluations in accordance with standard engineering practices and initiate corrective action for those pumps having unacceptable test results. Where applicable, such evaluations shall include, but are not limited to, the following:

1. Pressure (Inlet, Discharge, Differential)
2. Flow
3. Vibration
4. Pump Bearing Temperatures
5. Trending of Test Results
6. System parameters such as temperature, alignment, plant load, etc.

3.2 Other responsibilities for implementation of this procedure are delineated and described in SAP-145.

### 4.0 GENERAL

- NOTES:
- 1) Attachment I to this procedure lists those pumps which are included in the scope of the Inservice Inspection Program. The list was developed in accordance with Reference 2.1.1 with guidance from Branch Technical Position M.E.B. No. 2.
  - 2) The detailed steps necessary for the Inservice testing of these pumps are outlined in separate Surveillance Test Procedures. Attachment I lists the Surveillance Test Procedures that are applicable for each type of pump.
  - 3) The performance of Inservice Testing per Reference 2.1.1 shall be in addition to any other specified surveillance requirements.
  - 4) Nothing contained in Reference 2.1.1 shall be construed to supersede the requirements of any Technical Specification.

#### 4.1 Components

- 4.1.1 All pumps which are required to be tested in the ISI Program are listed on Attachment I.

## 4.2 Reference Values

- 4.2.1 Reference values will be used as a basis of comparison for all subsequent testing. Deviations from these reference values are indicative of changes which, depending upon the degree of deviation, may indicate a need for corrective action or further tests. (Refer to Section 6.0 of this procedure.)
- 4.2.2 Reference values shall be obtained during the Preservice Inspection Program (PSI) at points of operation easily duplicated during power operation or separate baseline reference established utilizing Surveillance Test Procedures.
- 4.2.3 The reference values shall be clearly marked and filed as part of the pump record. If new reference values are established in accordance with subsections IWP-3111 and IWP-3112 of Reference 2.1.1, the new reference values should be clearly marked and the previous reference values retained as part of the pump record. If new reference values are established, the reason for doing so shall be justified and documented in the pump file.

## 4.3 Scope of Tests

- 4.3.1 Each ISI test shall include measurement or observation of all quantities specified on the Pump Data Sheet, except bearing temperatures which shall be recorded at least once per year during ISI testing.
- 4.3.2 When bearing temperature measurement is not required each pump shall be run for at least 5 minutes. At the end of that period at least one measurement or observation of the quantities specified in the STP shall be made and recorded on the Pump Data Sheets provided in the procedure which directs the test.
- 4.3.3 When measuring bearing temperature, run the pump until the bearing temperature stabilizes. Bearing temperature shall be considered stable when three successive readings taken at 10 minute intervals do not vary by more than 3%. After bearing temperature stabilization, the quantities specified on the Surveillance Test Procedure shall be measured or observed and recorded on the data sheets provided in the procedure which directs the test.

#### 4.4 Frequency

- 4.4.1 All Quantities specified in the applicable Surveillance Test Procedure, except bearing temperature, shall be measured or observed and recorded for each pump every 31 days during normal plant operation.

NOTE: It is recommended that the above test frequency be maintained, if possible, during plant shutdown to minimize accumulation of required tests. If the tests are not conducted during plant shutdown the pump shall be tested within one week after the plant is returned to normal operation.

NOTE: The test frequency may be increased as a result of deviations in test quantities in comparison to reference values. Refer to Section 6.0 of this procedure for details.

- 4.4.2 Pumps which are normally operated more frequently than every month may be tested during normal operation provided the Pump Data Sheets and the Pump File show each such pump was operated at the reference values in the required flow path and the required quantities specified in the STP were measured, observed, analyzed and recorded on the applicable Pump Data Sheets.

- 4.4.3 Bearing temperature shall be measured and recorded at least once per year for each pump during an ISI test on that pump.

- 4.4.4 Each pump's Inservice test shall be performed at the specified time interval with:

- A. A maximum allowable extension not to exceed 25% of the Surveillance Interval.
- B. A total maximum combined interval for any three (3) consecutive surveillance intervals is not to exceed 3.25 times the specified surveillance interval.

NOTE: Refer to the applicable Surveillance Test Procedure for the required parameters to be measured.

#### 4.5 Measurement Methods

- 4.5.1 All instruments used for Inservice Tests may have nominal errors within the following limits and the range of each instrument shall not exceed three (3) times the reference value.

