SOUTHERN COMPANY SERVICES
INSPECTION, TESTING, AND ENGINEERING DEPARTMENT
FOR
GEORGIA POWER COMPANY

ISI-P-016
INSERVICE TEST PROGRAM
VOGTLE ELECTRIC GENERATING PLANT
UNIT 2

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INSERVICE TEST PROGRAM

VOGTLE ELECTRIC GENERATING PLANT

UNIT 2

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1.0 INTRODUCTION

1.1 GENERAL

The Inservice Testing Program is written and presented in accordance with the requirements of the Code of Federal Regulations 10 CFR 50.55a(g). This document provides a description of the inservice testing program for Vogtle Electric Generating Plant, Unit 2 (VEGP-2), for safety-related ASME Boiler and Pressure Vessel Code Class 1, 2, and 3 pumps and valves in accordance with the requirements of Subsections IWP and IWV of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 Edition through Summer 1983 Addenda. This program is referenced by VEGP-2 plant Technical Specification 4.0.5.

1.2 EFFECTIVE PERIOD

This document shall go into effect beginning with baseline testing to establish reference data and shall then remain in effect through the first 120-month interval of commercial operation.

1.3 PROGRAM REVISIONS

As a minimum, this program will be reviewed and revised as necessary for compliance with the ASME Code in effect 12 months prior to the end of the first 120 months of commercial operation. Similarly, this program will be reviewed and revised for each subsequent 120-month interval. Georgia Power Company reserves the right to submit program revisions which may enhance or improve this pump and valve testing program at any time within the effective period.

1.4 GENERAL PROGRAM CONCEPT

The program specifies Section XI testing requirements for components providing, either by action or position, a safety-related function. By definition, a safety-related function is one that is used in:

a. Mitigating the consequences of an accident.

b. Shutdown of the reactor to the cold shutdown condition.

c. Maintaining the reactor in a safe shutdown condition.

Section XI requires quarterly testing of all components unless it is impractical to do so. This program specifies quarterly testing of pumps and valves unless it has been determined that such testing would:

a. Be impractical due to system or component design.

b. Render a safety-related system inoperable.

c. Cause a reactor or turbine trip.

d. Require significant deviations from normal plant operations.

e. Require entry into inaccessible plant areas.

f. Increase the possibility of an intersystem LOCA.

Each component excluded from quarterly testing has been analyzed to determine when appropriate testing may be performed. If operation of a valve is not practical during plant operation, the Code allows part-stroke exercising during normal plant operation and full-stroke exercising at cold shutdown.

Since the Code accepts cold shutdown testing, this program does not request relief for those valves for which testing is delayed until cold shutdown. The Program does provide a justification for delay of testing until cold shutdown. These justifications are prepared in a format similar to relief requests, and are located behind the Cold Shutdown Justification tab.

Where it has been determined that testing is not practical during plant operation, or at cold shutdown, a specific relief request has been prepared. Each specific relief request provides justification for not performing the Code-specified tests, and provides appropriate alternative testing. In addition to specific relief requests, general relief requests which address specific Code requirements found to be impractical for this site have been prepared. Relief requests are located behind the Relief Requests tab.

The two general relief requests which have been written are RR-2 and RR-3. RR-2 requests relief from IWV-3417(b) and IWV-3523 which state that, when corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup. Relief was requested to allow corrective action to be performed prior to the valve being required for plant operability as defined in the Plant Technical Specifications. RR-3 requests relief from IWV-3413(b) and IWV-3417 for valves with stroke times of 2 seconds or less. Relief was requested to require the acceptance of the test to be based only on the stroke time limit and not the "50 percent" criterion in IWV-3417.

1.5 DEFINTIONS

Terms below, when used in the Inservice Testing Program, are defined as follows:

Quarterly: An interval of 92 days for testing components which can be tested during normal plant operation.

Cold Shutdown: Testing scheduled for cold shutdown will commence no later than 48 hours after entering cold shutdown. Testing will continue until all tests are complete or the plant is ready to return to power. Completion of all testing is not a prerequisite to return to power. Testing not completed at one cold shutdown will be performed during subsequent cold shutdowns that may occur before the refueling outage. In case of frequent cold shutdowns, valve testing will not be performed more often than once every 3 months. The 48-hour interval need not hold for planned cold shutdowns when their duration is of sufficient time to accomplish all shutdown testing.

Refueling: Testing scheduled for refueling will be performed during the normal scheduled refueling shutdowns before returning to power operation.

2.0 PUMPS

The following Pump Test List describes the inservice/preservice testing of pumps subject to the requirements of Subsection IWP of the American Society of Mechanical Engineers (ASME) Code, Section XI, 1983 Edition through Summer 1983 Addenda. The edition and addenda of Section XI for the inservice testing will be as required by 10 CFR 50.55a. The Pump test List provides identification of the pumps to be tested, inservice inspection (ISI) class, reference drawings, test requirements, and frequency of the tests. The legends before the Pump Test List describe the alpha coding used in the list.

Relief from the testing requirements of Section XI is requested where full compliance with the requirements of the code is not practical. In such cases the Pump Test List refers to a specific pump relief request (PR) number for the appropriate pump. The relief request provides specific information which identifies the applicable code requirements, the justification for the relief request, and the testing to be used as an alternate.

The baseline testing of pumps will be performed during preoperational testing or during the first surveillance test run. Reference values for subsequent inservice testing will be obtained from these baseline tests.

2.1 Inservice Test Plans

IWP-6230 (Inservice Test Plans) requires test plans which include the following:

(a) the hydraulic circuit to be used;
(b) the location and type of measurement for each of the required test quantities;
(c) the reference values (Table IWP-3100-1), limits of Pi and Tb (Table IWP-3100-2), and any other values required by Subsection IWP.

Included in Sections 4 (NSCW) through 11 (ESF) of this document is information that meets the intent of this requirement.

LEGEND FOR HEADINGS

Pump I.D. No.	- Unique Pump Identification Number
ISI Class	- The Classification as Determined for Section XI
Project Class	- The Classification as Determined by the Vogtle Project
P&ID/Sheet Number	- Piping and Instrumentation Diagram on which pump is shown.
Coordinates	- Location on P&ID where pump is shown.
Pump Descriptions	- Functional name of pump.
Relief Req	- Applicable relief request numbers are indicated with a "PR" prefix.

LEGEND FOR PUMP PARAMETERS

Pi - Inlet pressure (psig)
Po - Outlet pressure (psig)
dP - Differential pressure dP = Po-Pi (psi)
Q - Flowrate (gal/min)
V - Vibration amplitude (mil)
T - Bearing temperature (°F)
LL - Lubricant level or pressure
N - Speed (rpm)
PR - Pump Relief Request

LEGEND FOR FREQUENCY OF TEST

Q - Quarterly
A - Annually
N/A - Not applicable
- - Test deleted, see Relief Request

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1202-P4-001	3	313	2X4DB133-1	C-8	NSCW Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-002	3	313	2X4DB133-2	C-8	NSCW Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-003	3	313	2X4DB133-1	C-5	NSCW Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-004	3	313	2X4DB133-2	C-5	NSCW Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-005	3	313	2X4DB133-1	C-7	NSCW Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-006	3	313	2X4DB133-2	C-7	NSCW Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-007	3	313	2X4DB133-1	C-6	NSCW Transfer Pump	Q	Q	Q	Q	Q	N/A	N/A	N/A		*
2-1202-P4-008	3	313	2X4DB133-2	C-6	NSCW Transfer Pump	Q	Q	Q	Q	Q	N/A	N/A	N/A		*

*The bearings of the nuclear service cooling water pumps are in the main process flow path and therefore temperature measurements are not required by IWP-4310.

VEGP Unit No. 2
Pump Test List
System: Component Cooling Water - System No. 1203

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Sheet 1 of 1

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1203-P4-001	3	313	2X4DB136	G-4	CCW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1203-P4-002	3	313	2X4DB136	D-4	CCW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1203-P4-003	3	313	2X4DB136	G-4	CCW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1203-P4-004	3	313	2X4DB136	C-4	CCW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1203-P4-005	3	313	2X4DB136	F-4	CCW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1203-P4-006	3	313	2X4DB136	B-4	CCW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency: Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1204-P6-003	2	212	2X4DB121	E-3	Safety Injection Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1204-P6-004	2	212	2X4DB121	C-3	Safety Injection Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	

VEGP Unit No. 2
Pump Test List
System: Residual Heat Removal - System No. 1205

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Sheet 1 of 1

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1205-P6-001	2	212	2X4DB122	G-4	RHR Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1205-P6-002	2	212	2X4DB122	D-4	RHR Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	

VEGP Unit No. 2
Pump Test List
System: Containment Spray - System No. 1206

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Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency: Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1206-P6-001	2	212	2X4DB131	G-4	CS Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1206-P6-002	2	212	2X4DB131	C-4	CS Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1208-P6-002	2	212	2X4DB116-2	G-4	Centrifugal Charging Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1208-P6-003	2	212	2X4DB116-2	C-4	Centrifugal Charging Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1208-P6-006	3	313	2X4DB118	D-4	Boric Acid Transfer Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A	PR-3	*
2-1208-P6-007	3	313	2X4DB118	B-4	Boric Acid Transfer Pumps	Q	Q	Q	Q	Q	N/A	N/A	N/A	PR-3	*

* Bearing surfaces and other parts are lubricated and cooled by the positive flow of pumped fluid. Therefore, temperature measurements are not required by IWP-4310.

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1302-P4-001	3	313	2X4DB161-2	F-6	AFW Pump (Turbine Driven)	Q	Q	Q	Q	Q	-	Q	Q	PR-1	
2-1302-P4-002	3	313	2X4DB161-2	D-6	AFW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1302-P4-003	3	313	2X4DB161-2	B-6	AFW Pumps	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	

VEGP Unit No. 2
Pump Test List
System: Safety-Related (ESF) Chillers - System No. 1592

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Sheet 1 of 1

Pump I.D. Number	Class ISI	Class Proj.	P&ID/Sheet Number	Coordinates	Pump Descriptions	Measured Parameters and Frequency Pi (psig)	Po (psig)	dP (psi)	Q (gpm)	V (mil)	T (°F)	LL (NA)	N (rpm)	Relief Req.	Notes
2-1592-P7-001	3	313	2X4DB221	F-5	ESF Chilled Water Pump	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	
2-1592-P7-002	3	313	2X4DB221	C-5	ESF Chilled Water Pump	Q	Q	Q	Q	Q	-	Q	N/A	PR-1	

RELIEF REQUEST

PR-1

PUMPS:	All pumps except the NSCW and NSCW Transfer, and Boric Acid Transfer Pumps
CLASS:	2 and 3
TEST REQUIREMENTS:	IWP-3300 requires a bearing temperature measurement at least once a year.
BASIS FOR RELIEF:	The once-a-year temperature measurement will not provide significant information about pump conditions. Industry experience has shown that bearing temperature changes caused by degrading bearings occur only after major degradation has occurred at the pump. Prior to this, the vibration measurement will provide the necessary information to warn the operator of an impending malfunction. The long running time required to achieve temperature stability could result in increased maintenance and repair. Deletion of this measurement will not have significant affect on evaluating pump test results since other required test parameters are being measured.
ALTERNATE TESTING:	Vibration amplitude will be measured quarterly as required by Code.

RELIEF REQUEST

PR-2

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RELIEF REQUEST

PR-3

PUMPS:	Boric acid transfer pumps (2-1208-P6-006 and 2-1208-P6-007)
CLASS:	3
TEST REQUIREMENTS:	IWP-4120 states "The full-scale range of each instrument shall be three times the reference value or less."
BASIS FOR RELIEF:	Suction pressure gauges PI-10115 and PI-10116 on the boric acid transfer pumps have a range of -15 psi to 15 psi. The suction pressure measurements are expected to be less than 4 psi. Therefore, the maximum full scale range of the gauge would have to be less than 12 psi to be within Code requirements. These instruments are within the accuracies of Table IWP-4110-1. Considering the low pressures involved, the difference between the Code ranges and the range on the installed instruments would have no significance on the adequacy of the measurements taken.
ALTERNATE TESTING:	The installed instruments will be used for taking suction pressure measurements during pump tests.

NUCLEAR SERVICE COOLING WATER PUMPS

(2-1202-P4-001, -002, -003, -004, -005, -006, -007, -008)

System Function

The nuclear service cooling water (NSCW) system provides cooling water for the containment coolers, control building essential chiller condensers, various engineered safety features pump coolers, and the component cooling water and auxiliary component cooling water heat exchangers and transfers the heat removed from these systems to the ultimate heat sink.

Pump Description

The NSCW pumps (Table 4-1) are each rated at 8600 gal/min at 230-ft head. Each pump is driven by a 700-hp motor. The transfer pumps (Table 4-2) are driven by a 30-hp motor and are rated at 600 gal/min at 110-ft head. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 4-3 through 4-10)
Pump Test Loops	(Drawings ISI-D-250 through 257)
Pump Characteristic Curves	(Figures 4-1 through 4-8)

Table 4-1

NSCW Pumps

(2-1202-P4-001, -002, -003, -004, -005, -006)

Quantity	6
Type	Vertical centrifugal, 2 stages, self lubricated
Manufacturer/Model	Bingham-Willamette/18x27B VCM
Rated capacity (gan/min, each)	8600
Rated total differential head (ft)	230
NPSH required, low level basin (ft)	33.5
NPSH available (minimum ft)	36.5
Driver	
Type	Electric motor
Horsepower	700
Revolutions/min	1170
Power supply	4160 V, 60 Hz, 3 phases
Project Class	313
Outline Drawing	2X4AF02-33
Instruction Book	2X4AF02-94
Location	NSCW Pump House
P&ID	2X4DB133-1, -2

Table 4-2

NSCW Transfer Pumps

(2-1202-P4-007, -008)

Quantity	2
Type	Vertical Centrifugal, self-lubricated 2 stages
Manufacturer/Model	Bingham Willamette/8x12A VCM
Rated capacity (gal/min, each)	600
Rated total differential head (ft)	110
NPSH required, low level basin (ft)	18
NPSH available (minimum ft)	37.7
Driver	
Type	Electric motor
Horsepower	30
Revolutions/min	1760
Power supply	480 V, 60 Hz, 3 phases
Project Class	313
Outline Drawing	AX4AF02-26
Instruction Book	2X4AF02-96
Location	NSCW Pump House
P&ID	2X4DB133-1, -2

Table 4-3

Test Parameter Table for Pump 2-1202-P4-001

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1606	N/A	Pi ≥ 33.5 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2148	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11760	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-4

Test Parameter Table for Pump 2-1202-P4-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1607	N/A	Pi ≥ 33.5 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2149	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11763	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-5

Test Parameter Table for Pump 2-1202-P4-003

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1606	N/A	Pi ≥ 33.5 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2152	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11762	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-6

Test Parameter Table for Pump 2-1202-P4-004

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1607	N/A	Pi ≥ 33.5 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2153	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11765	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-7

Test Parameter Table for Pump 2-1202-P4-005

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1606	N/A	Pi ≥ 33.5 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2150	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11761	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-8

Test Parameter Table for Pump 2-1202-P4-006

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1607	N/A	Pi ≥ 33.5 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2151	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11764	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-9

Test Parameter Table for Pump 2-1202-P4-007

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1606	N/A	Pi ≥ 18 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2154	N/A	
Differential Pressure (dP)	Quarterly	M&TE	dPr (2)	Note 3
Flowrate (Q)	Quarterly	FI-2156	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 4-10

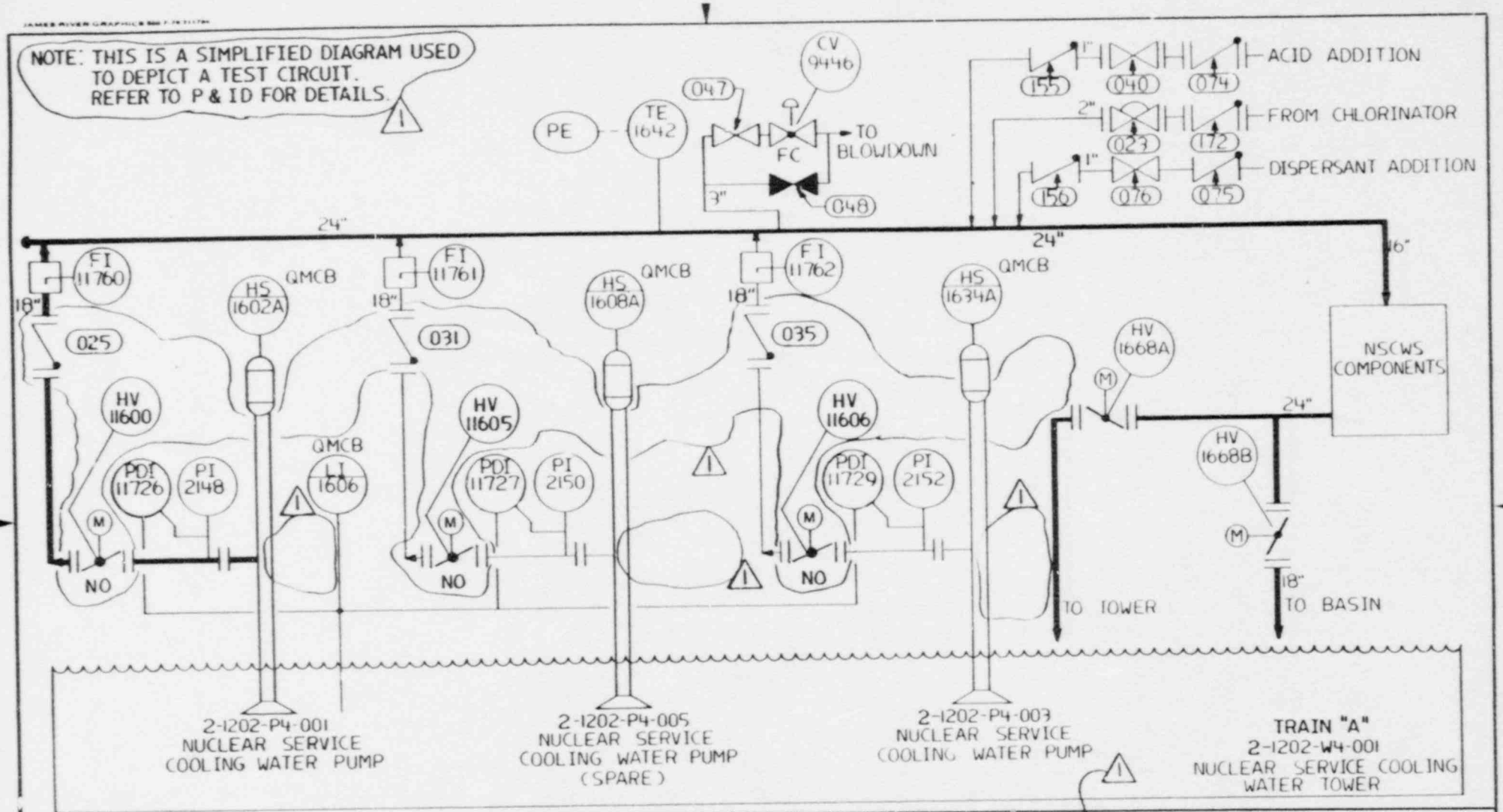
Test Parameter Table for Pump 2-1202-P4-009

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	LI-1607	N/A	Pi ≥ 18 ft required in basin
Outlet Pressure (Po)	Quarterly	PI-2155	N/A	
Differential Pressure (dP)	Quarterly	M&TE	dPr (2)	Note 3
Flowrate (Q)	Quarterly	FI-2157	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Bearings in main process flow path
Bearing Temperature (Tb)	N/A	N/A	N/A	Not required per IWP-4310, bearings in main process flow path

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	BGS	WS	ISSUED FOR PSI					
1	1-26-88		RCB	UPDATED TO REV. 20 OF 2X4DB133-1					

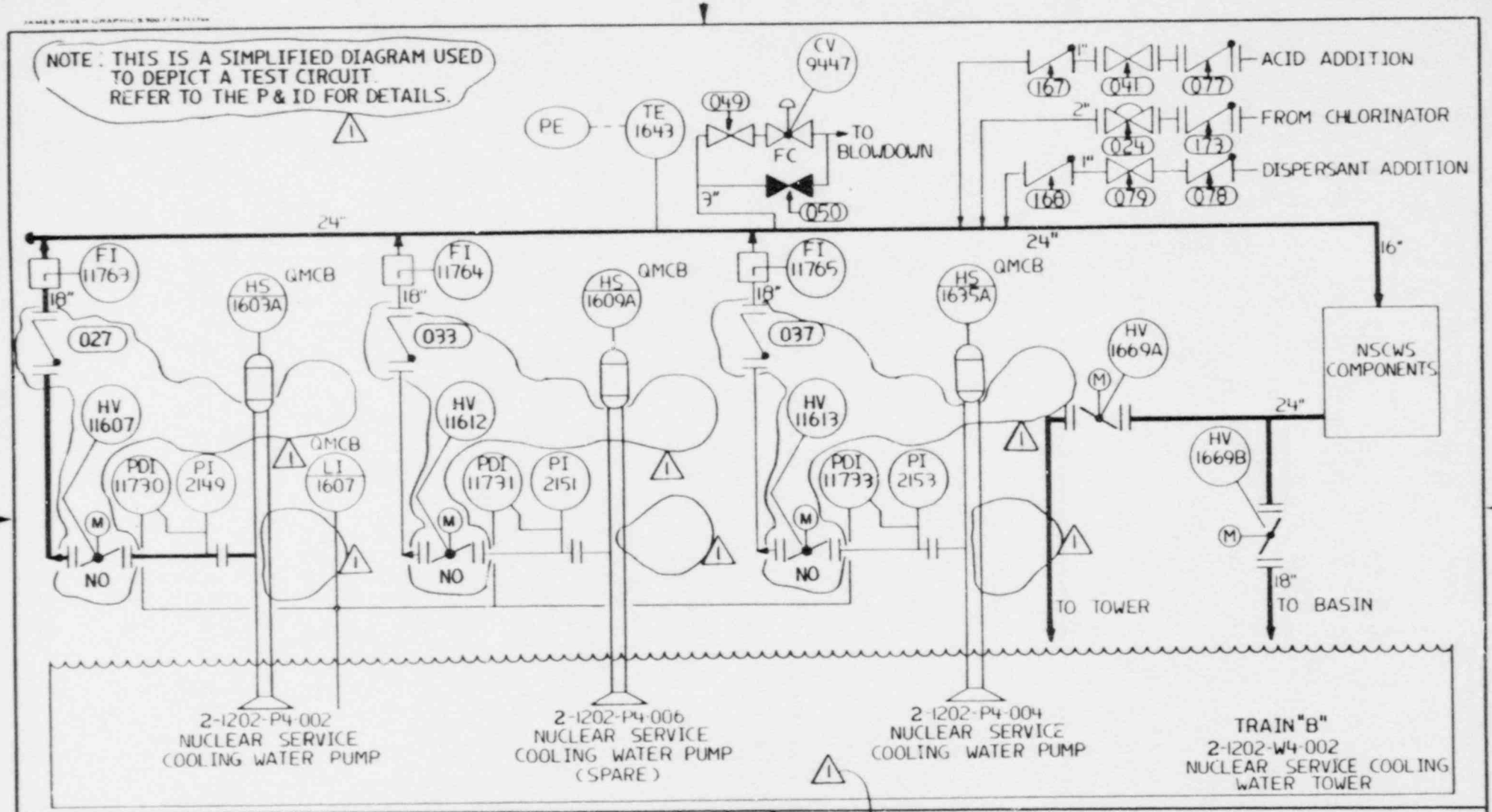
REMARKS

Southern Company Services, Inc. FOR **Georgia Power Company**

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR NUCLEAR SERVICE COOLING WATER PUMP 2-1202-P4-001

DESIGNED ET DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-250	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-86	BGS	WS	ISSUED FOR PSI					
1	1-26-88		RLB	UPDATE TO REV. 19 OF 2X4DB133-2					