NOMINAL MAXIMUM INSTRUMENT ERRORS

Pressure	$\pm 2\%$ of Full Scale
Differential Pressure	$\pm 2\%$ of Full Scale
Flowrate	$\pm 2\%$ of Full Scale
Speed	$\pm 2\%$ of Full Scale
Temperature	$\pm 5\%$ of Full Scale
Vibration Amplitude	$\pm 5\%$ of Full Scale

NOTE: V. C. Summer calibrated Field Test Equipment and/or Process Instruments satisfy these accuracy requirements.

- 4.5.2 All instruments (together with their transmitters, if required) used in measuring the inservice test quantities listed in the STP during Inservice testing shall be calibrated in accordance with reference 2.1.6, SAP-141, "Control and Calibration of Measuring and Test Equipment".
- 4.5.3 Instruments, in which the readings are position sensitive, i.e., vibration amplitude, shall be permanently mounted or provisions will be made in the Preoperational/Functional testing procedures and the STPs to duplicate position for each test.
- 4.5.4 Symmetrical damping devices or averaging techniques may be used to reduce instrument fluctuations to within  $\pm 2\%$  of the observed reading. Hydraulic readings may be damped by using gage snubbers or by throttling small valves in instrument lines. If throttling of small valves is used, the operator should alternately open and close the valve several times to verify unobstructed pressure communication, while observing the instrument reading.

4.5.5 The following instructions refer to pressure measurement during the test as outlined in subsection IWP-4200 of Reference 2.1.1.

- A. Gage Lines: If a gage line is such that the presence or absence of liquid could produce a difference of more than 1/4% in the indicated value of the measured pressure, means shall be provided in the STP to assure or determine the presence or absence of liquid as required for the static correction used.
- B. Pressure Taps: Pressure taps shall be located in a section of the flow path that is expected to have reasonably stable flow as close as practical to the pump. Any line valves between inlet and discharge pressure taps shall be in a fully open position during the test.
- C. Differential Pressure: The differential pressure across a pump shall be determined by use of either a differential pressure gage or differential pressure transmitter that provides 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.

4.5.6 The following instructions refer to temperature measurement during the test as outlined in Subsection IWP-4300 of Reference 2.1.1.

- A. Bearing Temperature: The temperature of all centrifugal pump bearings outside the main flow path shall be measured at points selected to be responsive to changes in the temperature of the bearing. These points will be used for subsequent measurements. Lubricant temperature, when measured prior to a cooler, shall be considered the bearing temperature.
- B. Alternately, a contact pyrometer on the pump bearing housing may be used. When using a contact pyrometer on the bearing housing the location at which the reference value is established will be used for subsequent measurements.

4.5.7 The following instructions refer to vibration measurement during the test as outlined in Subsection IWP-4500 of Reference 2.1.1.

- A. At least one displacement vibration amplitude (peak-to-peak composite) shall be read during each inservice test. 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.
- B. 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. On a pump coupled to the driver, the measurement shall be taken on the bearing housing near the pump coupling, the measurement point shall be as close as possible to the inboard bearing.

4.5.8 The following instructions refer to Flow Measurement during the test as outlined in Subsection IWP-4600 of Reference 2.1.1.

- A. Flow rate shall be measured using a rate or quantity meter installed in the pump test circuit. The meter may be in any class that provides an overall readout repeatability within the accuracy limits of 4.5.1.
- B. Where the meter does not indicate the flow rate directly, the record shall include the method to reduce the data.

## 5.0 RECORDS

5.1 A file will be maintained for each pump covered by this ISI Program. The file will include the following items and must be retained for the lifetime of the component.

5.1.1 A Pump Data Sheet listing reference values.

NOTE: If a new set of reference values are established as permitted by Subsection IWP-3111 and IWP-3112 of Reference 2.1.1, the file will contain documentation of the reasons for establishing additional set of reference values. In addition, the previous reference values may be maintained to indicate they have been superseded or maintained as a separate set of reference values.

- 5.1.2 Pump Data Sheets for each test which has been performed.
  - 5.1.3 The name of the pump manufacturer, manufacturer's serial number, manufacturer's model number and the equipment identification number.
  - 5.1.4 A copy of the Manufacturer's Acceptance Test, if any, or a summary thereof.
  - 5.1.5 A copy of the ISI Pump Data Sheet Acceptance Criteria and a record of corrective action, if applicable, for each test which has been performed.
  - 5.1.6 Any additional data which would enhance the ability of plant personnel to analyze trends and assess operational readiness.
- 5.2 When using flow meter(s) to measure flow in inches of H<sub>2</sub>O the following formula may be used to calculate flow in gallons per minute where:
- Q = Flow (gallons per minute)  
X = Constant for type and size of orifice and system resistance  
Y = Flow in inches of water
- $$Q = X\sqrt{Y}$$
- 5.3 Relief requests, if any, shall be referenced on Attachment I. Such relief requests shall be indexed, stored and maintained under separate cover.

## 6.0 RESULTS

- 6.1 All test data must be analyzed within 96 hours of test completion; however, weekends and/or holidays are not included in this time frame. (Reference Relief Request E.1)
- 6.2 The Acceptable, Alert, and Required Action Ranges of ISI test quantities are tabulated on Attachment III. The ranges are expressed as a percentage of the reference values. If the ISI Test Quantities deviate from the Acceptable Range, the following corrective action statements shall be observed:

- 6.2.1 If the ISI Test Quantities fall within the Alert Range as shown on Attachment III, the frequency of testing shall be doubled until the cause of deviation is determined and corrected and either the existing reference values reverified or a new set established in accordance with Subsections, IWP-3111 and IWP-3112 of Reference 2.1.1.
- 6.2.2 If the ISI Test Quantities fall within the Required Action Range of Attachment III:
- A. The pump shall be declared inoperative.
  - B. The pump shall not be returned to service until the condition has been corrected and a satisfactory ISI test has been conducted or engineering evaluation has been performed to permit operability of the pump.

The Shift Supervisor will review the test data immediately upon completion of the test and compare it to the acceptable ranges as shown on Attachment III. If the results are unsatisfactory, he shall initiate corrective action, including any Limiting Condition for Operations, as required by V. C. Summer Technical Specification.

NOTE: The Limiting Condition for Operation will be referenced in the STP for those pumps whose inoperability require a Limiting Condition for Operation.

- 5.4 A summary, Attachment IV, will be maintained indicating the "Date of Successful Test" for each pump.

## 7.0 ATTACHMENTS

- 7.1 Attachment I - Pump List
- 7.2 Attachment II - Symbols
- 7.3 Attachment III- Allowable Ranges of ISI Test Quantities.
- 7.4 Attachment IV - Pump Test Summary

PUMP NUMBER #	SYSTEM	PUMP DESCRIPTION	DRAWING NUMBER	CO-ORD	SPECIFIC RELIEF REQUEST	REMARKS
XPP-21A	EF	MOTOR DRIVEN EMERGENCY FEED WATER PUMP	302-085	D-7	NO	STP-120.001*
XPP-21B	EF	MOTOR DRIVEN EMERGENCY FEED WATER PUMP	302-085	F-6	NO	STP-120.001*
XPP-8	EF	TURBINE DRIVEN EMERGENCY FEED WATER PUMP	302-085	H-6	NO	STP-120.002*
XPP-39A	SW	SERVICE WATER PUMP	302-221	C-2	YES B.2	STP-123.002*
XPP-39B	SW	SERVICE WATER PUMP	302-221	C-10	YES B.2	STP-123.002*
XPP-39C	SW	SERVICE WATER PUMP	302-221	C-6	YES B.2	STP-123.002*
XPP-45A	SW	SERVICE WATER BOOSTER PUMP	302-222	C-6	YES B.1	STP-123.002*
XPP-45B	SW	SERVICE WATER BOOSTER PUMP	302-222	G-6	YES B.1	STP-123.002*
XPP-141A	DG	DIESEL GENERATOR FUEL OIL TRANSFER PUMP	302-351	G-14	YES A.1	STP-125.002*
XPP-141B	DG	DIESEL GENERATOR FUEL OIL TRANSFER PUMP	302-351	G-2	YES A.1	STP-125.002*
XPP-4A	DG	DIESEL GENERATOR FUEL OIL TRANSFER PUMP	302-351	G-12	YES A.1	STP-125.002*