REMARKS

Southern Company Services, Inc. FOR Georgia Power Company

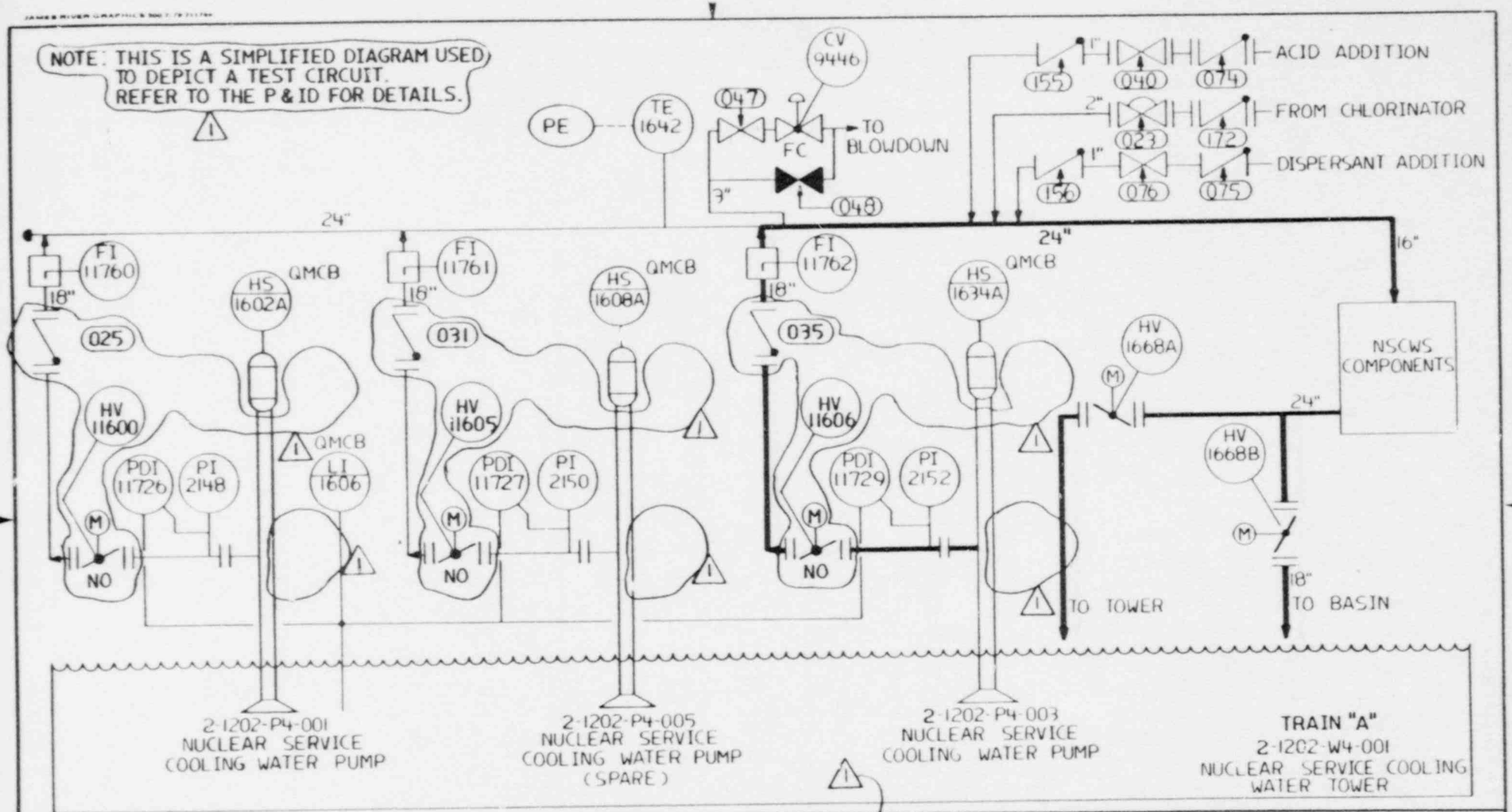
VOGTLE ELECTRIC GENERATING PLANT
UNIT-2

PUMP INSERVICE TESTING LOOP FOR NUCLEAR SERVICE COOLING WATER PUMP 2-1202-P4-002

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-251	1 OF 1	1

FORM NO. 4-351



REV.	DATE	BY	CHKD	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5	REMARKS
0	8-5-84	[illegible]	WS	ISSUED FOR PSI						
1	3-26-88	[illegible]	WS	UPDATED TO REV. 20 OF 2X4DB133-1						

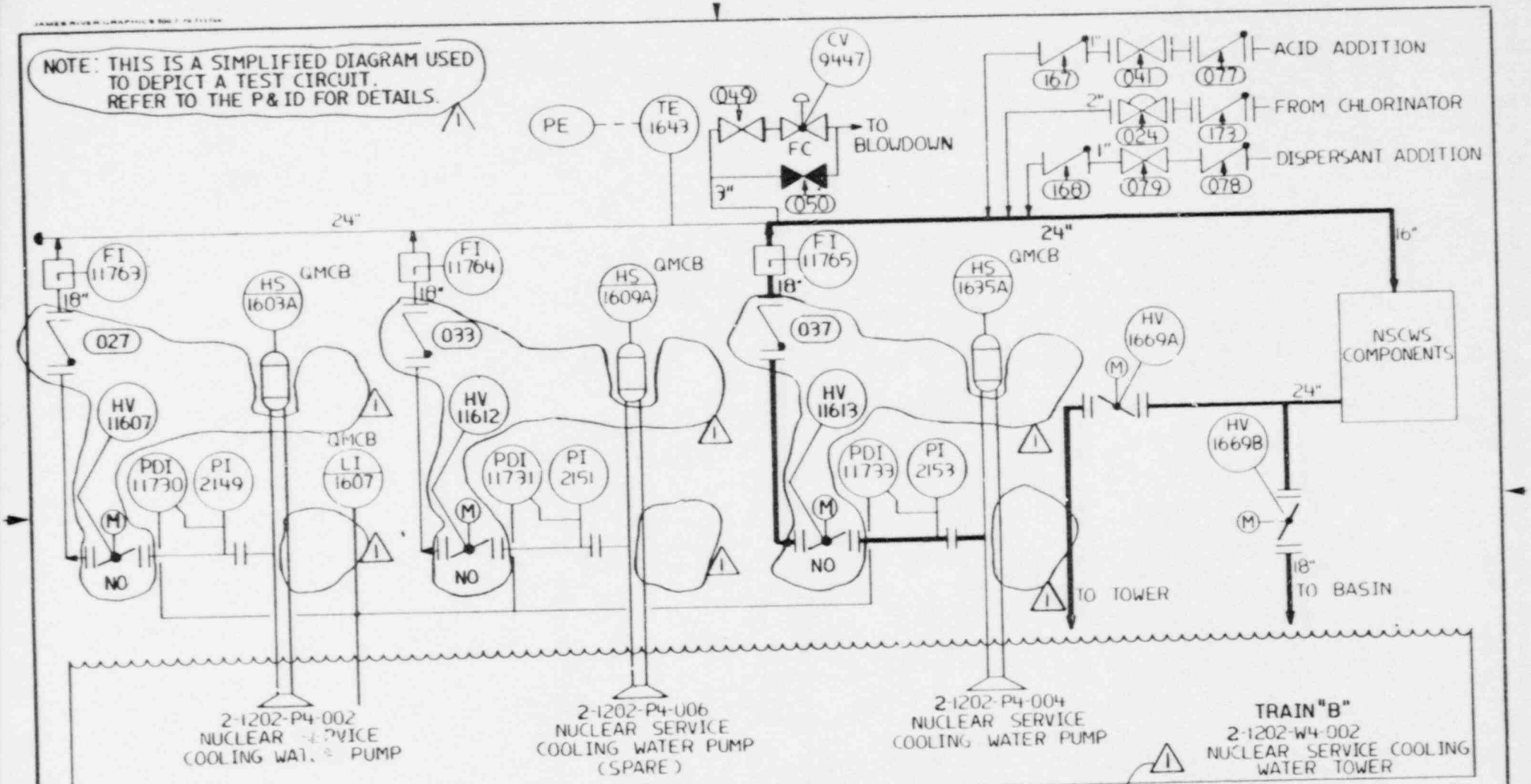
Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR NUCLEAR SERVICE COOLING WATER PUMP 2-1202-P4-003

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

	PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	N/A	ISI-D-252	1 OF 1	1

FORM NO. 9.391



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	WS	ISSUED FOR PST					
1	1-26-88	[illegible]	RCB	UPDATE TO REV. 19 OF 2X4DB133-2					

REMARKS

Southern Company Services, Inc. FOR Georgia Power Company

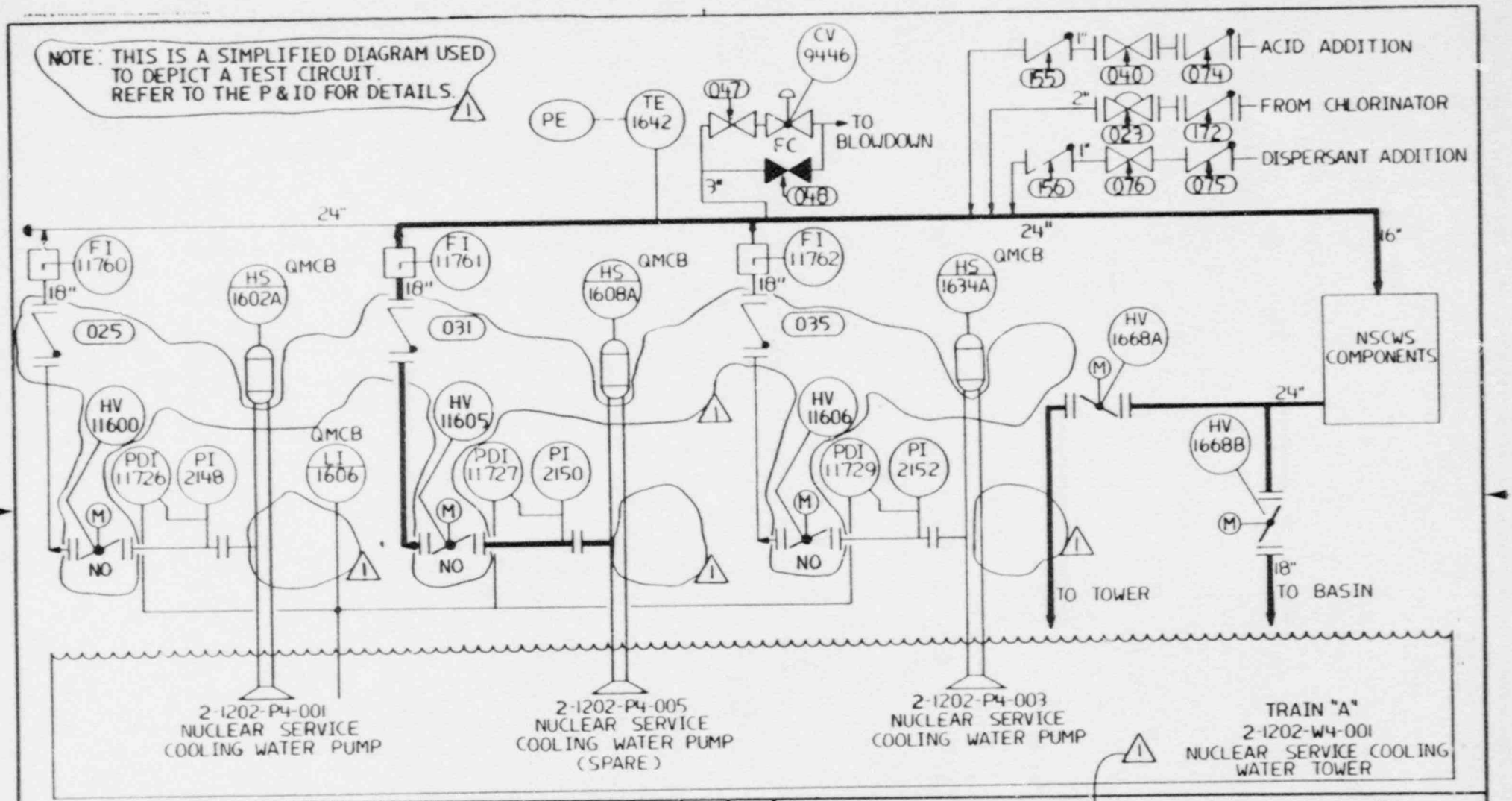
VOGTLE ELECTRIC GENERATING PLANT
UNIT-2

PUMP INSERVICE TESTING LOOP FOR NUCLEAR SERVICE COOLING WATER PUMP 2-1202-P4-004

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	N/A	ISI-D-253	1 OF 1	1

FORM NO. 5-361



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	AGN	WS	ISSUED FOR PST					
1	1-26-88		RCB	UPDATED TO REV. 20 OF 2X4DB133-1					

REMARKS

Southern Company Services, Inc. FOR Georgia Power Company

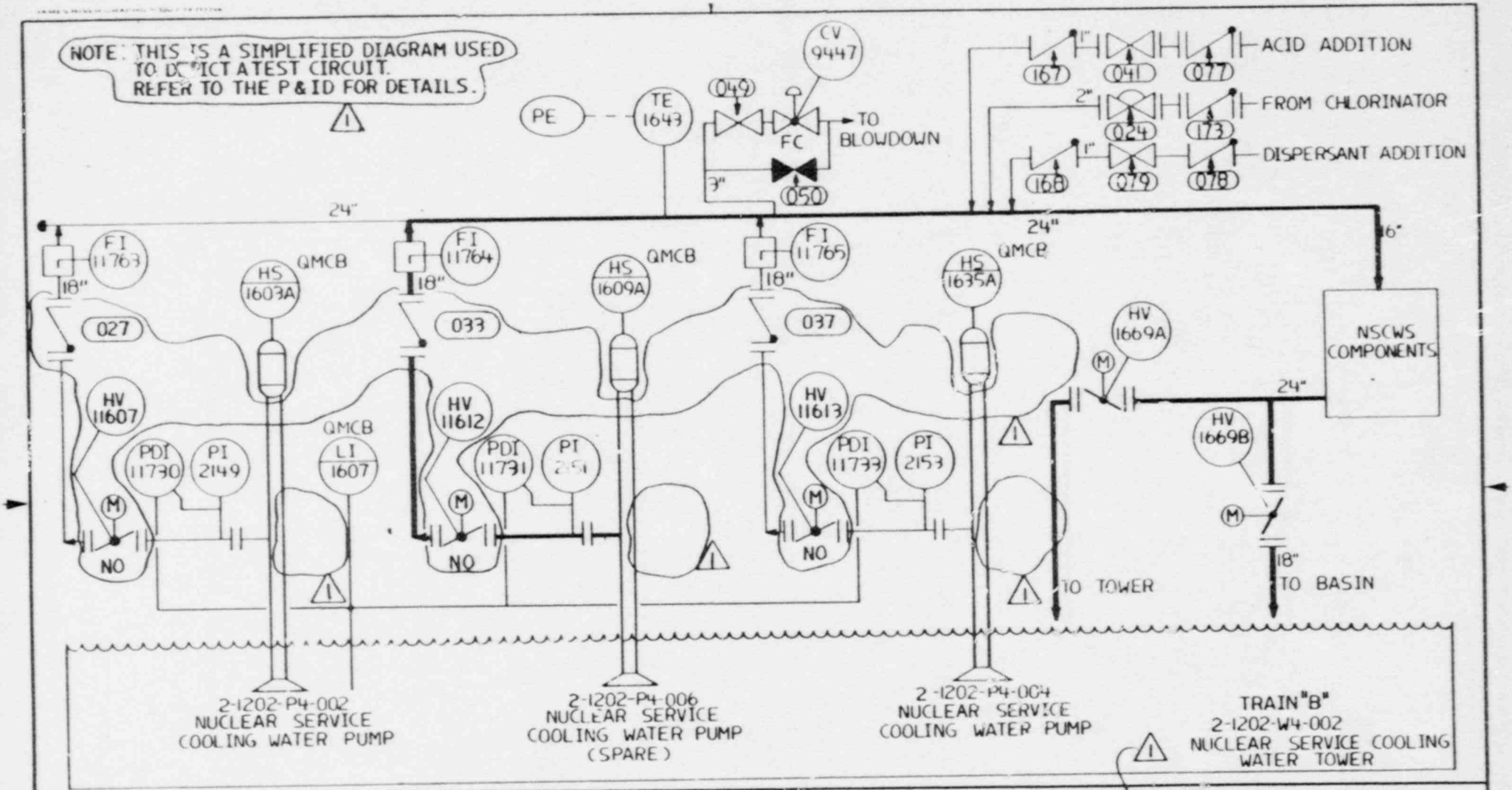
VOGTLE ELECTRIC GENERATING PLANT UNIT-2

PUMP INSERVICE TESTING LOOP FOR NUCLEAR SERVICE COOLING WATER PUMP 2-1202-P4-005

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-254	1 OF 1	1

FORM NO. 6 351



REV.	DATE	BY	CHKD	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	WS	ISSUED FOR PST	[illegible]				
1	1-16-88	[illegible]	RCB	UPDATED TO REV. 19 OF 2X4DB133-2	[illegible]				

REMARKS

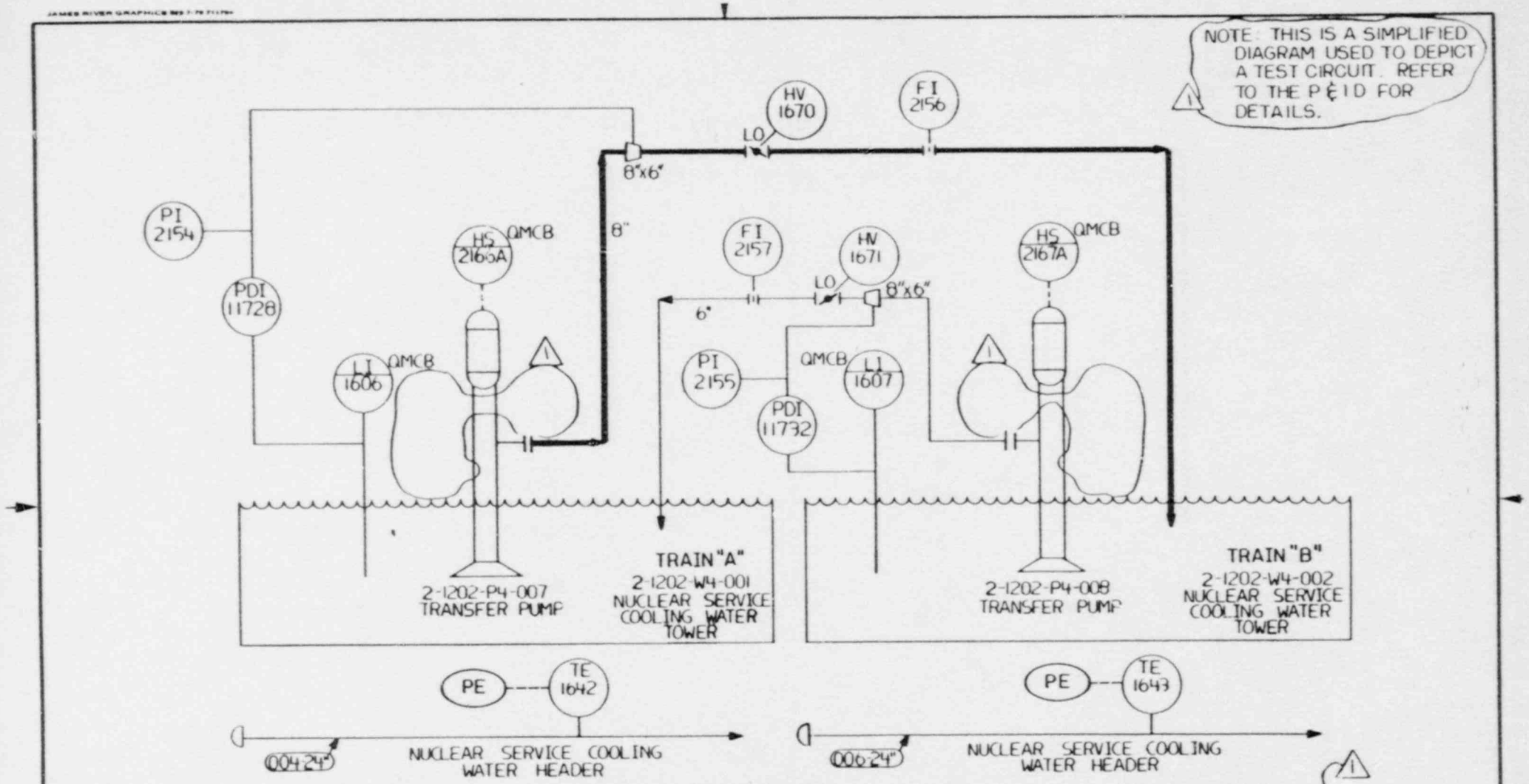
Southern Company Services, Inc. FOR **Georgia Power Company**

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR
NUCLEAR SERVICE COOLING WATER
PUMP 2-1202-P4-006

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-255	1 OF 1	1

FORM NO. 5-M1



REV	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[redacted]	WS	ISSUED FOR PSI					
1	1-16-88	[redacted]	RLB	UPDATED TO REV. 20 2X4DB133-1 & REV. 19 2X4DB133-2					

REMARKS

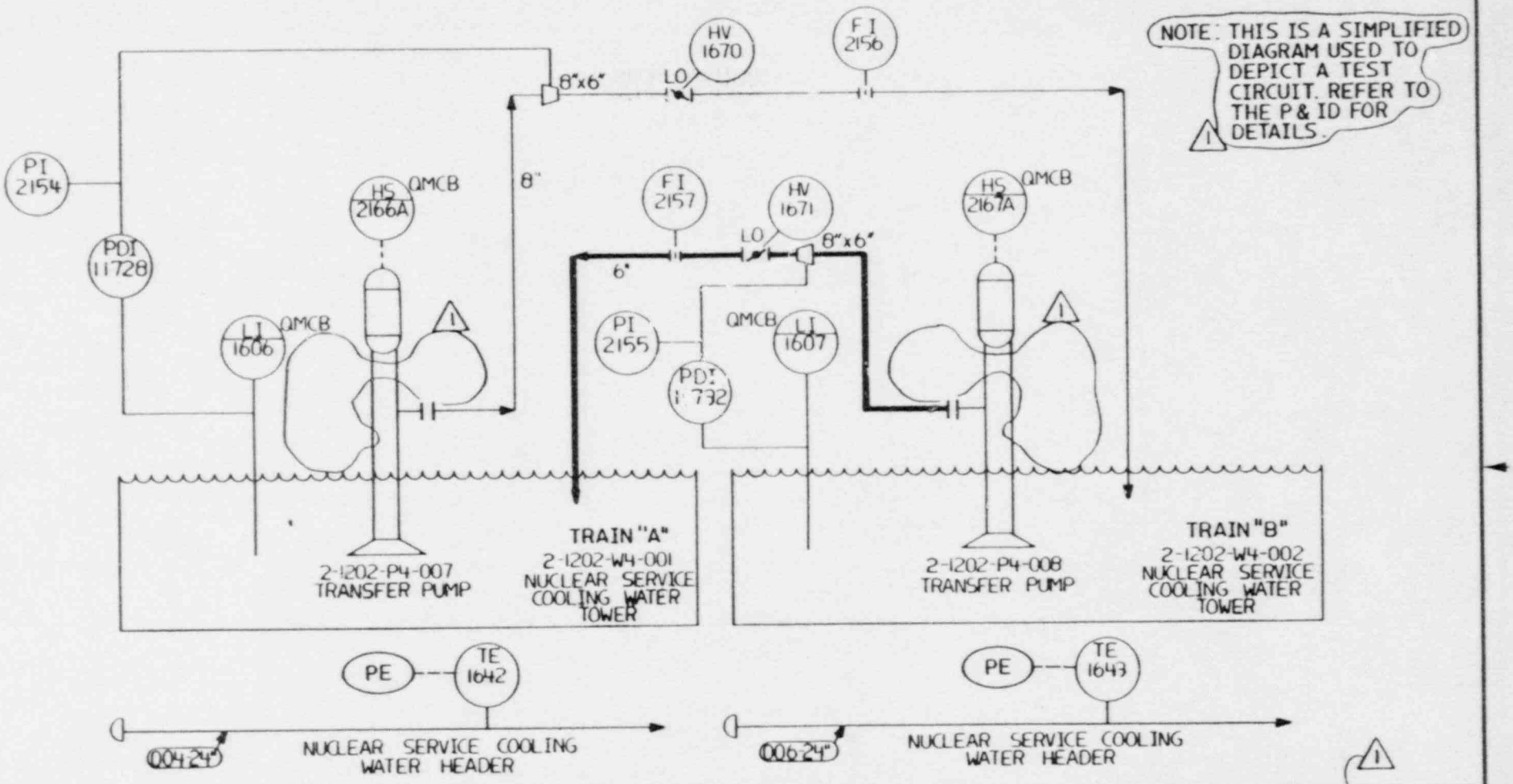
Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT UNIT-2

PUMP INSERVICE INSPECTION LOOP FOR TRANSFER PUMP 2-1202-P4-007

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-256	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	BGB	WS	ISSUED FOR PSI					
1	1-12-88	JMH	RCB	UPDATED TO REV 20 2X4DB133-1 & REV 19 2X4DB133-2					

REMARKS

Southern Company Services, Inc. FOR **Georgia Power Company**

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE INSPECTION LOOP
FOR TRANSFER PUMP
2-1202-P4-008

DESIGNED FT DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-257	1 OF 1	1

FORM NO. 5-201

CHARACTERISTIC CURVE SHEET

39372

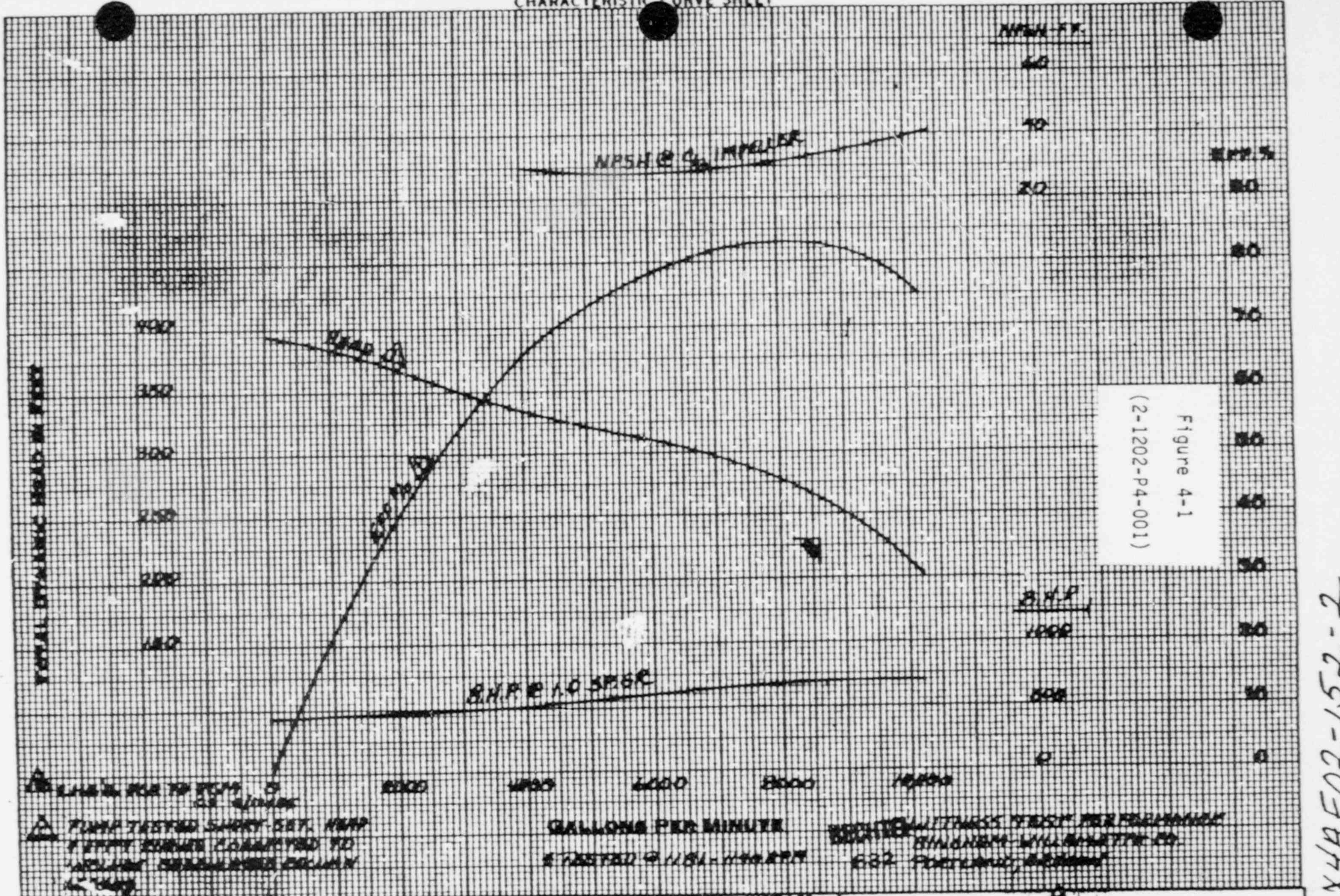


Figure 4-1
(2-1202-P4-001)

PUMP TESTED SHORT SET. HEAD & EFFY. CURVE CORRECTED TO "SPECIFIC" ... COLUMN ...

* TESTED @ 1181-1190 RPM

WITNESS TEST PERFORMANCE BINGHAM-WILLAMETTE CO. PORTLAND, OREGON

GEORGIA POWER CO. COOLING WATER PUMP CUST. P.O. # PAV2-67 PUMP S/N = 1A058-1	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND OREGON & SHREVEPORT LA. BINGHAM-WILLAMETTE LTD. VANCOUVER B.C. & CAMBRIDGE ONTARIO 2-7-83	IMPELLER MAX. DIA. 19 7/8" MIN. DIA. EYE AREA 983 SQ IN	18 x 27B VCM 2 STAGE PUMP		
			DIA. IMPELLER 18.51" B.D. @ 25°	IMPELLER PATT. 2613 VC-1	* AS TESTED R.P.M.
			N.P.S.H. REQUIRED	REFERENCE	CURVE NO. 39372

Form No. 3132

2X4AF02-152-2

CHARACTERISTIC CURVE SHEET

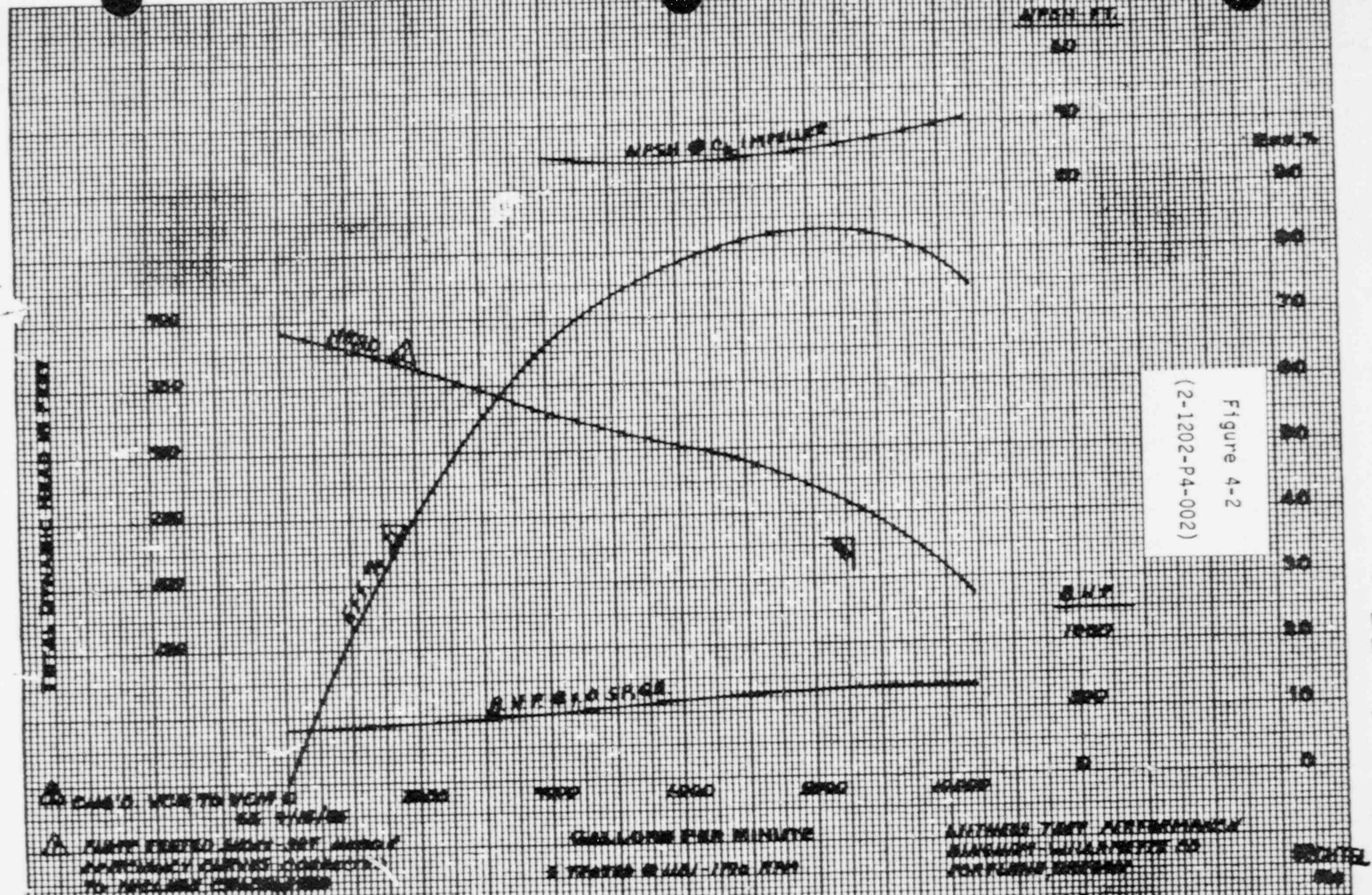


Figure 4-2
(2-1202-P4-002)

2X4AF02-157-2

GEORGIA POWER COMPANY COOLING WATER PUMP CUST. P.O. # PRV2-67 PUMP S/N = 1A059-1	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND OREGON & SHREVEPORT LA BINGHAM-WILLAMETTE LTD. VANCOUVER B.C. & CAMBRIDGE ONTARIO	IMPELLER MAX. DIA. 19 7/8" MIN. DIA EYE AREA 98.3 SQ IN	18 x 278 VCM 2 STAGE PUMP DIA. IMPELLER N.P.S.H. REQUIRED	IMPELLER PATT. 2613 VC-1 REFERENCE
				AS TESTED R.P.M. CURVE No. 39376

CHARACTERISTIC CURVE SHEET

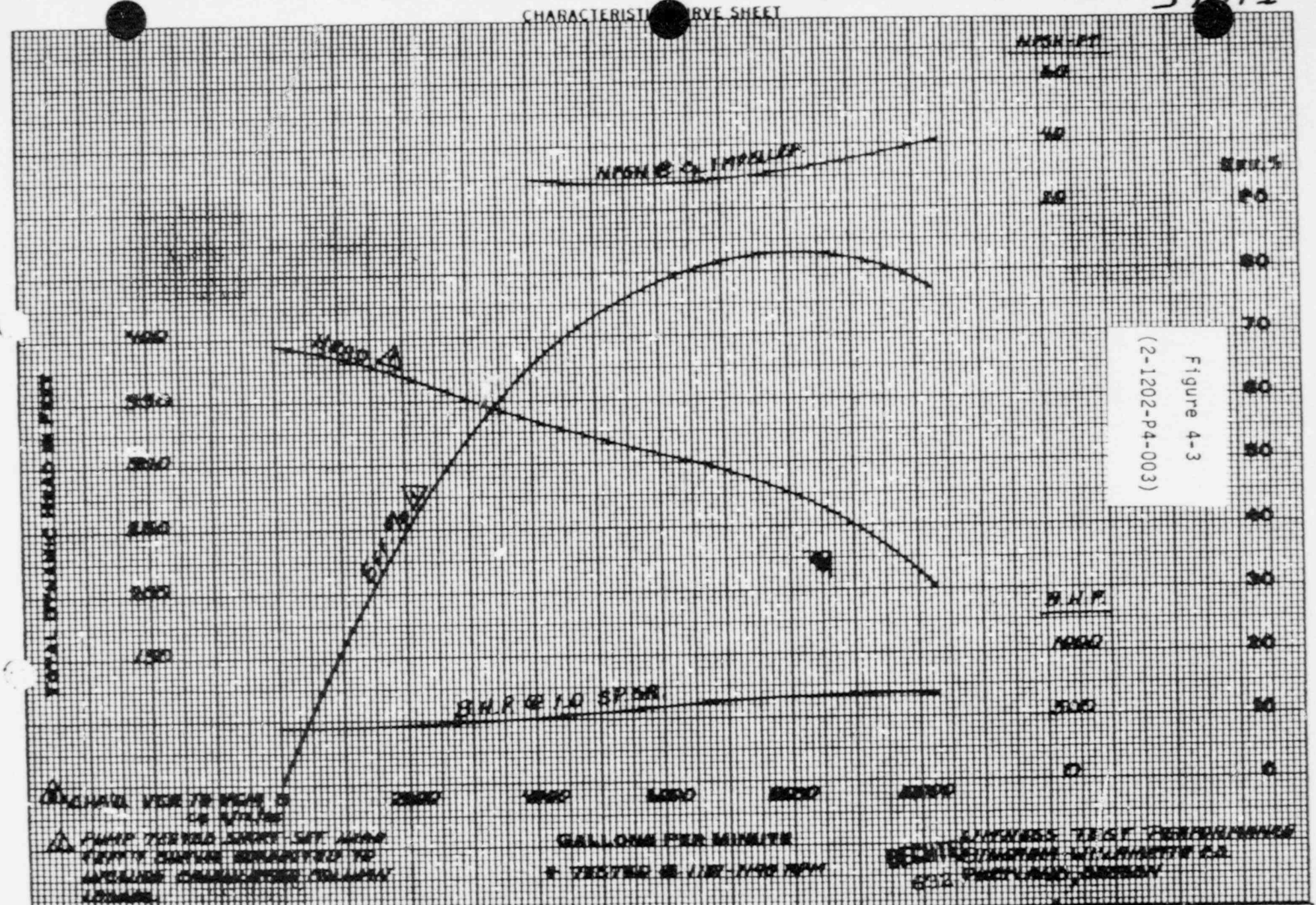


Figure 4-3
(2-1202-P4-003)

GEORGIA POWER COMPANY COOLING WATER PUMP CUST. P.O. # PAV2-67 PUMP S/N = 1A060-1	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND, OREGON & SHREVEPORT, LA BINGHAM-WILLAMETTE LTD. VANCOUVER, B.C. & CAMBRIDGE, ONTARIO DI 2-10-83	IMPELLER MAX. DIA. 19⅞"	18x27.8 VCM 2 STAGE PUMP		
		MIN. DIA.	DIA. IMPELLER 18.61" B.D. @ 25°	IMPELLER DESIG. 2613 VC-1	* AS TESTED R.P.M.
		EYE AREA 98.3 SQ IN	N.P.S.H. REQUIRED	REFERENCE	CURVE No. 39371

2XHAF02-151-2

Form No. 3122

CHARACTERISTIC CURVE SHEET

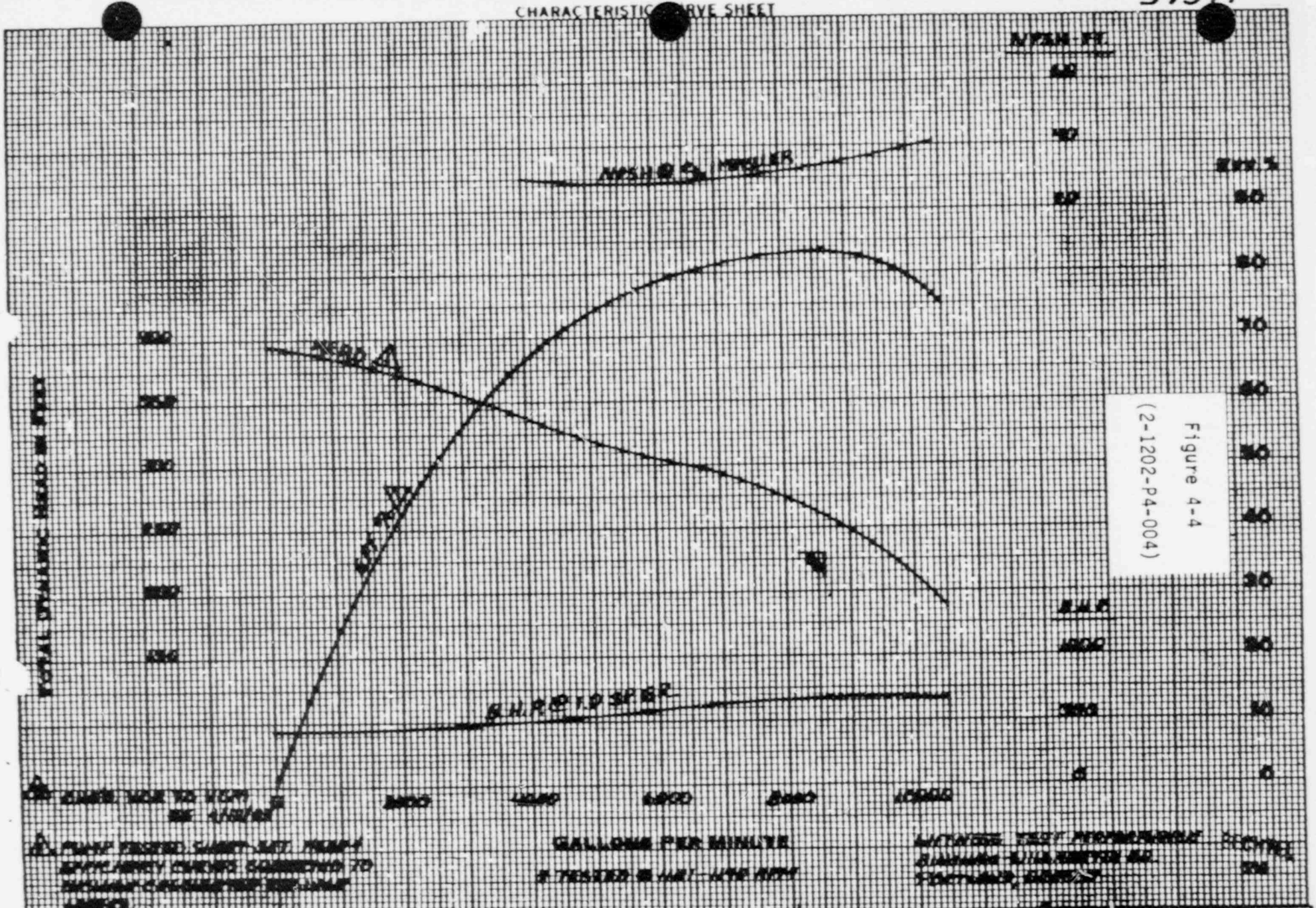


Figure 4-4
(2-1202-P4-004)

Borg & Power Company Cooling Water Pump Cust. P.O. # PAV2-67 Pump S/N = 1A061	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND, OREGON & SHREVEPORT, LA. BINGHAM-WILLAMETTE LTD. VANCOUVER, B.C. & CAMBRIDGE, ONTARIO	IMPELLER MAX. DIA. 19¾" MIN. DIA. EYE SQ AREA 98.3 IN.	18x27B VCM 2 Stage PUMP	
			DIA. IMPELLER 18.51" B.D. @ 85°	IMPELLER REPT. 2613 VC-1
			N.P.S.H. REQUIRED	REFERENCE
			AT ✱ TESTED	R.P.M.
			CURVE No. 39377	

2X4AF02-159-2

Form No. 5184

CHARACTERISTIC CURVE SHEET

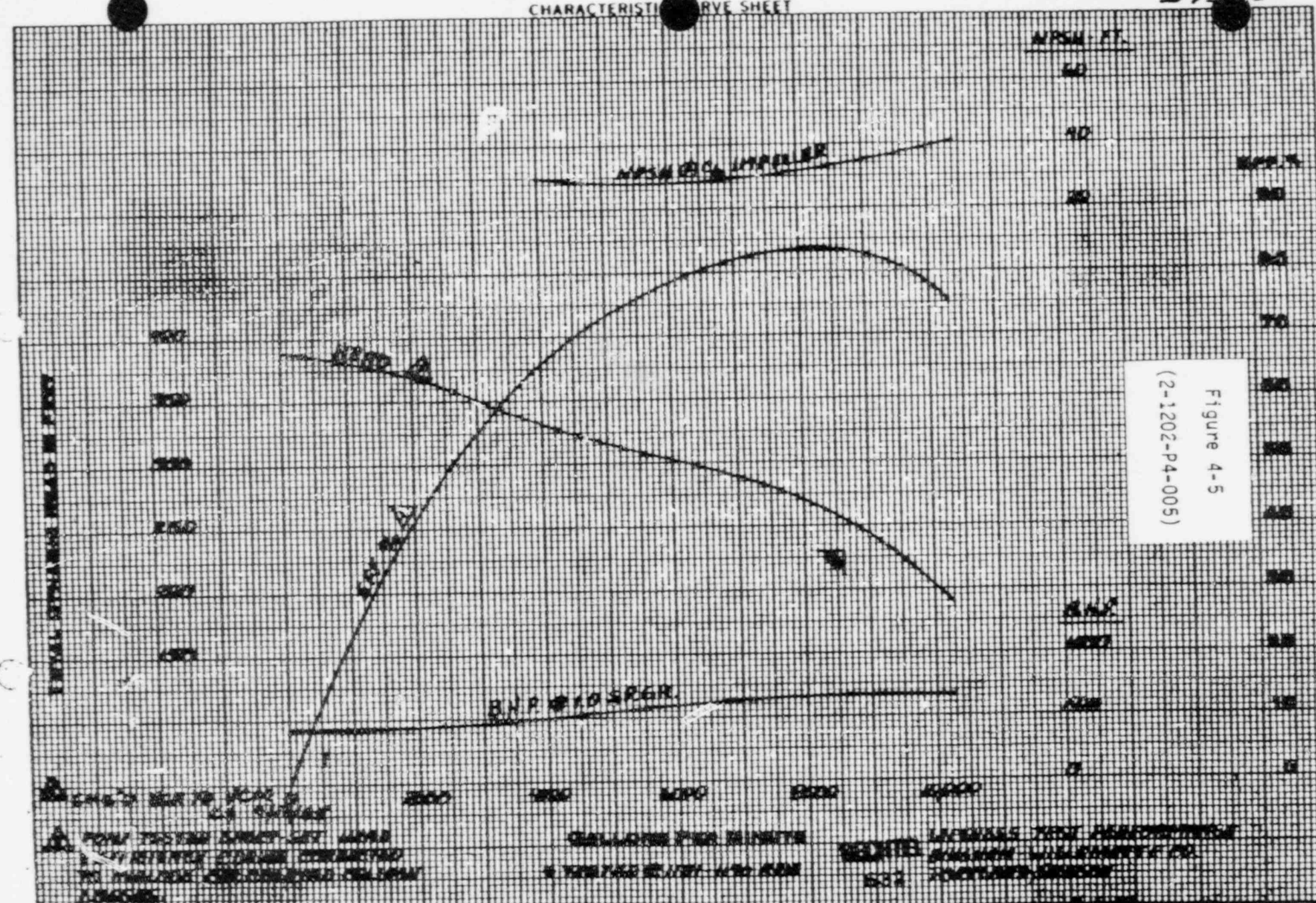
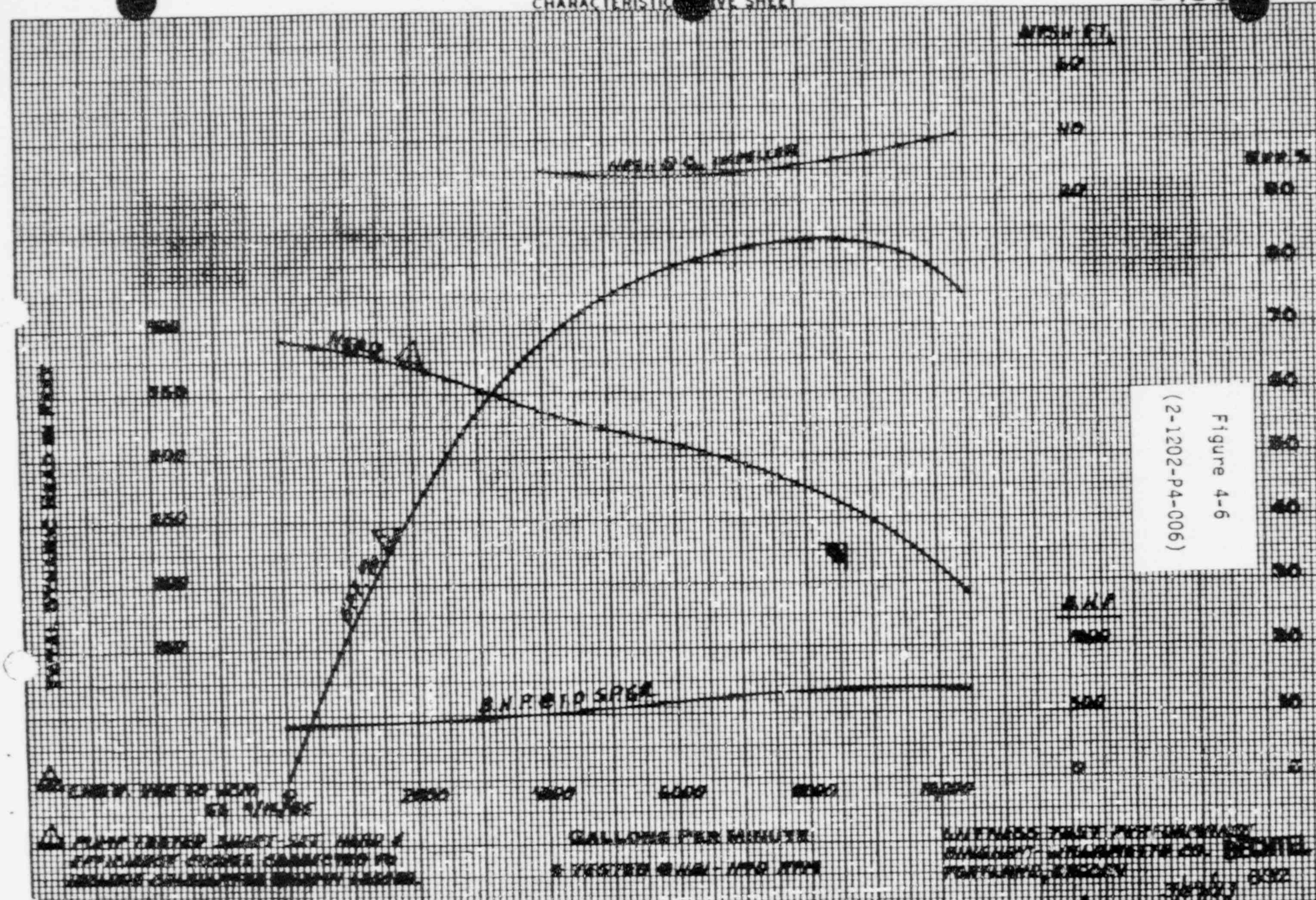