PUMP NUMBER #	SYSTEM	PUMP DESCRIPTION	DRAWING NUMBER	CO-ORD	SPECIFIC RELIEF REQUEST	REMARKS
XPP-4B	DG	DIESEL GENERATOR FUEL OIL TRANSFER PUMP	302-351	G-3	YES A-1	STP-125.002*
XPP-1A	CC	A COMPONENT COOLING WATER PUMP	302-611	G-8	NO	STP-122.002*
XPP-1B	CC	B COMPONENT COOLING WATER PUMP	302-611	G-4	NO	STP-122.002*
XPP-1C	CC	C COMPONENT COOLING WATER PUMP	302-611	H-6	NO	STP-122.002*
XPP-3 A	RH	A RESIDUAL HEAT REMOVAL PUMP	114E074	C-7	NO	STP-105.004*
XPP-31B	RH	B RESIDUAL HEAT REMOVAL PUMP	114E074	E-7	NO	STP-105.004*
XPP-48A	VU	HVAC SYSTEM A CHILLED WATER PUMP	302-841	E-10	YES F.1	STP-129.001*
XPP-48B	VU	HVAC SYSTEM B CHILLED WATER PUMP	302-841	E-5	YES F.1	STP-129.001*
XPP-48C	VU	HVAC SYSTEM C CHILLED WATER PUMP	302-841	E-5	YES F.1	STP-129.001*
XPP-13A	BR	A BORIC ACID TRANSFER PUMP	114E073, SH 5	E-8	YES C.1	STP-104.005*
XPP-13B	BR	B BORIC ACID TRANSFER PUMP	114E073, SH 5	C-8	YES C.1	STP-104.005*

PUMP NUMBER #	SYSTEM	PUMP DESCRIPTION	DRAWING NUMBER	CO-ORD	SPECIFIC RELIEF REQUEST	REMARKS
XPP-38A	SP	A REACTOR BUILDING SPRAY PUMP	302-661	D-6	NO	STP-112.002*
XPP-38B	SP	B REACTOR BUILDING SPRAY PUMP	302-661	E-6	NO	STP-112.002*
XPP-43A	CS	A CHARGING AND SAFETY INJECTION PUMP	114E073 SH 3	E-8	YES D.1	STP-105.001*
XPP-43B	CS	B CHARGING AND SAFETY INJECTION PUMP	114E073 SH 3	C-8	YES D.1	STP-105.001*
XPP-43C	CS	C CHARGING AND SAFETY INJECTION PUMP	114E073 SH 3	D-8	YES D.1	STP-105.001*
						*See attached Test List (page 4 of 5)

# RELIEF REQUEST E.1 APPLIES TO ALL PUMPS IN THIS ATTACHMENT.

TEST LIST

STP-120.001 - Emergency Feedwater Pump (Electric) Test  
STP-120.002 - Emergency Feedwater Pump (Turbine) Test  
STP-123.002 - Service Water Pump Test  
STP-125.002 - Diesel Generator Operability Test  
STP-122.002 - Component Cooling Water Pump Test  
STP-105.004 - RHR Pump Test  
STP-129.001 - Chilled Water Pump Test  
STP-104.005 - Boric Acid Transfer Pump Test  
STP-112.002 - RB Spray Pump Test  
STP-105.001 - Charging/Safety Injection Pump Test

SYMBOLS

SYMBOLS	QUANTITIES	UNITS	UNIT ABBREVIATION
M, 1	Exponents	—	—
$\Delta P$	Differential Pressure across Pump	Pounds per square inch	psi
$P_1$	Inlet Pressure	Pounds per square inch gage	psig
$P_d$	Discharge Pressure	Pounds per square inch gage	psig
Q	Flow Rate	Gallons per minute	gpm
r	Subscript denotes reference quantity		
N	Rotative Speed	Revolutions per minute	
$T_b$	Bearing Temp.	Deg. Fahrenheit	°F
$T_p$	Fluid Temp.	Deg. Fahrenheit	°F
V	Vibration amplitude (Peak-to-Peak)	Thousandths of an inch	mil
>	Greater Than	—	—
<	Less Than	—	—
$\geq$	Greater Than or Equal to	—	—
$\leq$	Less Than or Equal to	—	—