Figure 4-5
(2-1202-P4-005)

GEORGIA POWER COMPANY COOLING WATER PUMP CUST. P.O.# PAV2-ET PUMP S/N - 1A062-1	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND OREGON & SHREVEPORT LA. BINGHAM-WILLAMETTE LTD. VANCOUVER B.C. & CAMBRIDGE ONTARIO	IMPELLER MAX. DIA. 19 7/8"	18 x 27B VCLM 6 STAGE PUMP	
		MIN. DIA.	DIA. IMPELLER 18.51" S.D. @ 25°	SIZE & TYPE LJ3 VC-1
		EYE AREA 983 SQ IN	N.P.S.H. REQUIRED	REFERENCE
				No. of TESTED R.P.M.
				CURVE NO. 39370

2X19FD2-150-2

CHARACTERISTIC CURVE SHEET



GEORGIA POWER COMPANY COOLING WATER PUMP CUST. P.O. # PAVR-67 PUMP S/N - 1A063	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND OREGON & SHREVEPORT, LA BINGHAM-WILLAMETTE LTD. VANCOUVER B.C. & CAMBRIDGE ONTARIO BI 3-28-83	IMPELLER MAX. DIA. 19 7/8 MIN. DIA. EYE AREA 98.3 SQ. IN.	18 x 27B VCM 2 STAGE PUMP D.A. IMPELLER: 18 3/4" BD. @ 25° IMPELLER PATT.: 2613 VC-1 N.P.S.H. REQUIRED REFERENCE AS TESTED R.P.M. CURVE No. 39384

2X4AF02-160-2

39250

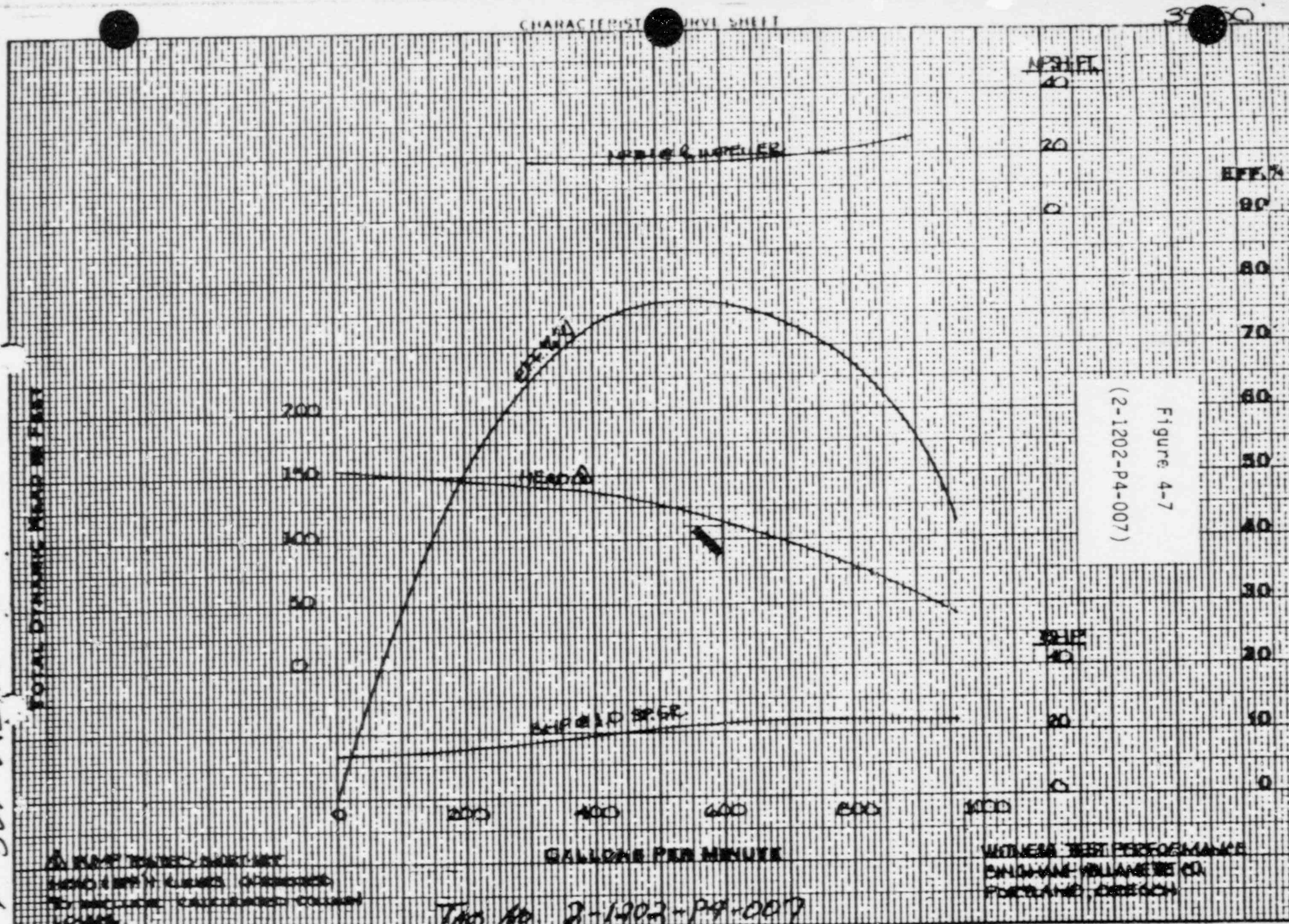


Figure 4-7

(2-1202-P4-007)

GEORGIA POWER COMPANY WATER TRANSFER PUMP CUST. P.O.# PAV 2-67 PUMP # 1A066	PUMP ENGINEERING DEPT BINGHAM-WILLAMETTE COMPANY PORTLAND OREGON & SHREVEPORT LA BINGHAM-WILLAMETTE LTD. VANCOUVER B.C. & CAMBRIDGE ONTARIO	IMPELLER MAX. DIA. 9 7/8" MIN. DIA. EYE AREA 25.5 SQ. IN.	8-12A VCM 2 STG. PUMP DIA. IMPELLER: 1) 20" B.D. @ 26°; 2) 20" B.D. @ 13° IMPELLER PATT.: 1) 1213 VCL 4; 1213 VCL - 2 VANES; 2) 1213 VC N.P.S.H. REQUIRED	1760 R.P.M. CURVE No. 39250 A

2X4AF02-128-4

243

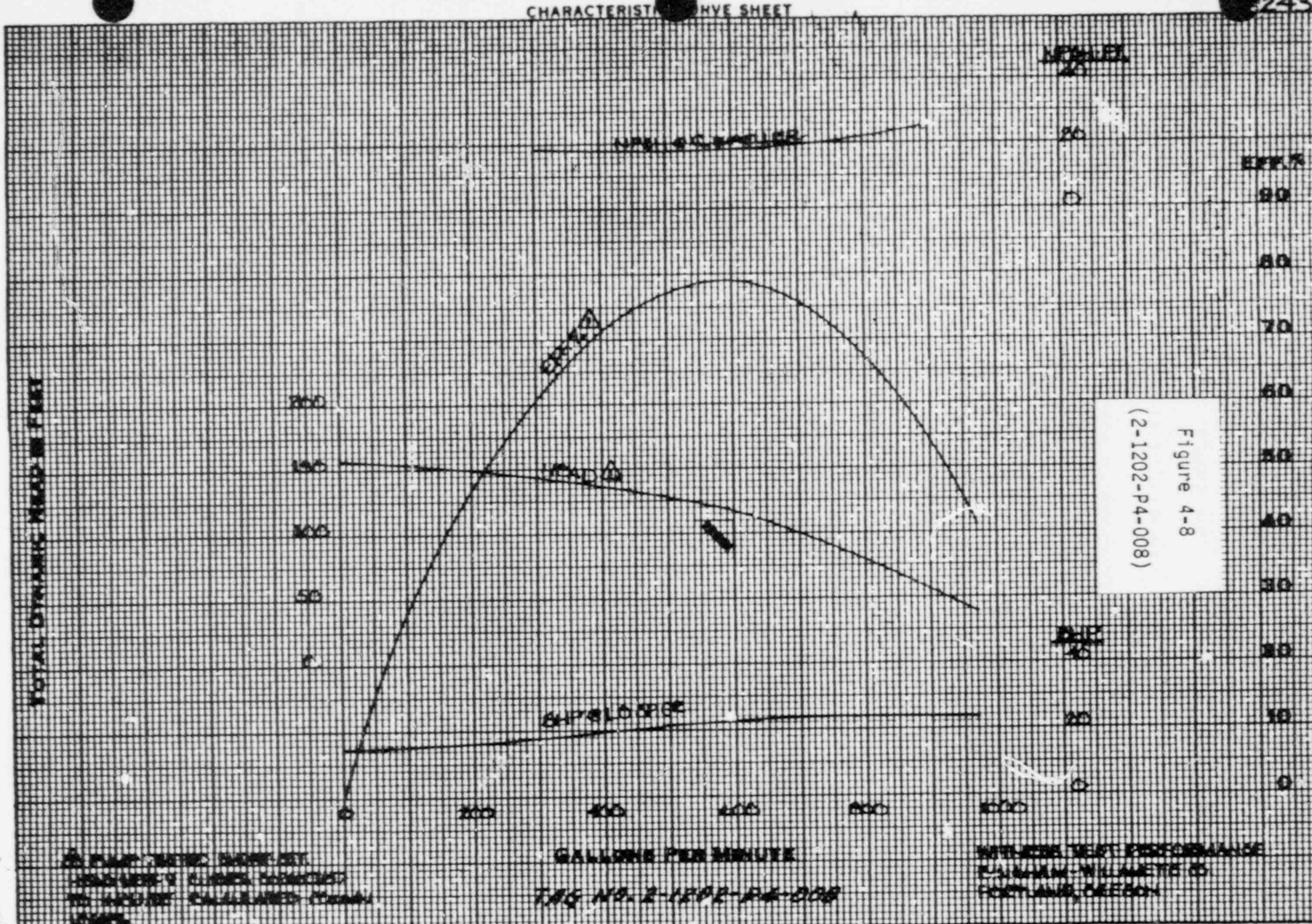


Figure 4-8 (2-1202-P4-008)

GEORGIA POWER COMPANY WATER TRANSFER PUMP CUST. P.O.# PAV2-67 PUMP %: 1A067	PUMP ENGINEERING DEPT. BINGHAM-WILLAMETTE COMPANY PORTLAND, OREGON & SHREVEPORT, LA BINGHAM-WILLAMETTE LTD. VANCOUVER B.C. & CAMBRIDGE, ONTARIO 2-20-82	IMPELLER MAX. DIA. 9 7/8" MIN. DIA. EYE AREA 25.5 SQ IN	8 x 12 A VCM 2 STG. PUMP		
			DIA. IMPELLER 8.20" B.D.@25° 8.20" B.D.@17° N.P.S.H REQUIRED	IMPELLER PATT. 1) 1213 VCL w/ 1213 VCL-2 VNS. 2) 1213 VC	1760 R.P.M. CURVE NO. 39243△

Form No. 3483

COMPONENT COOLING WATER PUMPS

(2-1203-P4-001, -002, -003, -004, -005, -006)

System Function

The component cooling water system (CCWS) performs the following functions:

A. Provides a continuous supply of cooling water to the heat exchangers that are necessary for safe operation of the reactor facility, under accident as well as normal conditions, and that handle radioactive fluids during normal operation.

B. Provides a continuous supply of cooling water to the residual heat removal (RHR) heat exchangers and pumps during accident conditions.

C. Serves as a barrier to radioactive material leakage from the containment systems serviced by the CCWS to the nuclear service cooling water system, which is open to the atmosphere through the ultimate heat sink.

Pump Description

The component cooling water (CCW) pumps (Table 5-1) are horizontal, centrifugal pumps, rated at 5000 gal/min at a head of 160 ft. They are driven by 300-hp electric motors. The pumps are 50-percent capacity with one standby per train. They take suction from the CCW heat exchanger discharge, and pump forward to a common line, which delivers the CCW as a coolant to the spent fuel pool heat exchanger, the residual heat exchanger, and the RHR pump seal cooler. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 5-2 through 5-7)
Pump Test Loops	(Drawings ISI-D-258 through 263)
Pump Characteristic Curves	(Figures 5-1 through 5-6)

Table 5-1

COMPONENT COOLING WATER PUMPS

(2-1203-P4-001, -002, -003, -004, -005, -006)

Quantity	6
Type	Horizontal, centrifugal, single-stage, horizontally split volute pumps with mechanical seals
Manufacturer/Model	Ingersoll-Rand/10x18 SE
Capacity (gal/min) (each)	5000
TDH (ft)	160
NPSH Required (ft)	17
Driver	Electric motor
hp	300
Manufacturer	Westinghouse
Type	LAC-LLD, 5008-S
rpm	1761
Power supply	4160 V/3 phase/60 Hz
Project Class	313
Outline Drawing	2X4AF01-109, 2X4AF01-110
Instruction Book	2X4AF01-137
Location	Auxiliary building, level A
P&ID	2X4DB136

Table 5-2

Test Parameter Table for Pump 2-1203-P4-001

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-1858	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11794	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 5-3

Test Parameter Table for Pump 2-1203-P4-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-1859	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11795	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 5-4

Test Parameter Table for Pump 2-1203-P4-003

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-1860	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11796	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 5-5

Test Parameter Table for Pump 2-1203-P4-004

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-1861	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11797	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 5-6

Test Parameter Table for Pump 2-1203-P4-005

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-1862	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11798	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 5-7

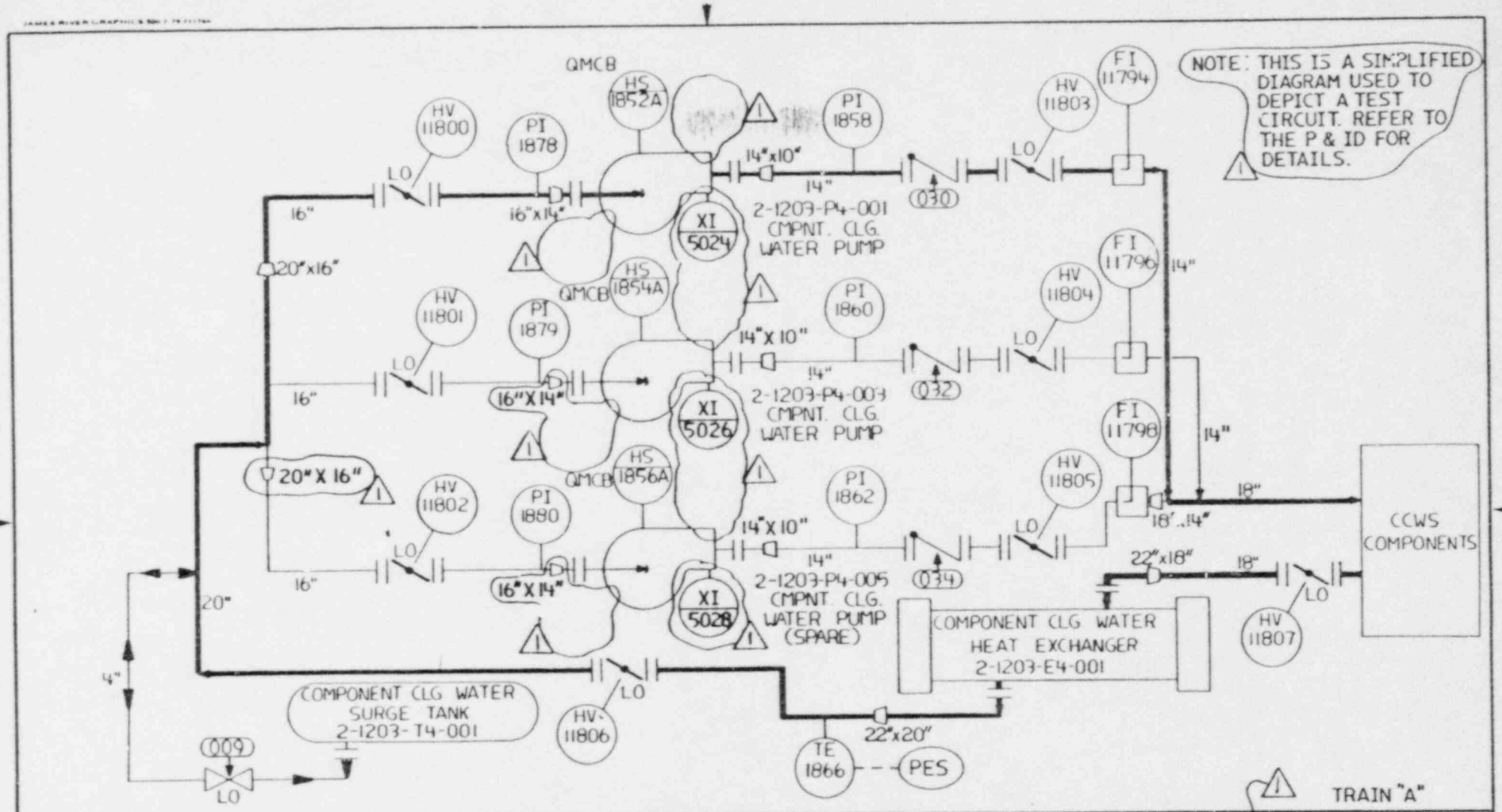
Test Parameter Table for Pump 2-1203-P4-006

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-1863	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-11799	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	4-5-84	[illegible]	[illegible]	ISSUED FOR PST					
1	1-16-86	[illegible]	RCB	UPDATED TO REV 14 OF 2X4DB136					

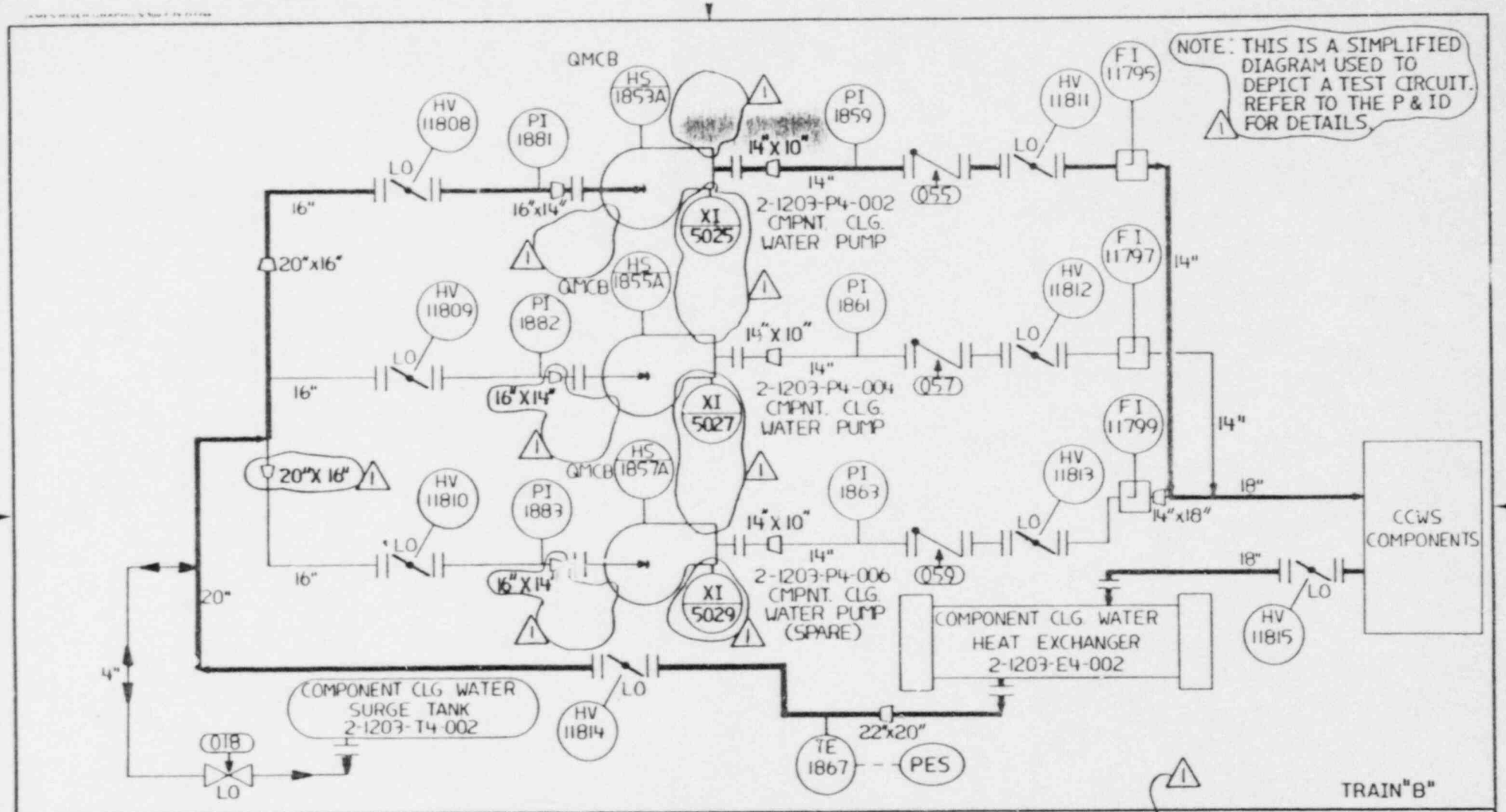
REMARKS

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR COMPONENT COOLING WATER PUMP
2-1203-P4-001