# ALLOWABLE RANGES OF ISI TEST QUANTITIES

Test Quantity	Acceptable Range	CORRECTIVE ACTION			
		Alert Range <sup>3</sup>		Required Action Range <sup>3</sup>	
		Low Values	High Values	Low Values	High Values
P <sub>1</sub>	Note 1	Note 1	Note 1	Note 1	Note 1
ΔP (P <sub>d</sub> -P <sub>1</sub> )	(.93 to 1.02) Pr	(.90 to .93) Pr	(1.02 to 1.03) Pr	<.90 Pr	>1.03 Pr
Q	(.94 to 1.02)Qr	(.90 to .94)Qr	(1.02 to 1.03)Qr	<.90 Qr	>1.03 Qr
V When $0 \leq V_r \leq 0.5$ mil 0 to 1 mil		none	$1 < V \leq 1.5$ mil	none	$V > 1.5$ mil
V When $0.5 \text{ mil} < V_r \leq 2.0 \text{ mil}$	V(0 to 2)Vr mil	none	2 Vr mil to 3 Vr mil	none	> 3Vr mil
V When $2.0 \text{ mil} < V_r \leq 5.0 \text{ mil}$	0 to (2+Vr) mil	none	(2+Vr) mil to (4+Vr) mil	none	> (4+Vr) mil
V When $V_r > 5.0$ mil	(0 to 1.4)Vr mil	none	1.4 Vr mil to 1.8 Vr mil	none	> 1.8 Vr mil
T <sub>b</sub>	Note 2	Note 2	Note 2	Note 2	Note 2

## NOTES:

- 1) P<sub>1</sub> - The pump inlet pressure will be determined during the PSI portion of this program.
- 2) T<sub>b</sub> - The bearing temperature will be determined during the PSI portion of this program.
- 3) Refer to Section 6.0 of this procedure.

[illegible]

PUMP TEST RELIEF INDEX

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E.1	Pump(s):	All Identified in the Inservice Inspection Program (GTP-001)	
F.	System(s):	Chilled Water	
F.1	Pump(s):	XPP0048A XPP0048B XPP0048C	Page 7

PUMP TEST RELIEF REQUESTS

A.1 Pump(s): XPP-141A, XPP-141B, XPP-4A, XPP-4B

Class: 3

Function: Diesel Fuel Oil Transfer Pumps

Test Requirement: Each Inservice Test shall include measurement and/or observation of the following quantities: Inlet Pressure (Pi), Differential Pressure ( $\Delta P$ ), Flow Rate (Q), Vibration Amplitude (V), Lubricant Level and Bearing Temperature (Tb).

Relief Request: Relief is requested from ASME Code Section XI Requirements for measuring everything except flow.

Basis For Relief: These pumps are positive displacement with self lubricated internal bearings. Therefore, flow measurement is indicative of pump performance.

Alternate Test: Flow measurement will be taken when pumps are used to pump up the Diesel Fuel Oil Tank at least once each month.

## PUMP TEST RELIEF REQUESTS

B.1 Pump(s): XPP-45A, XPP-45B

Class: 3

Function: Service Water Booster Pumps

Test Requirement: Each Inservice Test shall include measurement and/or observation of the following quantities: Inlet Pressure (Pi), Differential Pressure (DP), Flow Rate (Q), Vibration Amplitude (V), Lubricant Level or Pressure and Bearing Temperature (Tb).

Relief Request: Relief is requested from ASME Code Section XI Requirements for measuring flow.

Basis For Relief: Full Flow Test would be detrimental to water chemistry the Reactor Building cooling units. The installed flow element/transmitter is downstream of the recirculation line and would not be representative of total pump flow when pump is tested by recirculation flow.

Alternate Test: Pumps will be tested on recirculation, measuring pump P utilizing pump suction and discharge pressure instrumentation. Pump P is indicative of pump performance which satisfies the intent of ASME Code Section XI.

PUMP TEST RELIEF REQUESTS

B.2 Pump(s): XPP0039A, XPP0039B, XPP0039C

Class: 3

Function: Service Water Pumps

Test Requirement: Each Inservice Test shall include measurement and/or observation of the following quantities: Inlet Pressure (Pi), Differential Pressure ( $\Delta P$ ), Flow Rate (Q), Vibration Amplitude (V), Lubricant Level and Bearing Temperature (Tb).

Relief Request: Relief is requested from ASME Code Section XI Requirements for measuring vibration and bearing temperature.

Basis For Vibration Relief: These pumps are vertical pumps with the pumping unit housed in a column below the floor structure of the service water pump house. The bearings are inaccessible for measurement of vibration.

Alternate Test: Vibration measurement will be taken on the motor inboard and outboard bearings.

Basis for Bearing Temperature Relief: These pumps are vertical pumps with the pumping unit housed in a column below the floor structure of the service water pump house. The bearings are inaccessible for measurement of bearing temperature.