DESIGNED FT DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-258	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	NS	ISSUED FOR PST					
1	1-24-88	[illegible]	RCD	UPDATED TO REV. 14 OF 2X4DB136					

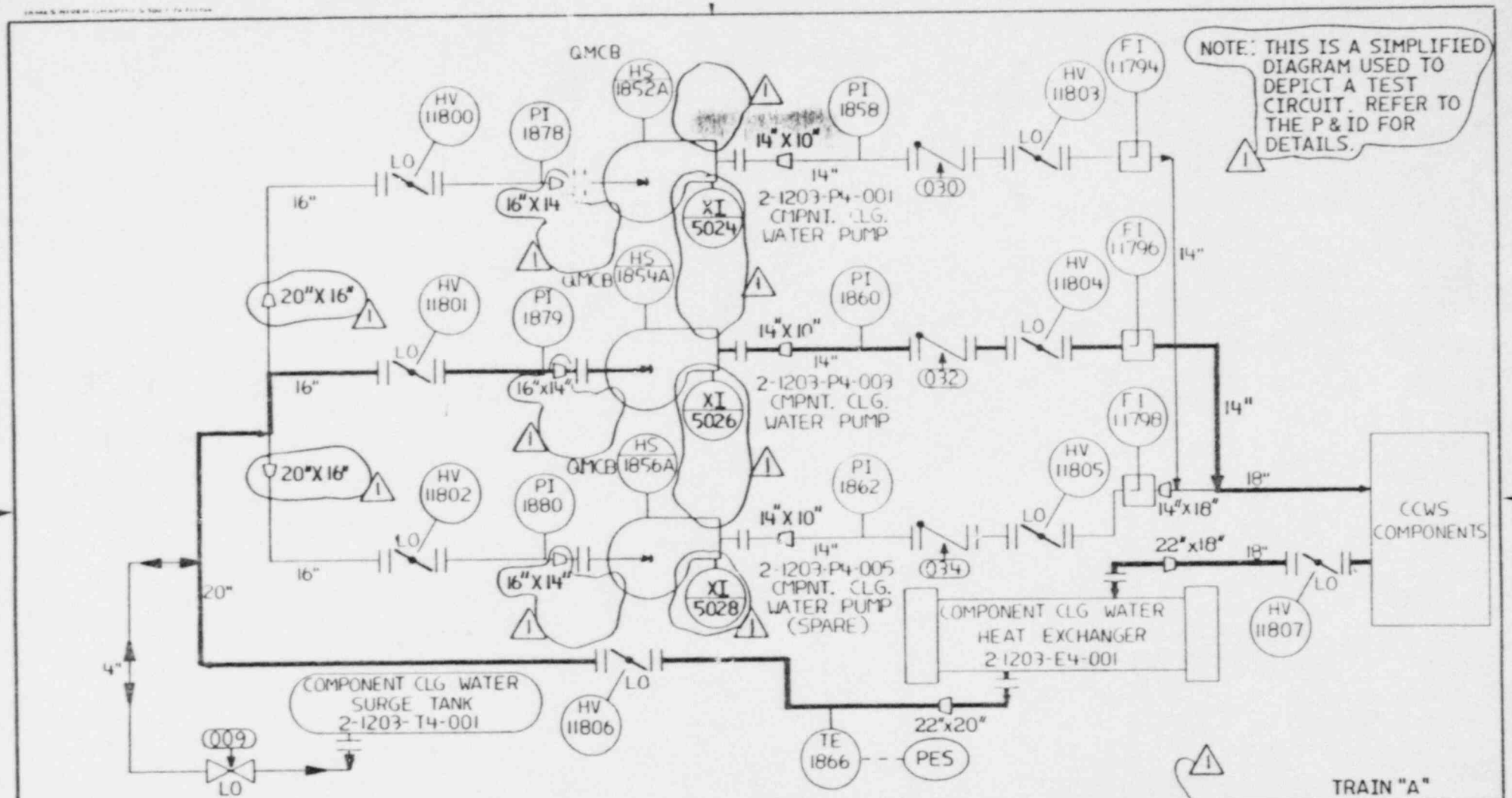
REMARKS

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR COMPONENT COOLING WATER PUMP 2-1203-P4-002

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-259	1 OF 1	1



REV.	DATE	BY	CHKD	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	WS	ISSUED FOR PST	[illegible]				
1	1-16-88	[illegible]	E.D	UPDATED TO REV. 14 OF 2X4DB136	[illegible]				

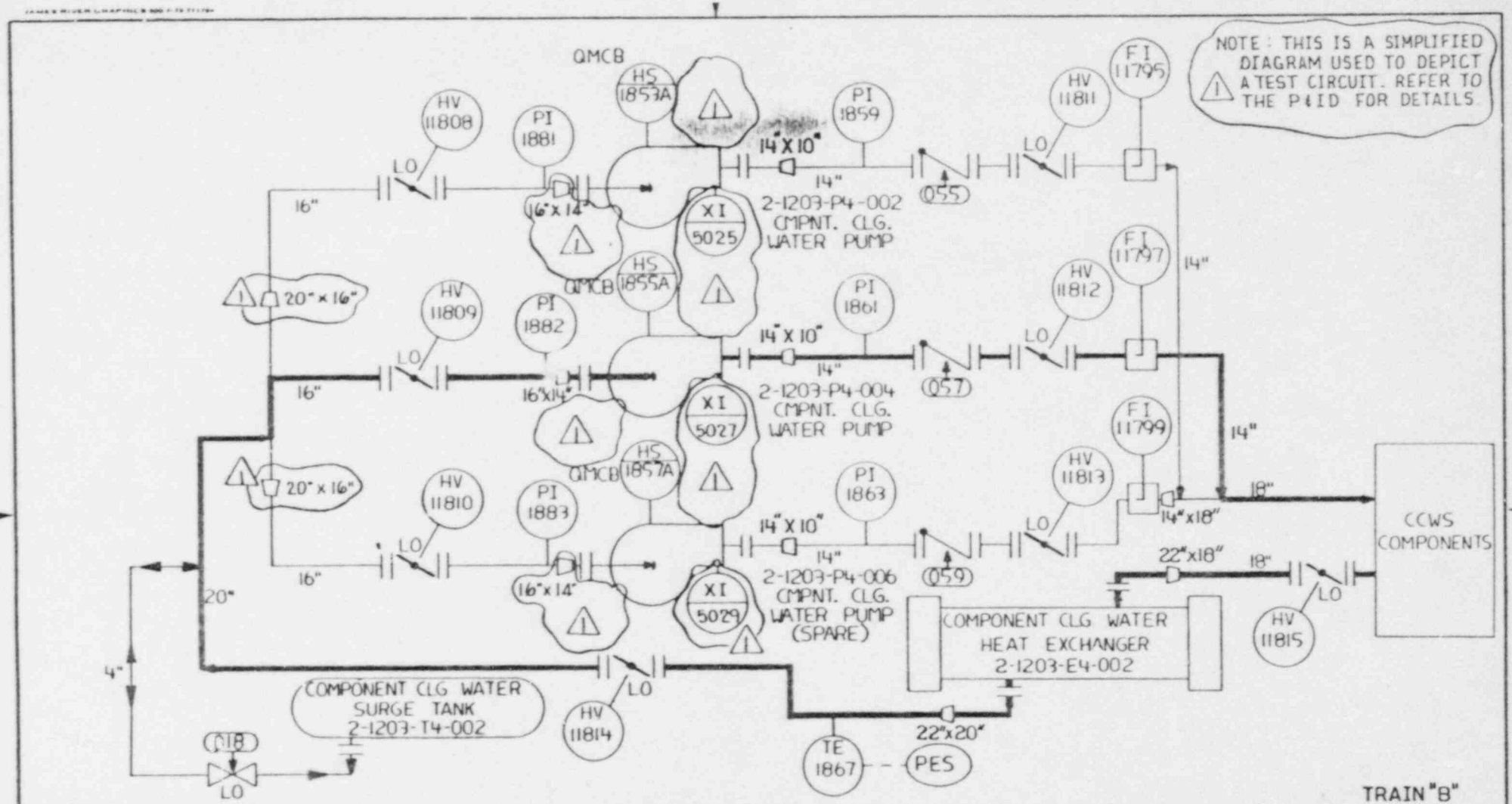
REMARKS

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR COMPONENT COOLING WATER PUMP
2-1203-P4-003

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-260	1 OF 1	1



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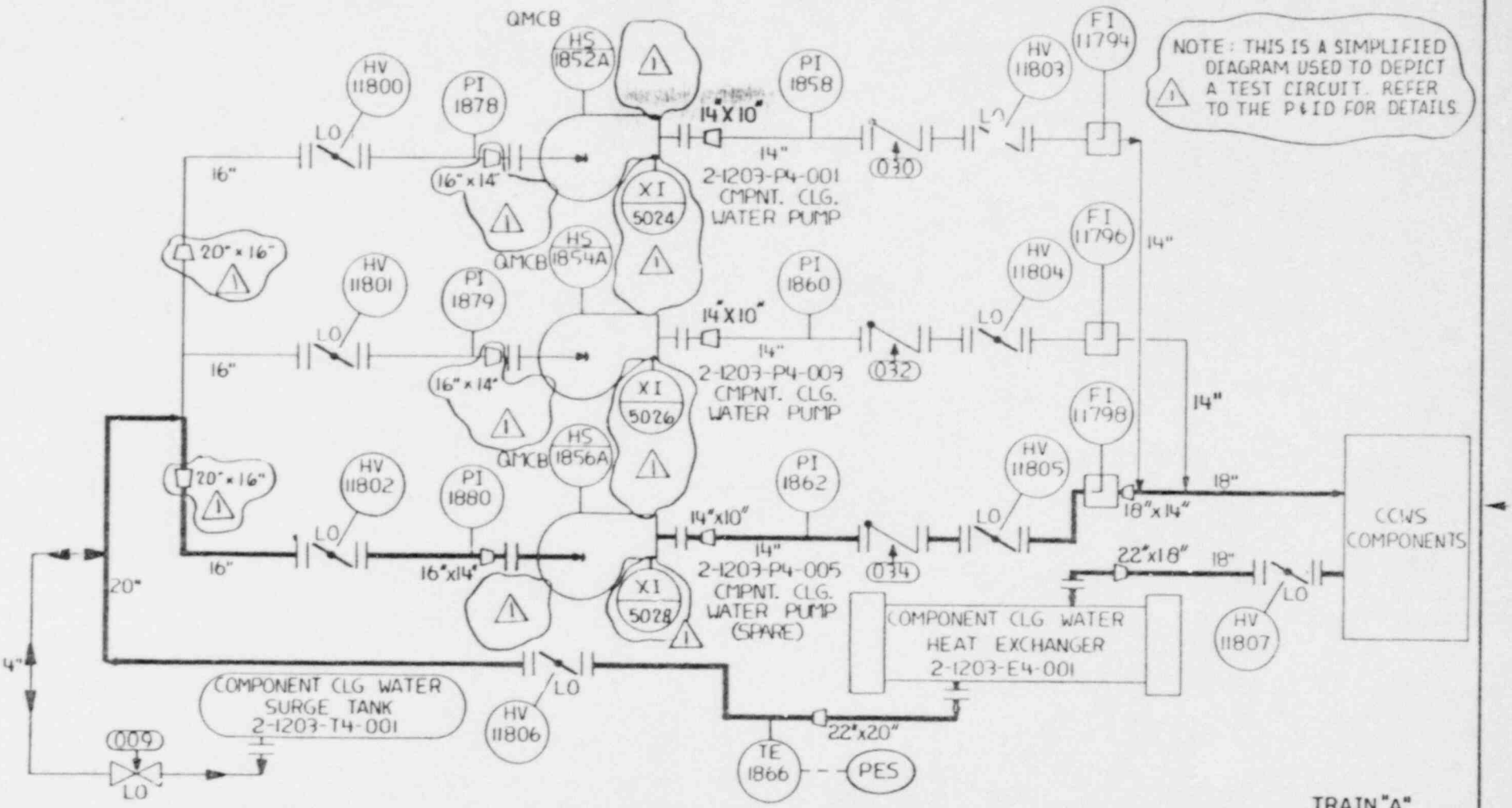
0	9-3-84	[illegible]	RWS	ISSUED FOR PST						
1	1-24-85	CL	RLB	UPDATED TO REV. 14 OF 2X4D8136						

Southern Company Services, Inc. for Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR COMPONENT COOLING WATER PUMP 2-1203-P4-004

DESIGNED FT DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-261	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	WS	ISSUED FOR PST	[illegible]				
1	1-16-88	CL	RLB	UPDATED TO REV 14 OF 2X4DB136	[illegible]				

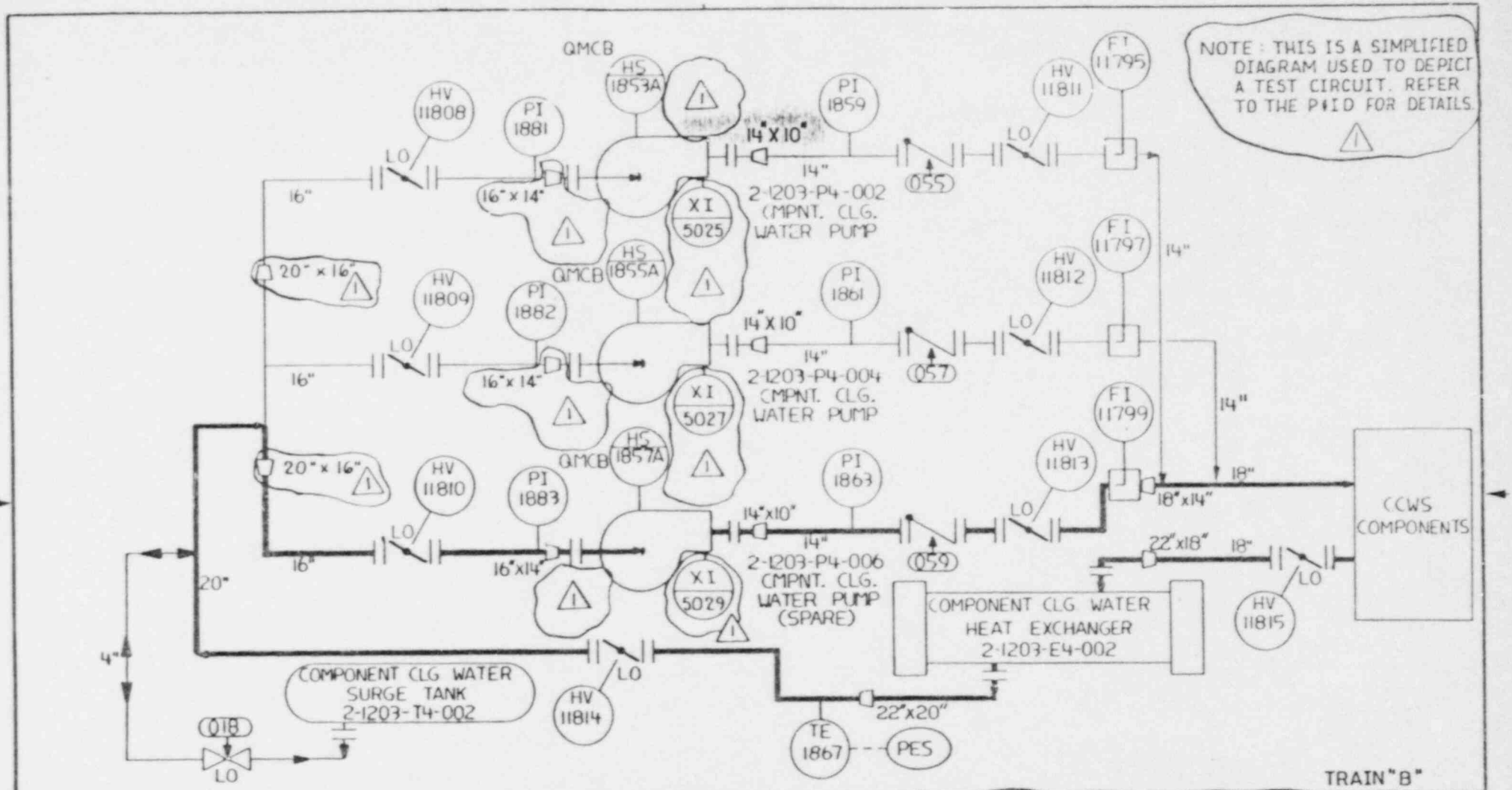
REMARKS: 1

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR COMPONENT COOLING WATER PUMP 2-1203-P4-005

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-262	1 OF 1	1



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0	9-5-84	[illegible]	WS	ISSUED FOR PST					
1	1-26-88	C.L.	RLB	UPDATED TO REV 14 OF 2X4DB136					

REMARKS

1

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR COMPONENT COOLING WATER PUMP 2-1203-P4-006

DESIGNED		DRAWN	DRC
TYPED	FT	CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-263	1 OF 1	1

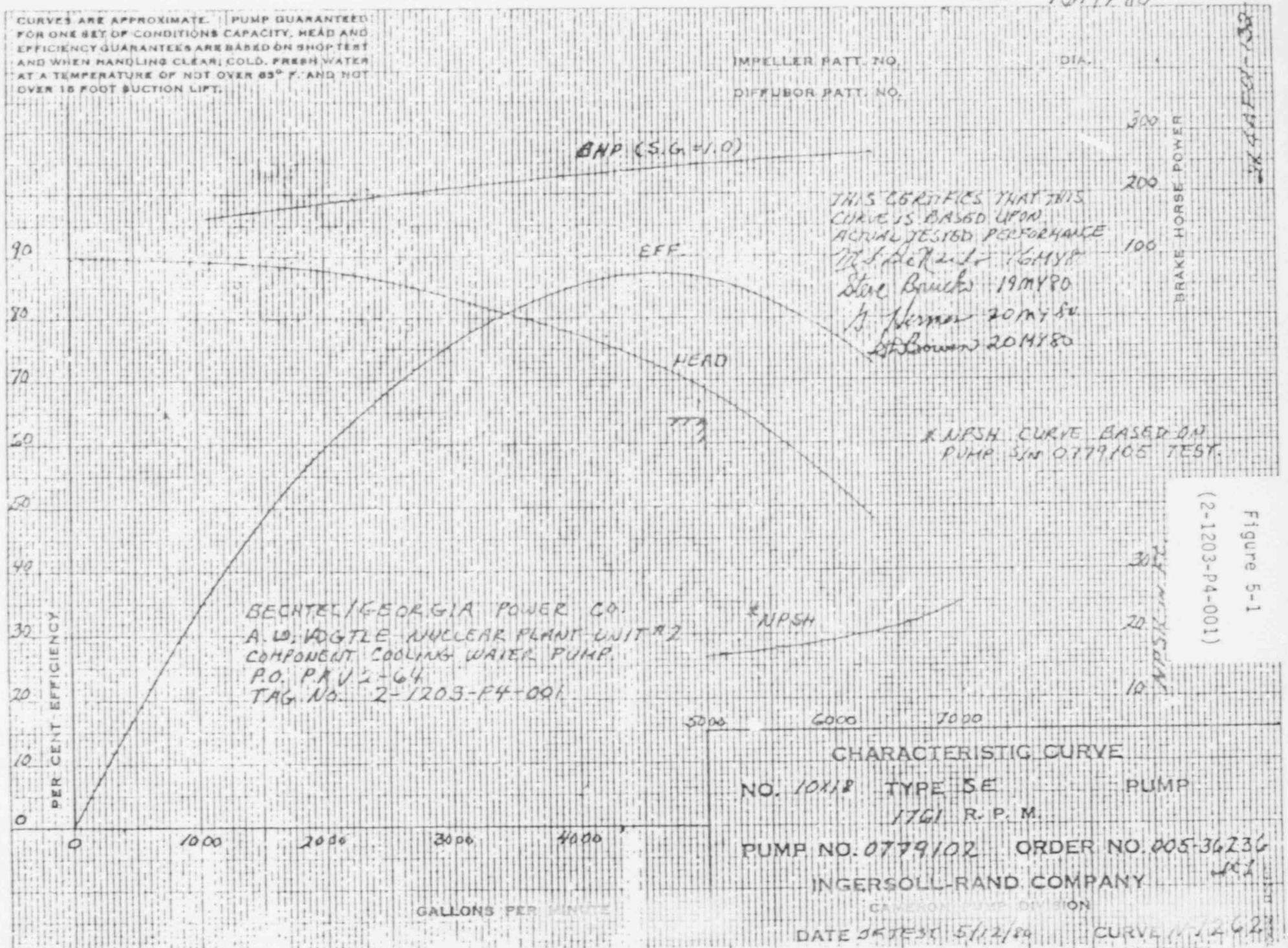
G-1226 BM 4-60

CURVE NO. N-12[illegible] Rev. 0
DATE 16MY80

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND NOT OVER 15 FOOT SUCTION LIFT.

IMPELLER PATT. NO. DIA.

DIFFUSOR PATT. NO.



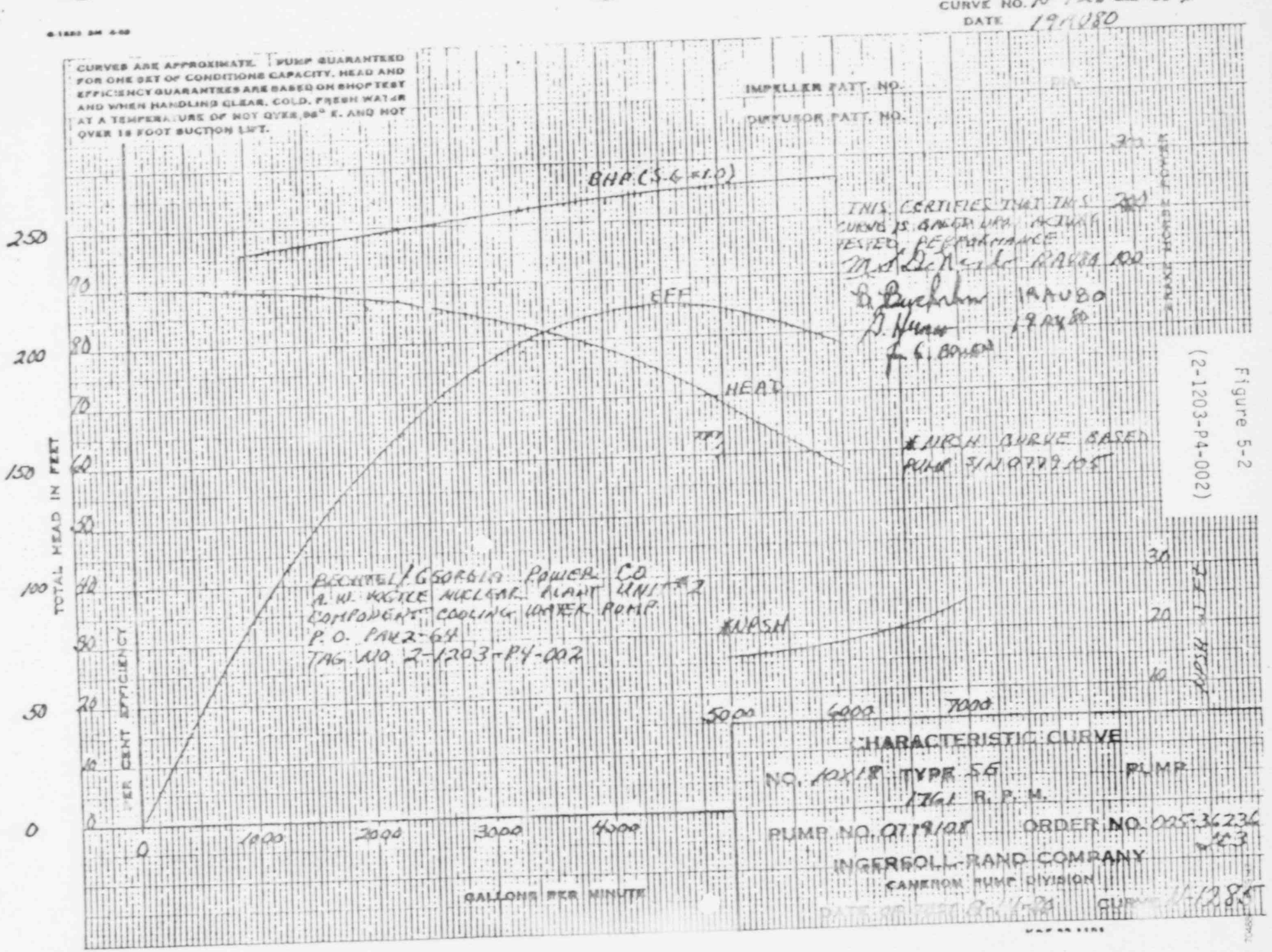
THIS CERTIFIES THAT THIS CURVE IS BASED UPON ACTUAL TESTED PERFORMANCE
W. S. Rich 16MY80
Dave Brooks 19MY80
G. Herman 20MY80
D. E. Brown 20MY80

*NPSH CURVE BASED ON PUMP S/N 0779105 TEST.