Alternate Test: The fluid temperature of the water being pumped will be measured.

## PUMP TEST RELIEF REQUESTS

C.1 Pump(s): XPP-13A, XPP-13B

Class: 2

Function: Boric Acid Transfer Pumps

Test Requirement: Each Inservice Test shall include measurement and/or observation of the following quantities: Inlet Pressure (Pi), Differential Pressure ( $\Delta P$ ), Flow Rate (Q), Vibration Amplitude (V), Lubricant Level or Pressure and Bearing Temperature (Tb).

Relief Request: Relief is requested from ASME Code Section XI Requirements for measuring flow, vibration and bearing temperature.

Basis For Flow Relief: There is no installed flow element in the system.

Alternate Test For Flow: Pumps will be tested by recirculating to their associated tank and measuring pump P utilizing tank level as suction pressure

Basis For Vibration Relief: These pumps are canned motor/pump units which have water lubricated sleeve bearings. Representative vibration indication cannot be obtained on the pump casing due to the damping effect of the water.

Alternate Test For Vibration: Each pump will be disassembled annually and inspected for abnormal wear or degradation in accordance with Mechanical Maintenance Procedures.

Basis For Bearing Temperature Relief: These pumps are canned motor/pump units which have water lubricated sleeve bearings. Representative bearing temperature indication cannot be obtained due to inaccessibility of the bearing within the motor/pump unit.

Alternate Test For Bearing Temperature: The fluid temperature of the water being pumped will be measured.

## PUMP TEST RELIEF REQUESTS

D.1 Pump(s): XPP-43A, XPP-43B, XPP-43C

Class: 2

Function: Charging/Safety Injection Pumps

Test Requirement: Each Inservice Test shall include measurement and/or observation of the following quantities: Inlet Pressure (Pi), Differential Pressure ( $\Delta P$ ), Flow Rate (Q), Vibration Amplitude (V), Lubricant Level or Pressure and Bearing Temperature (Tb).

Relief Request: Relief is requested from ASME Code Section XI Requirements for measuring flow.

Basis For Relief: The installed Flow Element/Transmitter is downstream of the seal injection and would not be representative of total pump flow.

Alternate Test: Technical Specification 4.1.2.3.1 "Required Charging Pump shall be demonstrated operable by verifying, on recirculation flow, a differential pressure across the pump of greater than or equal to 2472 PSIG is developed.

This test is required to be performed at least once per 31 days except when the vessel head is removed, thus is indicative of pump performance and satisfies the intent of ASME Code Section XI Flow Test.

## PUMP TEST RELIEF REQUESTS

E.1      Pump(s):      All identified in the Inservice Inspection Program (GTP-001)

          Class:        1, 2 and 3

          Function:     Defined by GTP-001

Requirements:        To review test data within 96 hours from the time test was performed.

Relief Request:      To exclude weekends and/or holidays from the 96 hour time frame starting at 4:00 P.M. on day preceding and ending at 8:00 A.M. on the day following the weekend and/or holiday, as applicable.

Alternate  
Requirements:        Review test data within 3 working days following the weekend and/or holiday not to exceed 96 hours accumulated time excluding weekends and/or holidays.

## PUMP TEST RELIEF REQUESTS

F.1 Pump(s): XPP0048a, XPP0048B, XPP0048C

Class: 3

Function: Chilled Water Pumps

Test Requirement: Each Inservice Test shall include measurement and/or observation of the following quantities: Inlet Pressure (Pi), Differential Pressure ( $\Delta P$ ), Flow Rate (Q), Vibration Amplitude (V), Lubricant Level or Pressure and Bearing Temperature (Tb).

Relief Request: Relief is requested from ASME Code Section XI Requirements for measuring vibration and bearing temperature.

Basis For Vibration Relief: These pumps are canned motor/pump units which have water lubricated sleeve bearings. Representative vibration indication cannot be obtained on the pump casing due to the damping effect of the water.

Alternate Test For Vibration: Each pump will be disassembled annually and inspected for abnormal wear or degradation in accordance with Mechanical Maintenance Procedures.

Basis For Bearing Temperature Relief: These pumps are canned motor/pump units which have water lubricated sleeve bearings. Representative bearing temperature indication cannot be obtained due to inaccessibility of the bearing within the motor/pump unit.

Alternate Test For Bearing Temperature: The fluid temperature of the water being pumped will be measured.