BECHTEL/GEORGIA POWER CO.
A. W. VOGTLE NUCLEAR PLANT-UNIT #2
COMPONENT COOLING WATER PUMP
P.O. PAV 2-64
TAG NO. 2-1203-P4-001

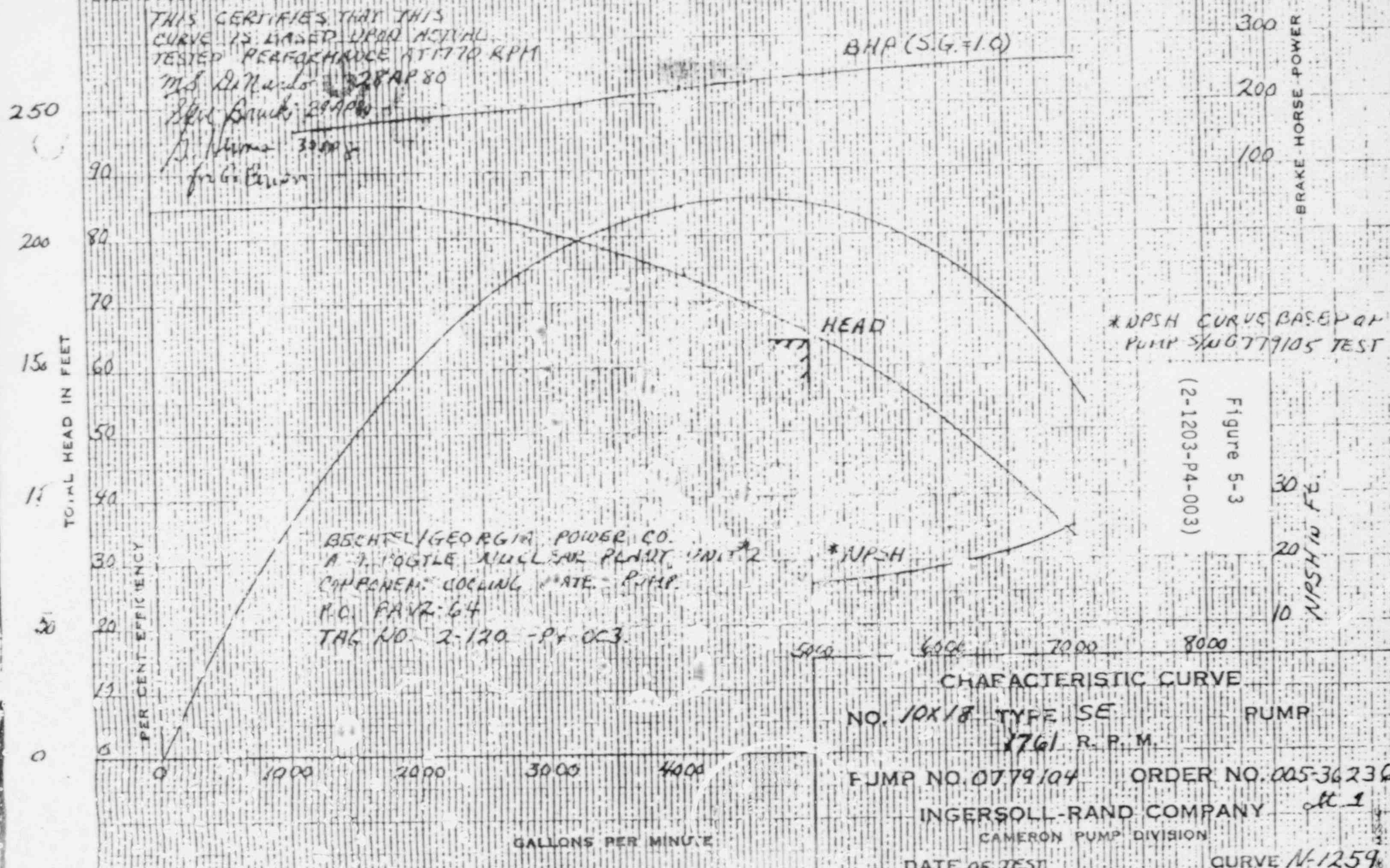
Figure 5-1
(2-1203-P4-001)

CHARACTERISTIC CURVE
NO. 10X18 TYPE SE PUMP
1761 R. P. M.
PUMP NO. 0779102 ORDER NO. 005-36236 SC1
INGERSOLL-RAND COMPANY
CAMERON PUMP DIVISION
DATE TESTED 5/12/80 CURVE [illegible]


CURVE NO. N-1285 Rev 1
DATE 19NOV80
CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 90° F. AND NOT OVER 15 FOOT SUCTION LIFT.
IMPELLER PATT. NO.
DIFFUSOR PATT. NO.
BHP (S.G. = 1.0)
EFF
HEAD
FT.
INSTRUMENT ERROR
THIS CERTIFIES THAT THIS CURVE IS A TRUE AND ACTUAL TESTED PERFORMANCE
M. McNeely RAVBA 100
B. Buchanan 19NOV80
D. Nunn 19NOV80
F. G. Bowen
*MARSH CURVE BASED PUMP S/N 07198105
TOTAL HEAD IN FEET
PER CENT EFFICIENCY
GALLONS PER MINUTE
*MARSH
FEET
BECHTEL/GEORGIA POWER CO.
A. W. VOGTLE NUCLEAR PLANT UNIT #2
COMPONENT COOLING WATER PUMP
P.O. PAW2-64
TAG NO. 2-1203-P4-002
CHARACTERISTIC CURVE
NO. 10X18 TYPE 56 PUMP
1761 R.P.M.
PUMP NO. 07198105 ORDER NO. 025-36236-123
INGERSOLL-RAND COMPANY
CAMERON PUMP DIVISION
Figure 5-2
(2-1203-P4-002)
2X4AFCI-1337-3

CURVE NO. N-1?? Rev 0
DATE 28 AP ?0

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F AND NOT OVER 15 FOOT SUCTION LIFT



IMPELLER PATT. NO.
DIA.
DIFFUSOR PATT. NO.
THIS CERTIFIES THAT THIS
CURVE IS BASED UPON ACTUAL
TESTED PERFORMANCE AT 1770 RPM
BHP (S.G.=1.0)
HEAD
*NPSH
*NPSH CURVE BASED ON
PUMP S/N 0779105 TEST
BECHTEL/GEORGIA POWER CO.
A. W. VOGTLE NUCLEAR PLANT UNIT 2
P.O. PAV2-64
TAG NO. 2-120 -P4-0C3
TOTAL HEAD IN FEET
PER CENT EFFICIENCY
BRAKE HORSE POWER
NPSH in FT.
GALLONS PER MINUTE
0
1000
2000
3000
4000
5000
6000
7000
8000
50
100
150
200
250
10
20
30
40
60
70
80
90
300

Figure 5-3

(2-1203-P4-003)

CHARACTERISTIC CURVE

NO. 10X18 TYPE SE PUMP

1761 R. P. M.

PUMP NO. 0779104 ORDER NO. 005-36236

INGERSOLL-RAND COMPANY

CAMERON PUMP DIVISION

DATE OF TEST

CURVE N-1259

K&E 99 1101

CURVE NO. N-12[illegible] Rev. 0
DATE 29AP80

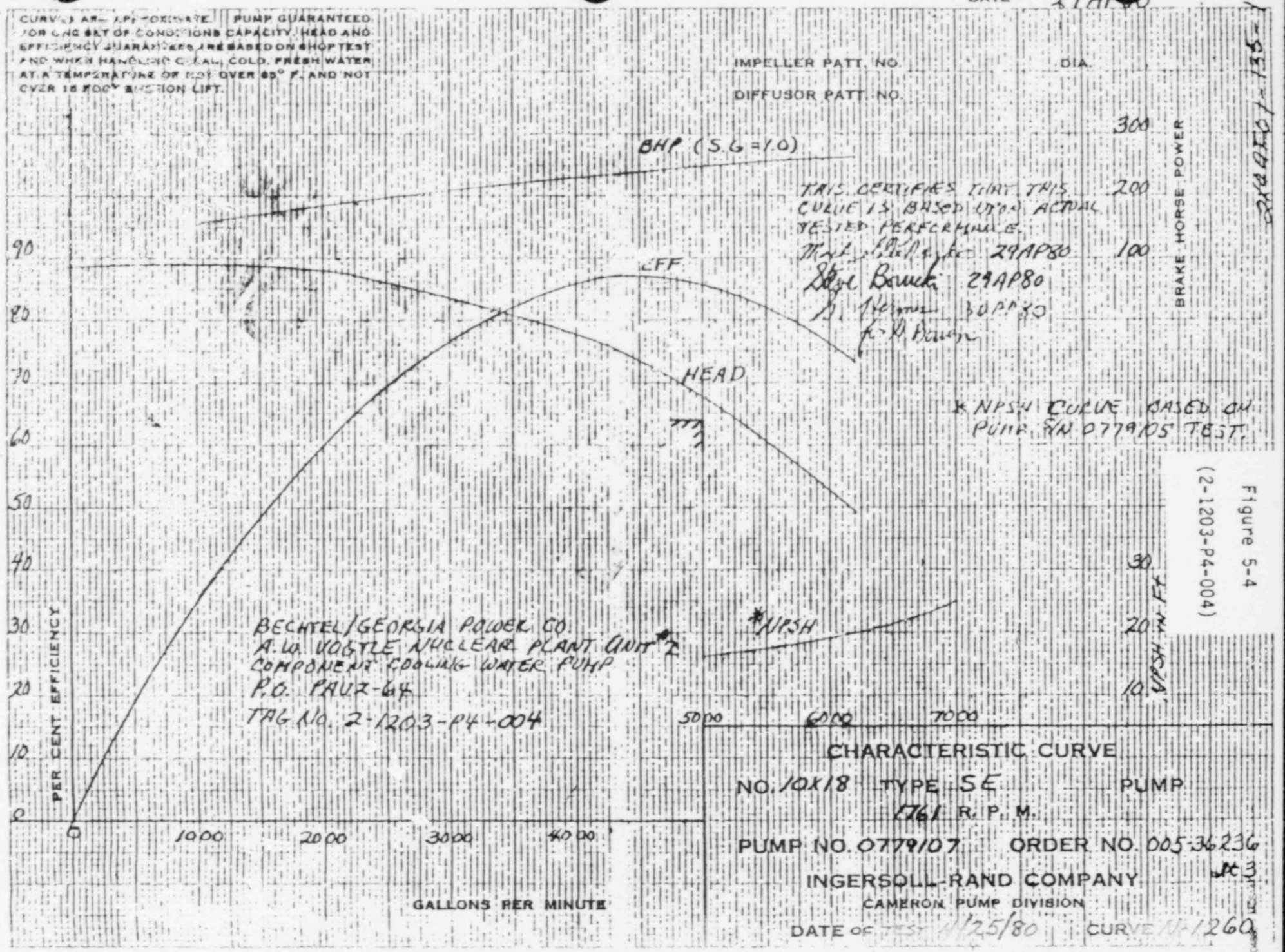


Figure 5-4
(2-1203-P4-004)

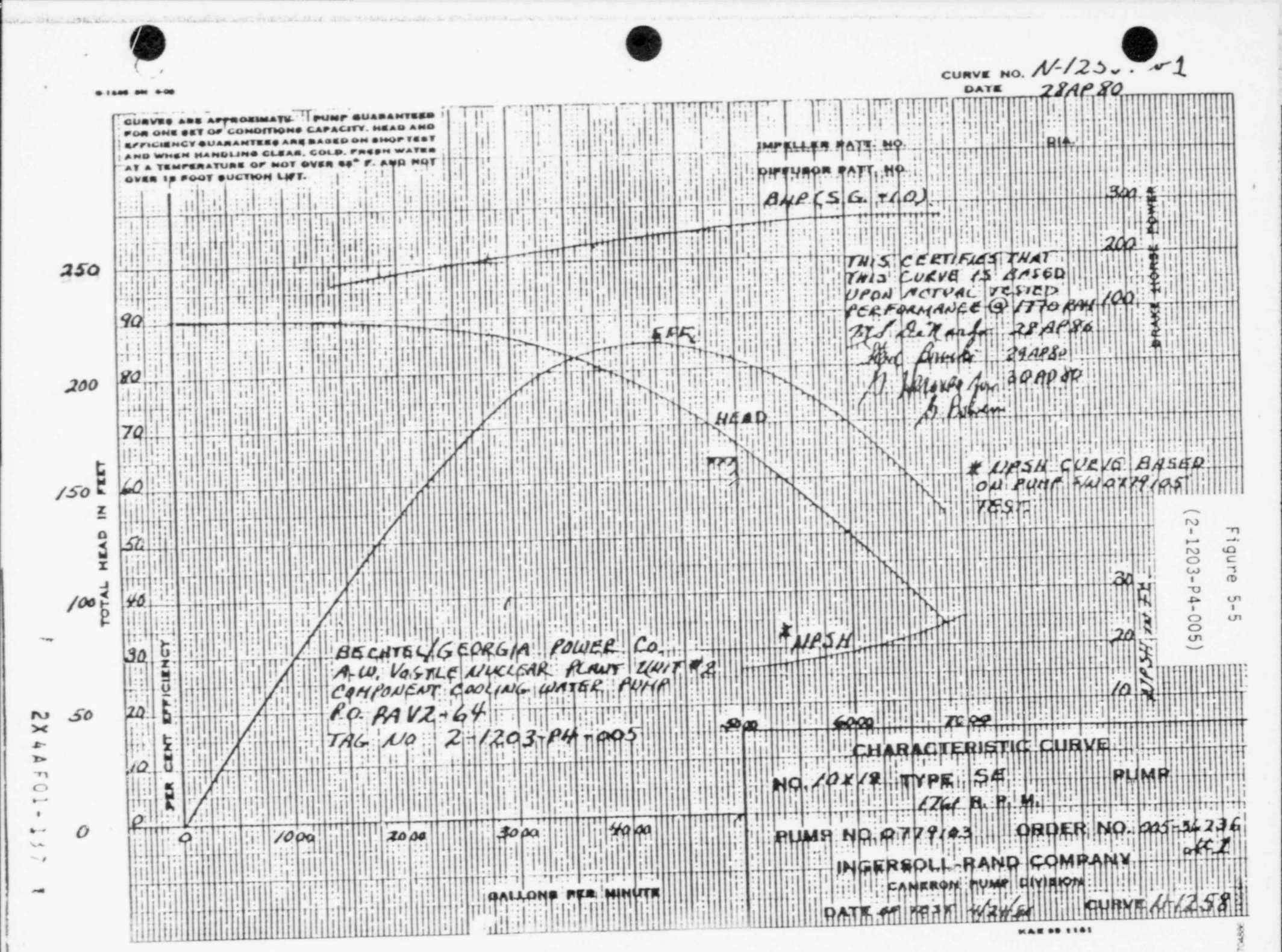


Figure 5-5
(2-1203-P4-005)

2X4AF01-1117 1

CURVE NO. N-1271 Rev. 0.
DATE 30 MAY 80

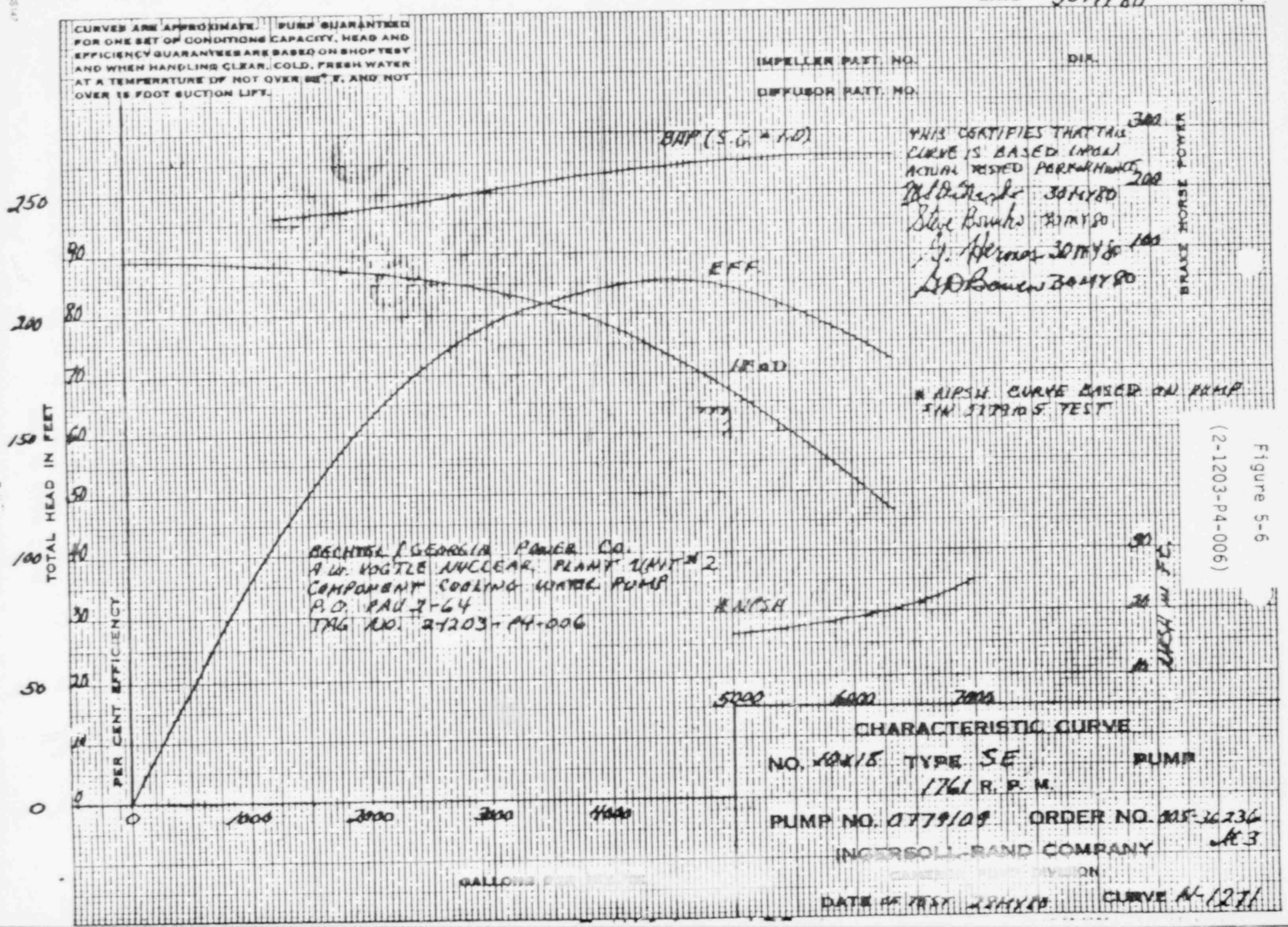


Figure 5-6
(2-1203-P4-006)

SAFETY INJECTION PUMPS

(2-1204-P6-003, -004)

System Injection Pumps

The safety injection system provides emergency core cooling and serves no other purpose.

The primary function of the emergency core cooling system (ECCS) is to remove the stored and fission product decay heat from the reactor core following an accident in order to prevent fuel rod damage that would jeopardize effective cooling of the core.

The ECCS is designed to cool the reactor core and provide shutdown capability following initiation of:

- Loss-of-coolant accident including a pipe break or spurious relief of safety valve opening in the reactor coolant system (RCS).
- Loss-of-secondary-coolant accident (steam or feedwater line break accident) including a pipe break or a spurious relief or safety valve opening in the secondary steam system.
- A steam generator tube rupture accident.

The system delivers borated water to the reactor core to provide core cooling during these postulated accidents. The boron, together with the control rods, provides sufficient negative reactivity for safe shutdown.

Pump Description

The Safety Injection Pumps (Table 6-1) are horizontal, multistage pumps capable of supplying borated water to either the cold- or hot-leg connections on all four RCS loops. Each safety injection pump is designed to deliver 440 gal/min at a maximum differential head of 2880 ft. A minimum-flow bypass line is provided on each pump discharge to recirculate flow to the RWST in the event that the pumps are started with the RCS pressure above pump shutoff head. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 6-2 and 6-3)
Pump Test Loops	(Drawings ISI-D-264 and 265)
Pump Characteristic Curves	(Figures 6-1 and 6-2)

Table 6-1

SAFETY INJECTION PUMPS

(2-1204-P6-003, -004)

Quantity	2		
Model/Type	Pacific model 3-in. JHF, 11 stages		
	Shutoff	Design	Runout
Design Flowrate (gal/min)	0	440	660
Max. Differential Head (ft)	3745	2880	1860
Min. Differential Head (ft)	3545	2680	1660
NPSH Required (ft)	NA	17	25
Design Pressure (psig)	1750		
Design Temperature (°F)	300		
Driver	Westinghouse electric motor (frame 5809 H)		
hp	450		
rpm	3600		
Power supply	4160 V/3 phase/60 Hz		
Project Class	212		
Outline Drawing	2X6AG02-10, -13, -15		
Instruction Book	2X6AG02-016		
Location	Auxiliary building, level B		
P&ID	2X4DB121		

Table 6-2

Test Parameter Table for Pump 2-120[illegible]-P6-003

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	PI-0977	N/A	Pi ≥ 7.4 psig (17 ft)
Outlet Pressure (Po)	Quarterly	M&TE	N/A	Note 3
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-0968	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 6-3

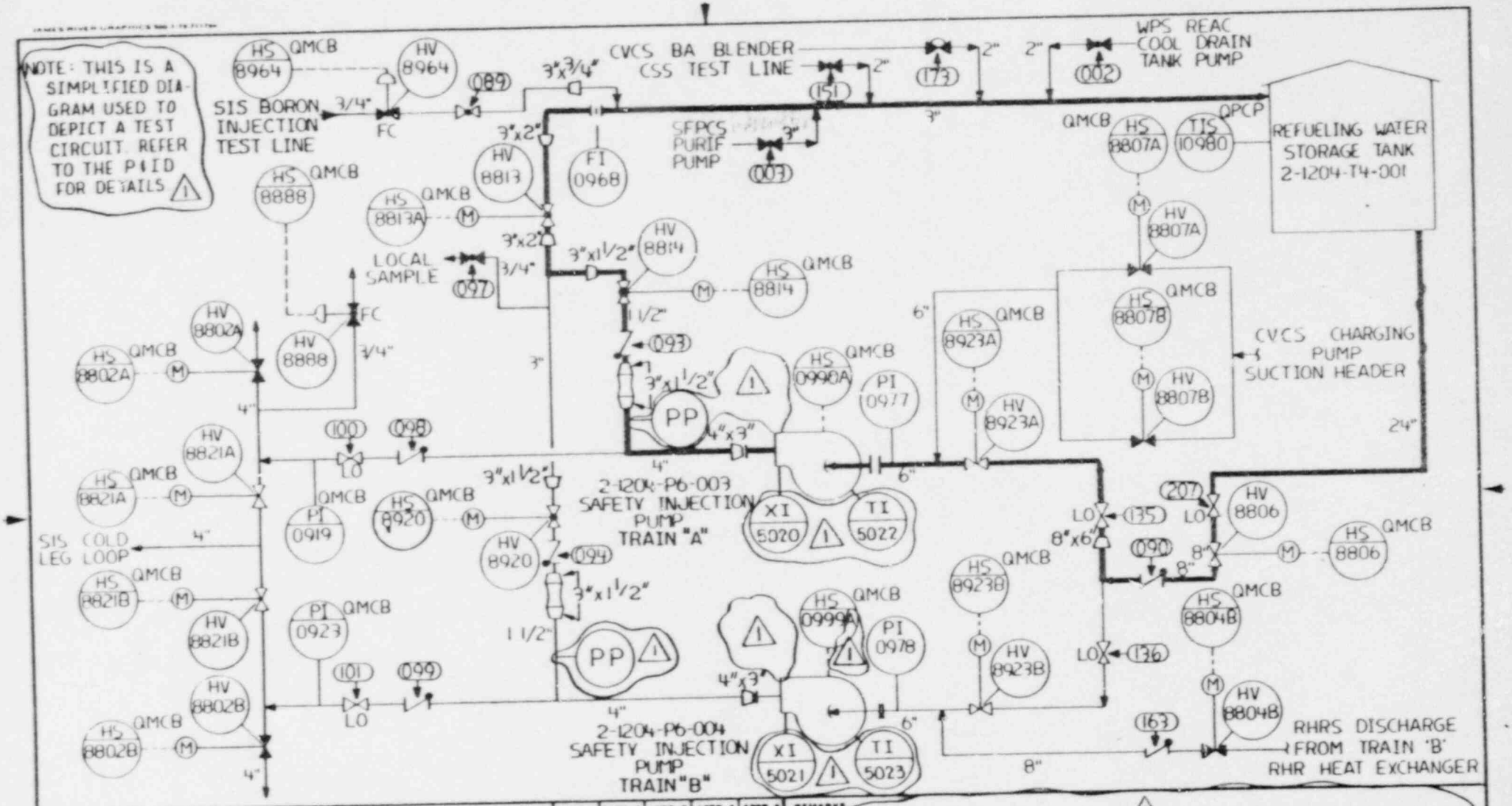
Test Parameter Table for Pump 2-1204-P6-004

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	PI-0978	N/A	Pi ≥ 7.4 psig (17 ft)
Outlet Pressure (Po)	Quarterly	M&TE	N/A	Note 3
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-0968	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	WS	ISSUED FOR PSI	[illegible]				
1	1-26-85	C.L.	WCB	UPDATED TO REV. 20 OF 2X4DB121					

REMARKS

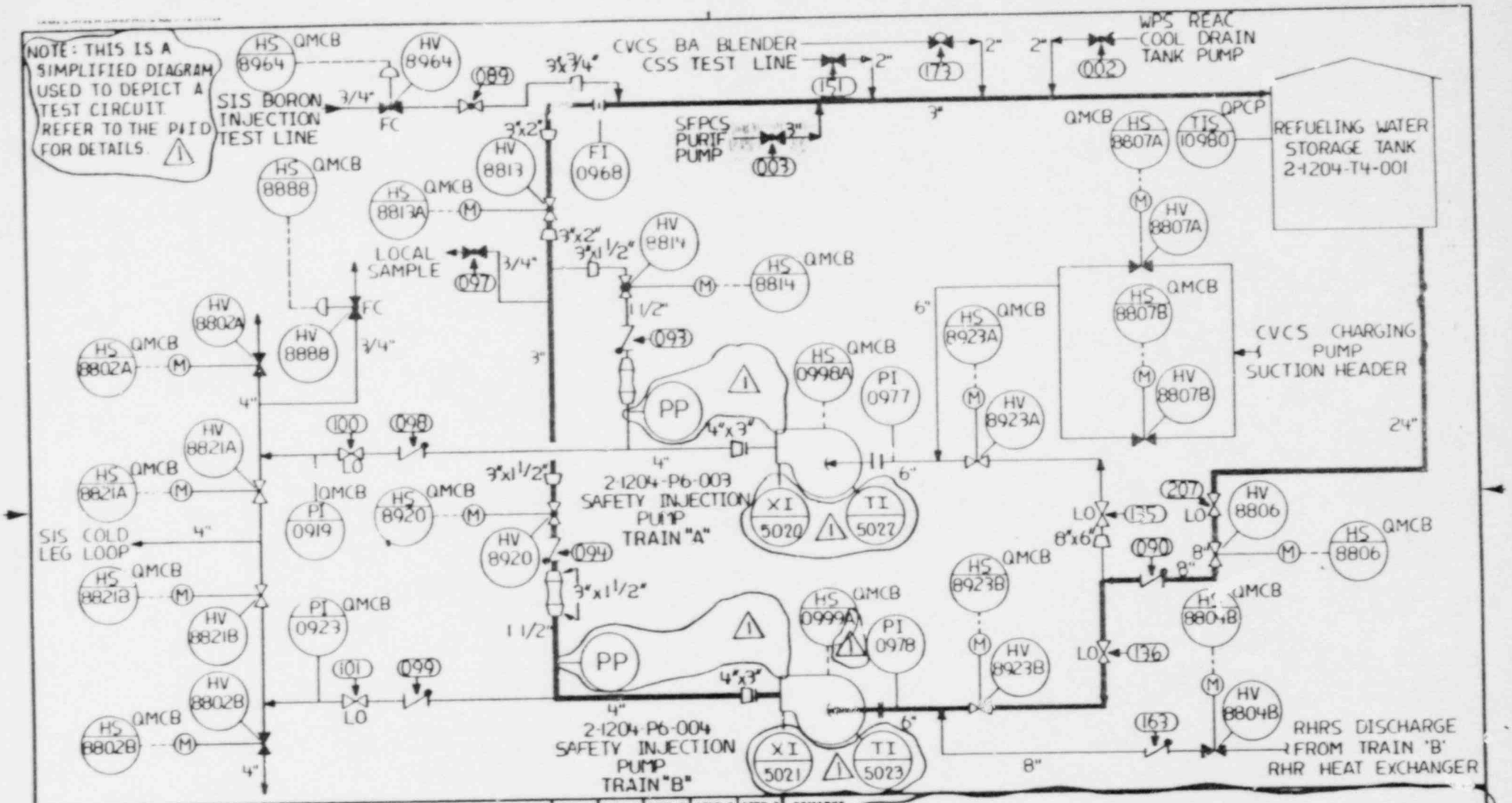
Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2

PUMP INSERVICE TESTING LOOP FOR SAFETY INJECTION PUMP 2-1204-P6-003

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-264	1 OF 1	1



REV	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5	REMARKS
0	9-2-84	[illegible]	WS	ISSUED FOR PST						
1	1-16-88	C.L.	DCB	UPDATED TO REV 20 OF 2X4DB121						

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT UNIT-2

PUMP INSERVICE TESTING LOOP FOR SAFETY INJECTION PUMP 2-1204-P6-004

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-265	1 OF 1	1

PACIFIC PUMPS | DRESSER | HUNTINGTON PARK, CALIFORNIA

TEST PERFORMANCE CURVE NO. 38031A Stage

CONTRACTOR ____

CUSTOMER Westinghouse NRS

ITEM NO. ____ P.O. 546-CAZ-401206

IMPELLER PATTERN M-7594 | M-7592

MAXIMUM DIAMETER 8 3/16 | 8 3/16

RATED DIAMETER 8 3/16 | 8 9/16 | 8 3/16

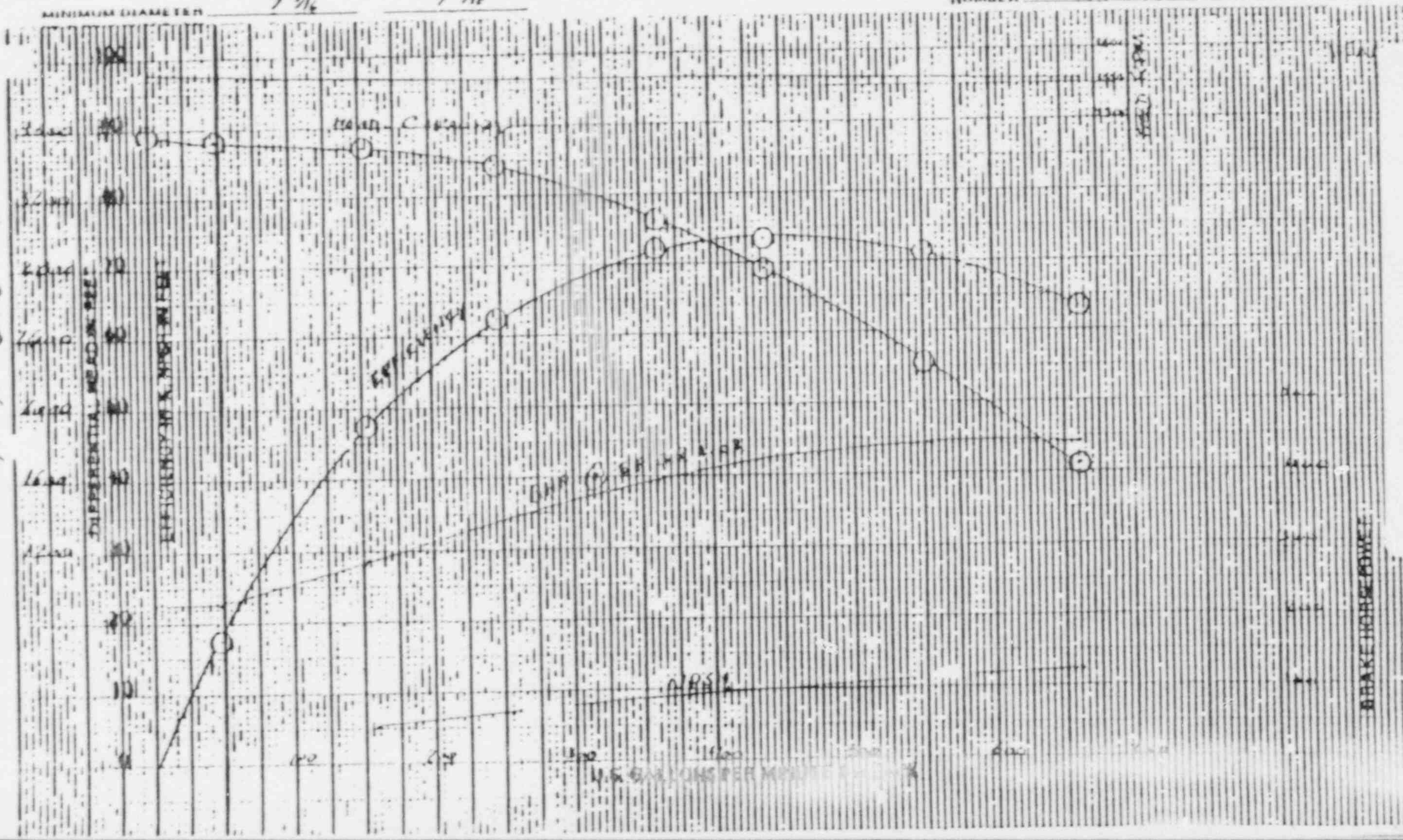
MINIMUM DIAMETER 7 9/16 | 7 9/16

SIZE 2" TYPE JBF STAGES 11

R.P.M. FIELD DATE 12/9/83

PUMP NUMBER See Attached

PERFORMANCE ALSO APPLIES TO PUMP NUMBER NH 71885



1CCAG03-16-6

Figure 6-1

(2-1204-P6-003)

...COPIC PUMPS — HUNTINGTON PARK, CALIF(IIA

CONTRACTOR _____

CUSTOMER WESTINGHOUSE NES

ITEM NO _____ PO 596-CAV-911206 APPL

IMPELLER PATTERN	M-7544	M-7592
MAXIMUM DIAMETER	8 9/16	8 9/16
RATED DIAMETER	8 9/16	8 9/16 / 8 9/16
MINIMUM DIAMETER	7 9/16	7 9/16

TEST PERFORMANCE CURVE NO. 38031B-SPARE

SIZE 3" TYPE SME STAGES 11

R.P.M. FIELD DATE 12/13/83

PUMP NUMBER SPARE ELEMENT FOR S/N 52230

PERFORMANCE ALSO APPLIES TO PUMP

NUMBER N444886

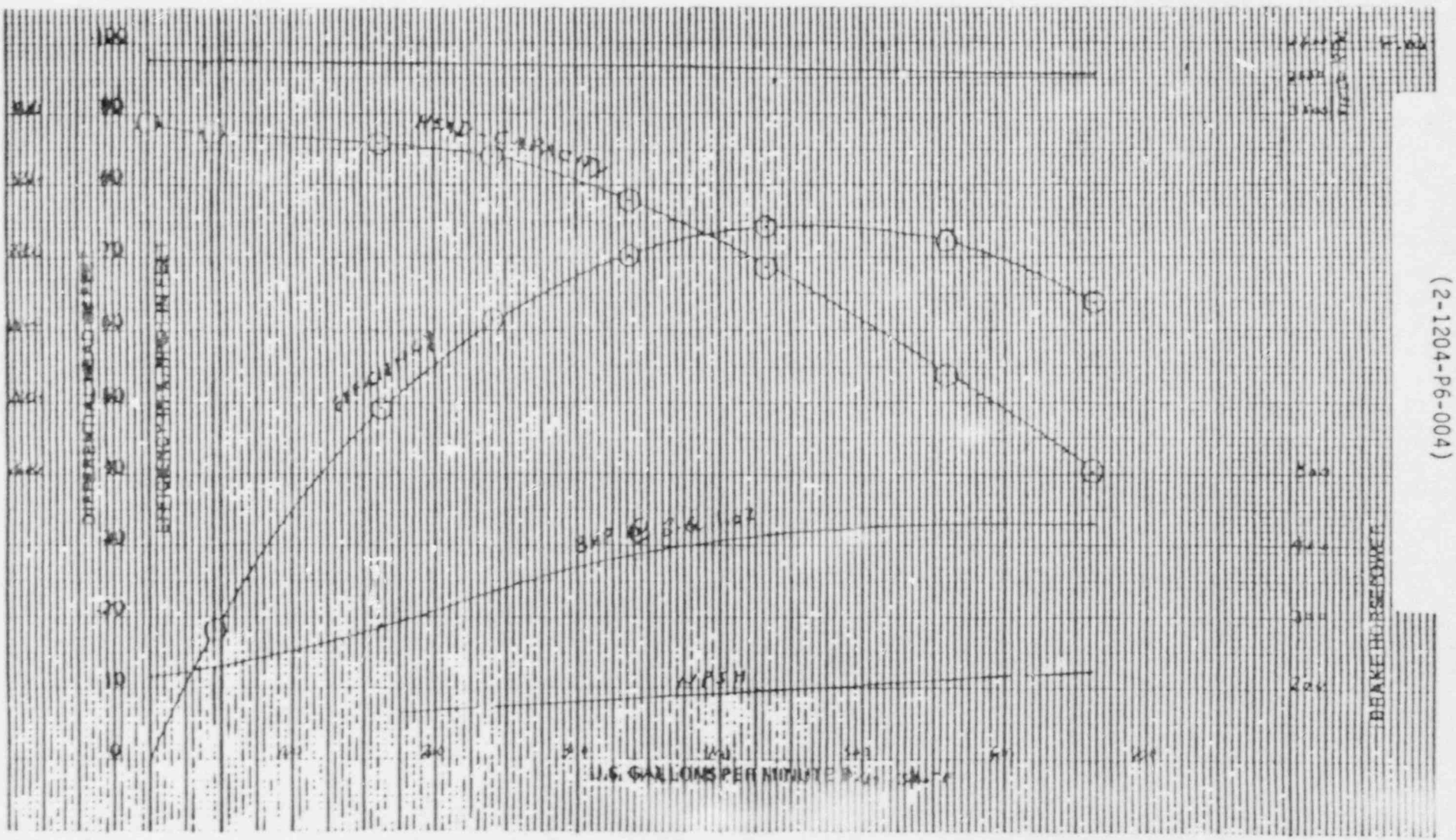


Figure 6-2

(2-1204-P6-004)

1KGAG02.16-6

FAC 2402

RESIDUAL HEAT REMOVAL PUMPS

(2-1205-P6-001, -002)

System Function

The primary function of the residual heat removal system (RHRS) is to remove heat energy from the reactor core and reactor coolant system during plant cooldown and refueling operations. As a secondary function, the RHRS is used to transfer refueling water between the refueling water storage tank and the refueling cavity at the beginning and end of refueling operations.

Parts of the RHRS also serve as part of the emergency core cooling system during the injection and recirculation phases of a loss-of-coolant accident.

Pump Description

The residual heat removal pumps (Table 7-1) are single-stage, vertical, centrifugal pumps sized to deliver reactor coolant flow through the residual heat exchangers to meet plant cooldown requirements. The use of two residual heat removal trains ensures that cooling capacity is only partially lost if one pump becomes inoperative. This also allows maintenance on one pump while the other pump is in operation.

The pumps are protected from overheating and loss of suction flow by miniflow bypass lines that provide flow to the pump suction. A valve located in each miniflow line is regulated by a signal from the flow transmitter located in the pump discharge header. The control valve opens when the residual heat removal pump discharge is less than approximately 500 gal/min and closes when the flow exceeds approximately 1000 gal/min. The pump is designed for a pressure rating of 600 psig and a suction temperature of 400°F.

In addition to the residual heat removal duty, the pumps are used to transfer borated water between the RWST and the refueling cavity during refueling. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 7-2 and 7-3)
Pump Test Loops	(Drawings ISI-D-266 and 267)
Pump Characteristic Curves	(Figures 7-1 and 7-2)

Table 7-1

RESIDUAL HEAD REMOVAL PUMPS

(2-1205-P6-001, -002)

Quantity	2
Type	Vertical, single-stage, centrifugal
Manufacturer/Model	Ingersoll-Rand 8x20 WDF

Runout	Design	Maximum
Suction Temperature (°F)	140-400	40-300
Suction Pressure (ft)	35-1090	20-175
Ambient Temperature (°F)	100	100
Ambient Pressure	atm	atm
Pump-Developed Head (ft)	375	325
Flow (gal/min)	3000	4500
NPSH Available (ft)	20	20
Discharge Pressure (psig)	600	-
Discharge Temperature (°F)	400	-
Shutoff Head (ft)	450	-

Driver	Westinghouse LLD squirrel cage induction motor
hp	400
rpm	1780
Power supply	4160 V/3 phase/60 Hz
Project Class	212
Pump Outline Drawing	2X6AF02-026
Instruction Book	2X6AF02-025
Location	Auxiliary building, level D
P&ID	2X4DB122

Table 7-2

Test Parameter Table for Pump 2-1205-P6-001

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 6.0 psig (14 ft) Note 3
Outlet Pressure (Po)	Quarterly	M&TE	N/A	Note 3
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FIS-0610	Qr (2)	Instrument accuracy to be within ± 2%
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 7-3

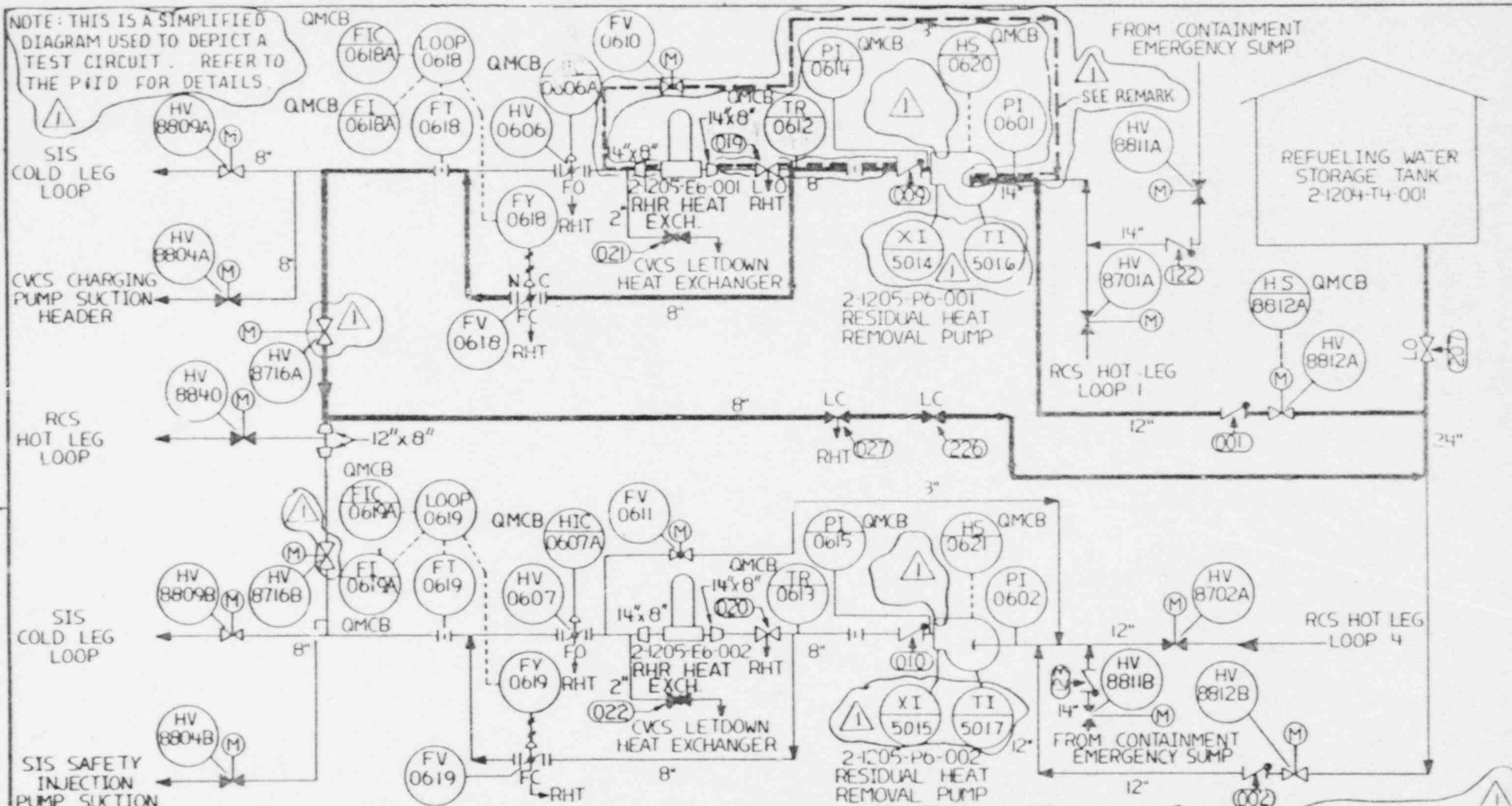
Test Parameter Table for Pump 2-1205-P6-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 6.0 psig (14 ft) Note 3
Outlet Pressure (Po)	Quarterly	M&TE	N/A	Note 3
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FIS-0611	Qr (2)	Instrument accuracy to be within ± 2%
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	BGW	WS	ISSUED FOR PST					
1	1-26-88	C.L.	RLB	UPDATED TO REV. 17 OF 2X4DB122					

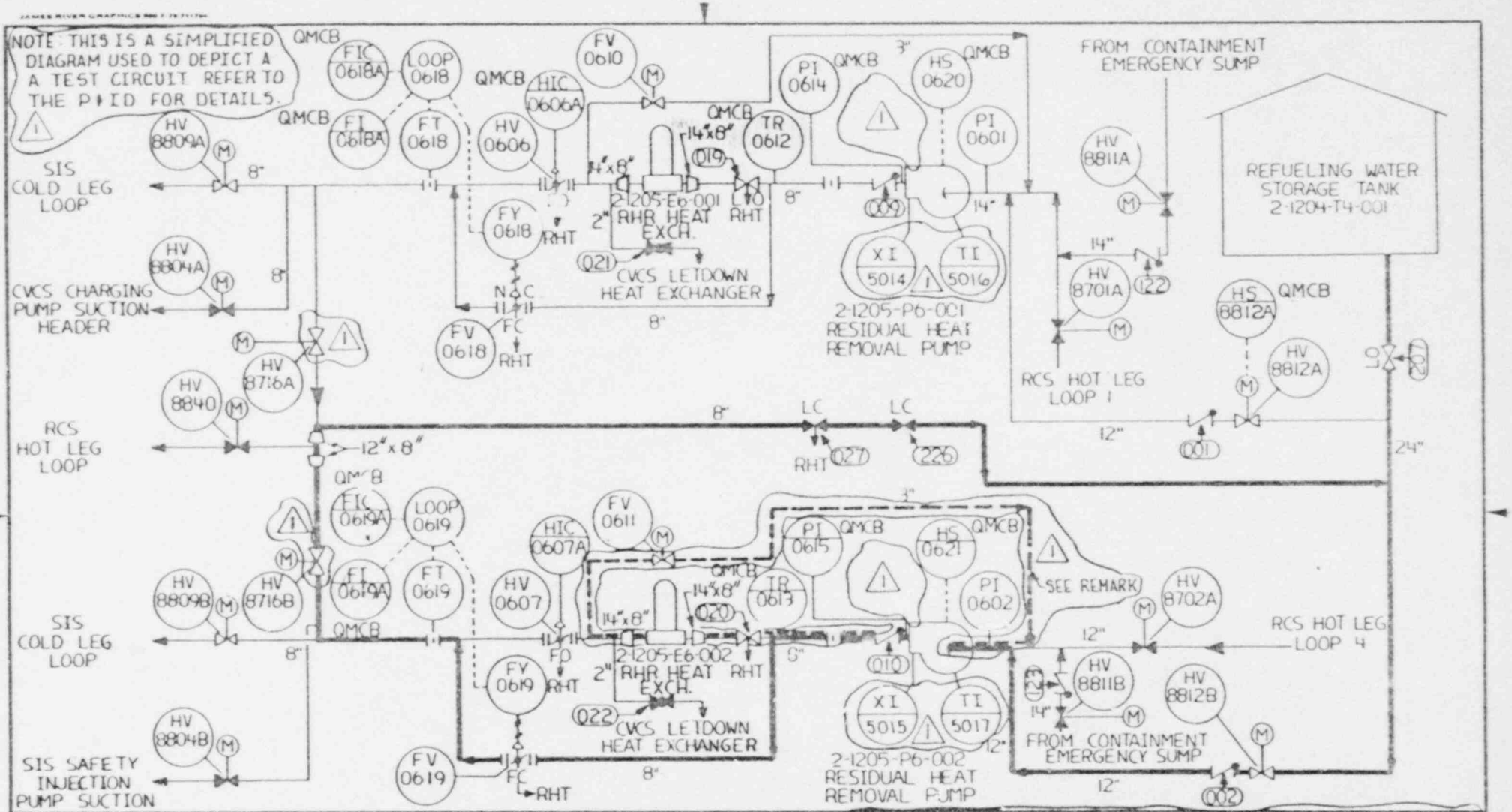
REMARKS: IF PUMP 2-1205-P6-002 IS INOPERABLE, ALTERNATE TESTING THROUGH THE RECIRC. LINE – AS INDICATED BY DASHED CIRCUIT – IS REQUIRED.

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR RESIDUAL HEAT REMOVAL PUMP
2-1205-P6-001

DESIGNED FT		DRAWN DBC		
TYPED		CHECKED WS		
SCALE NONE		CONTINUED ON SHEET		
	PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	N/A	ISI-D-266	1 OF 1	1

FORM NO. 3-09



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	ADB	WS	ISSUED FOR PST					
1	1-16-85	CL	RLB	UPDATED TO REV. 17 OF 2X4DB122					

REMARKS: IF PUMP 2-1205-P6-001 IS INOPERABLE, ALTERNATE TESTING THROUGH THE RECIRC. LINE - AS INDICATED BY DASHED CIRCUIT - IS REQUIRED. 1

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR RESIDUAL HEAT REMOVAL PUMP 2-1205-P6-002

DESIGNED ET | DRAWN DRC | TYPED | CHECKED WS | SCALE NONE | CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-267	1 OF 1	1

G-1226 3M 4-68

CURVE NO. N-1193
DATE 19SE79

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS. CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 80° F. AND NOT OVER 15 FOOT SUCTION LIFT.

IMPELLER PATT. NO. 8X20A3E DIA. 20" STRGT. S
DIFFUSOR PATT. NO. 20WDF56A 19.75" MAX.

BHP
NPSHR
EFF.
TDH

BRAKE HORSE POWER

NPSHR

TOTAL HEAD IN FEET

PER CENT EFFICIENCY

GALLONS PER MINUTE

Figure 7-1
(2-1205-P6-001)

THIS CERTIFIES THAT THIS CURVE IS BASED UPON ACTUAL PERFORMANCE TEST OF PUMP S/N 087730

NOTE: NPSH CURVE IS BASED ON ACTUAL TEST RESULTS OF PUMP S/N 067470 (WEST SPIN NO. WAT-RHAPRH-01)

RPB/kk 20SE79 Bruce Berkemeier 2064M

CHARACTERISTIC CURVE
S/N NO. GBE-KAPRH-01
NO. 8X20 TYPE WDF PUMP IT # 2A
1780 R. P. M.
PUMP NO. 087730 ORDER NO. 037-362H

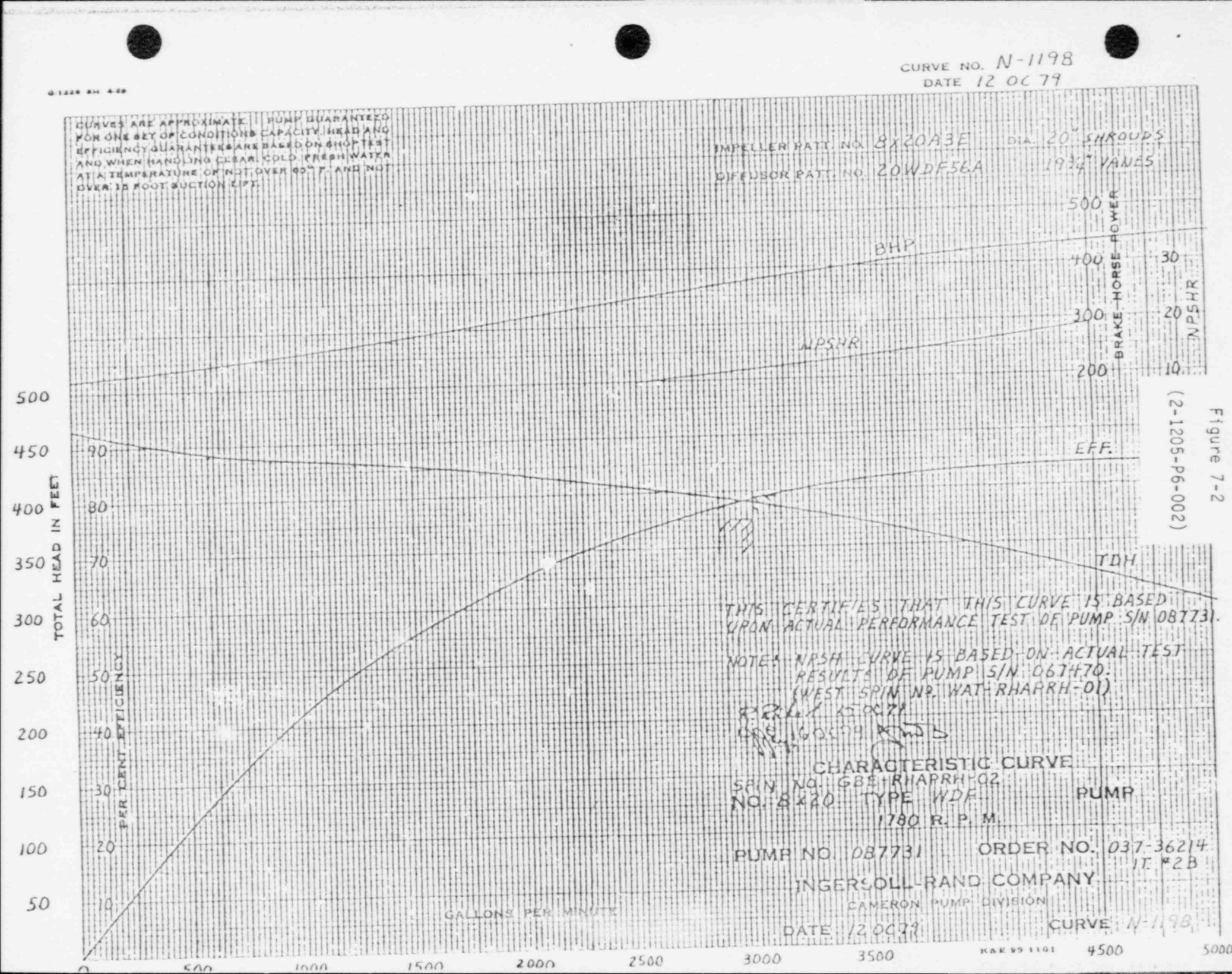
INGERSOLL-RAND COMPANY
CAMERON PUMP DIVISION
DATE 19SE79 CURVE N-1193

KAE 99 1101

CURVE NO. N-1198
DATE 12 OCT 79

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS. CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND NOT OVER 15 FOOT SUCTION LIFT.

IMPELLER PATT. NO. 8X20A3E DIA. 20" SHROUDS
DIFFUSOR PATT. NO. 20WDF5EA 19¾" VANES



THIS CERTIFIES THAT THIS CURVE IS BASED UPON ACTUAL PERFORMANCE TEST OF PUMP S/N 087731.

NOTE: NPSH CURVE IS BASED ON ACTUAL TEST RESULTS OF PUMP S/N 067470.
(WEST SPIN NO. WAT-RHAPRH-01)

CHARACTERISTIC CURVE
S.P.I.N. NO. GBE-RHAPRH-02
NO. 8X20 TYPE WDF PUMP
1780 R. P. M.
PUMP NO. 087731 ORDER NO. 037-36214 IT #2B
INGERSOLL-RAND COMPANY
CAMERON PUMP DIVISION
DATE 12 OCT 79 CURVE N-1198

K&E 89 1101

Figure 7-2
(2-1205-P6-002)

CONTAINMENT SPRAY PUMPS

(2-1206-P6-001, -002)

System Function

The containment spray system limits the peak pressure in the containment to less than design pressure following a loss-of-coolant accident or a main steam break accident inside containment. Sodium hydroxide is added to the containment spray water to enhance absorption of the airborne fission product iodine and to retain the iodine in the containment sump solution to limit calculated offsite doses to less than 10 CFR 100 limits.

Pump Description

The containment spray pumps (Table 8-1) are of the horizontal, centrifugal type, driven by electric motors powered from the emergency buses. These pumps are rated at 2600 gal/min at a design head of 450 ft. The design head of the pumps is sufficient to continue at rated capacity with a minimum level in the RWST against a head equivalent to the sum of the design pressure of the containment, the head to the uppermost nozzles, line losses, and nozzle pressure losses. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 8-2 and 8-3)
Pump Test Loops	(Drawings ISI-D-268 and 269)
Pump Characteristic Curves	(Figures 8-1 and 8-2)

Table 8-1

CONTAINMENT SPRAY PUMPS

(2-1206-P6-001, -002)

Quantity	2
Type	Horizontal, centrifugal
Manufacturer	Goulds model 3415
Capacity (gal/min)	2600
TDH (ft)	450
Driver	Electric motor
Manufacturer	Westinghouse
Frame	5010S
hp	400
rpm	1777
Power supply	4160 V/3 phase/60 Hz
Project Class	212
Outline Drawing	2X6AD02-10
Instruction Book	2X6AD02-18
P&ID	2X4DB131
Location	Auxiliary building, level D

Table 8-2

Test Parameter Table for Pump 2-1206-P6-001

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	PI-0972	N/A	Pi ≥ 5.9 psig
Outlet Pressure (Po)	Quarterly	PI-0974	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-0929	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 8-3

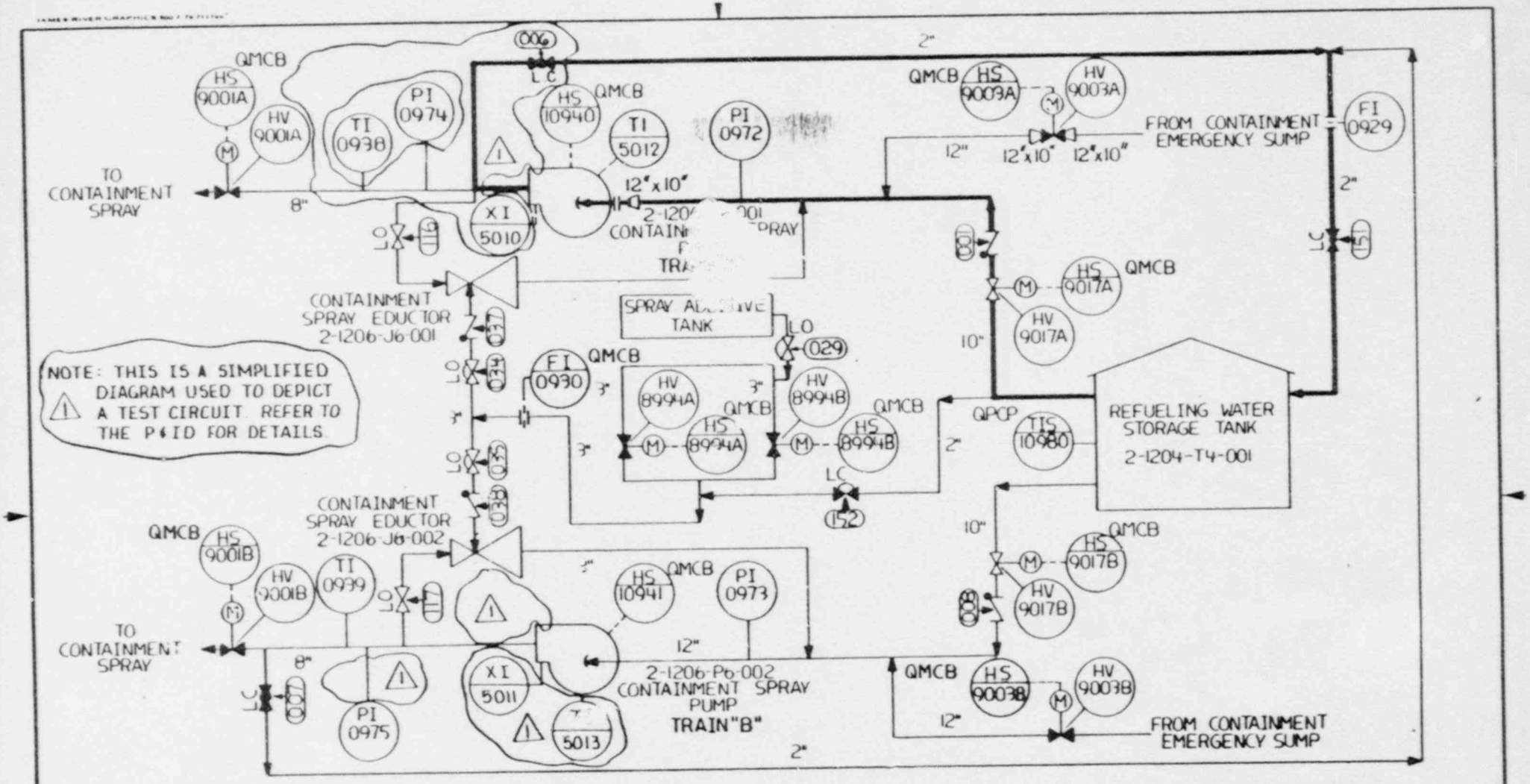
Test Parameter Table for Pump 2-1206-P6-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	PI-0973	N/A	Pi ≥ 5.9 psig
Outlet Pressure (Po)	Quarterly	PI-0975	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-0929	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	[illegible]	ISSUED FOR PST	[illegible]				
1	1-16-88	C.L.	RLB	UPDATED TO REV. 15 OF 2X4DB131	[illegible]				

REMARKS: 1

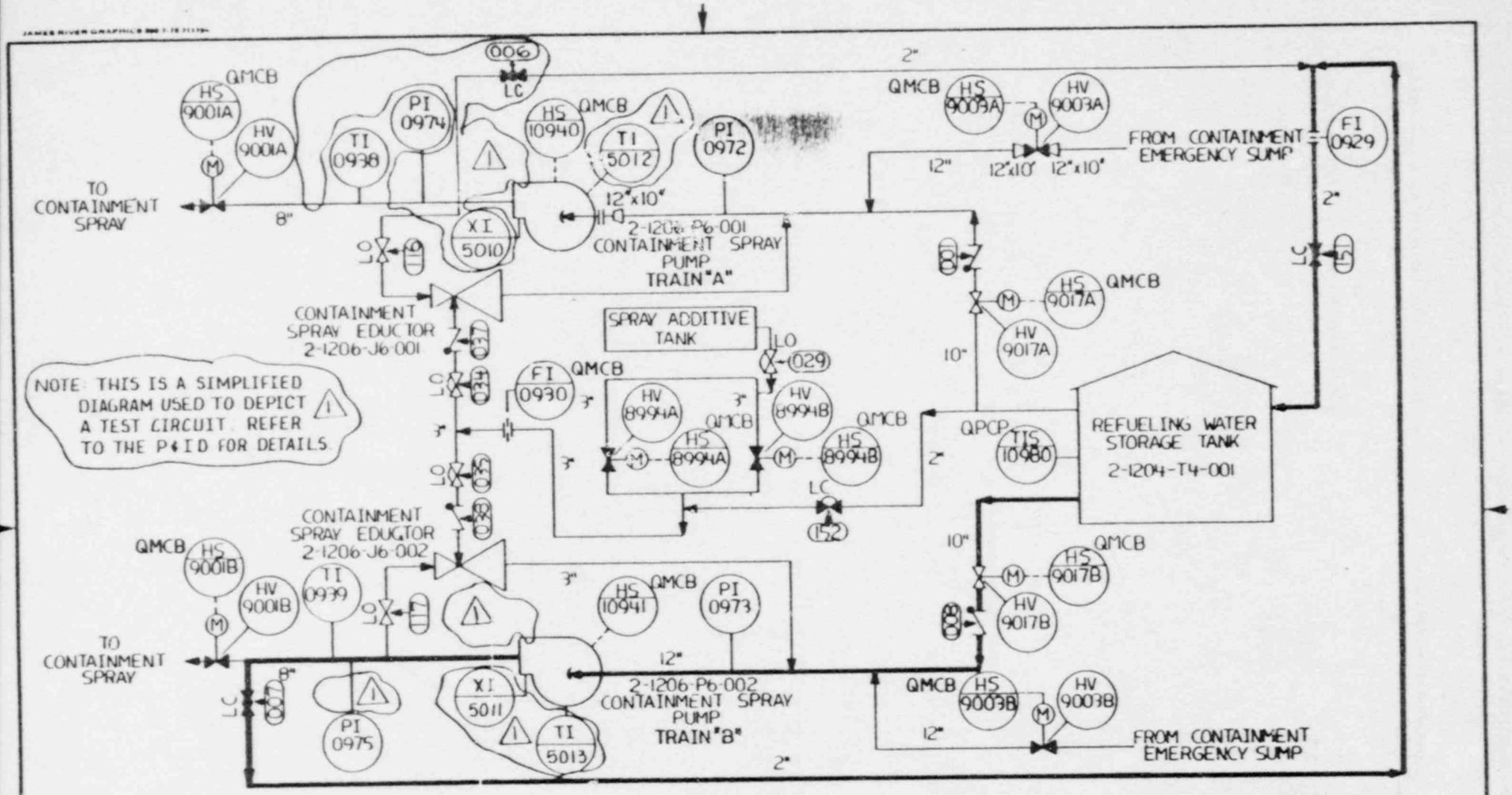
Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR CONTAINMENT SPRAY PUMP
2-1206-P6-001

DESIGNED	ET	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-268	1 OF 1	1

FORM NO. 6-(M)



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5	REMARKS
0	2-5-84	[illegible]	[illegible]	ISSUED FOR PST	[illegible]					
1	1-26-88	CL	[illegible]	UPDATED TO REV. 15 OF 2X4DB131	[illegible]					

Southern Company Services, Inc. for Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR CONTAINMENT SPRAY PUMP
2-1206-P6-002

DESIGNED FT DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	N/A	ISI-D-269	1 OF 1	1

A-25294

75

CHARACTERISTIC CURVE
CERTIFIED TEST DATA
GOULDS PUMPS, INC.
SENECA FALLS, N.Y.
J. Schell 12-7-78

GOULDS PUMPS, INC.
ENGINEERED PRODUCTS DIV.
SENECA FALLS, N.Y. 13148

CUSTOMER WESTINGHOUSE ELECTRIC
P. O. NO. ~~SA-CAY-173184-BN~~ ITEM NO.
GOULDS SER. NO. NZ31B623-1
SPIN # GBE-CIAPCS-01
MODEL 3415 SIZE 8X10-22
R. P. M. 1780 IMPLR. DIA. 21 3/16"

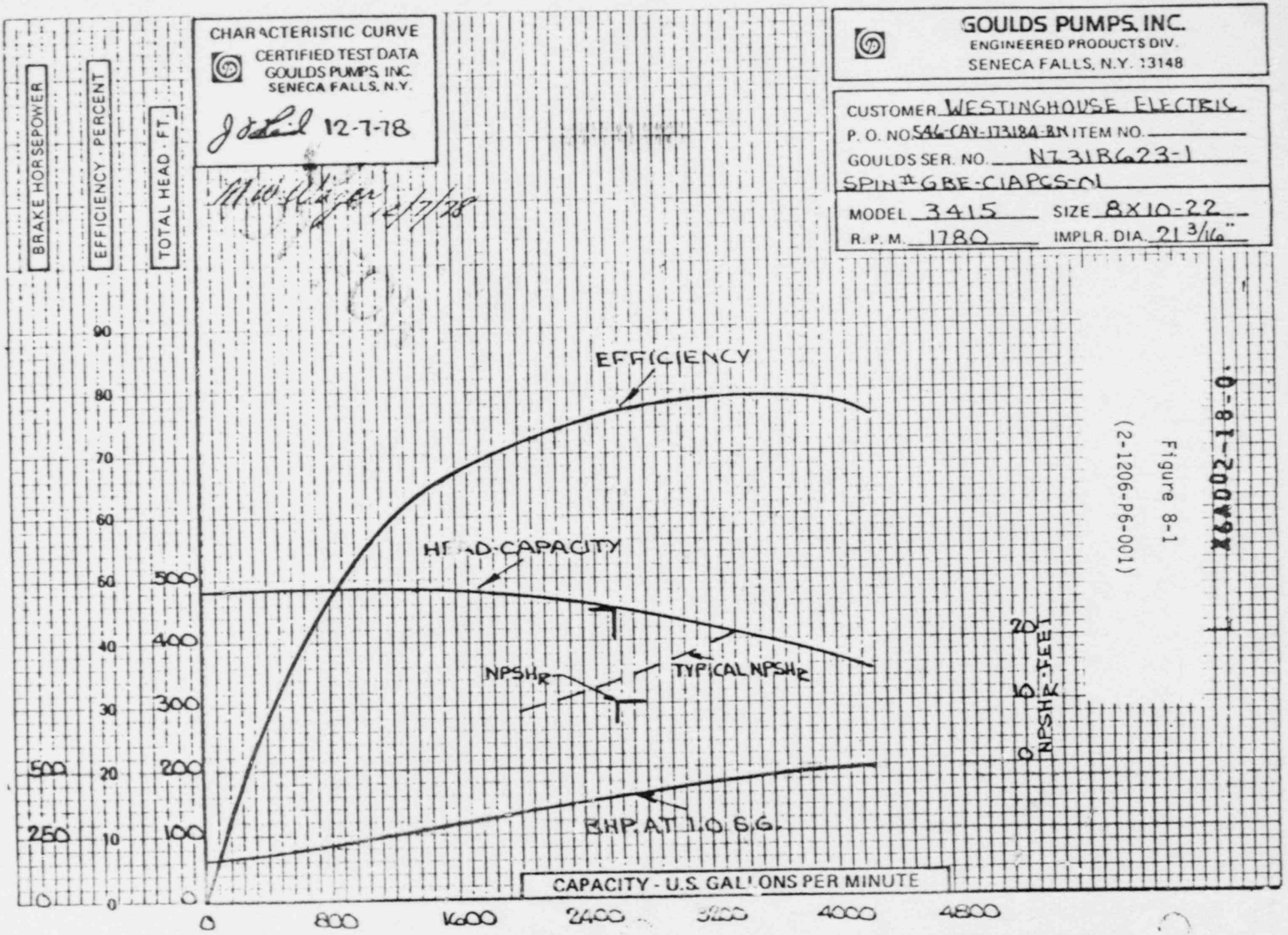


Figure 8-1
(2-1206-P6-001)

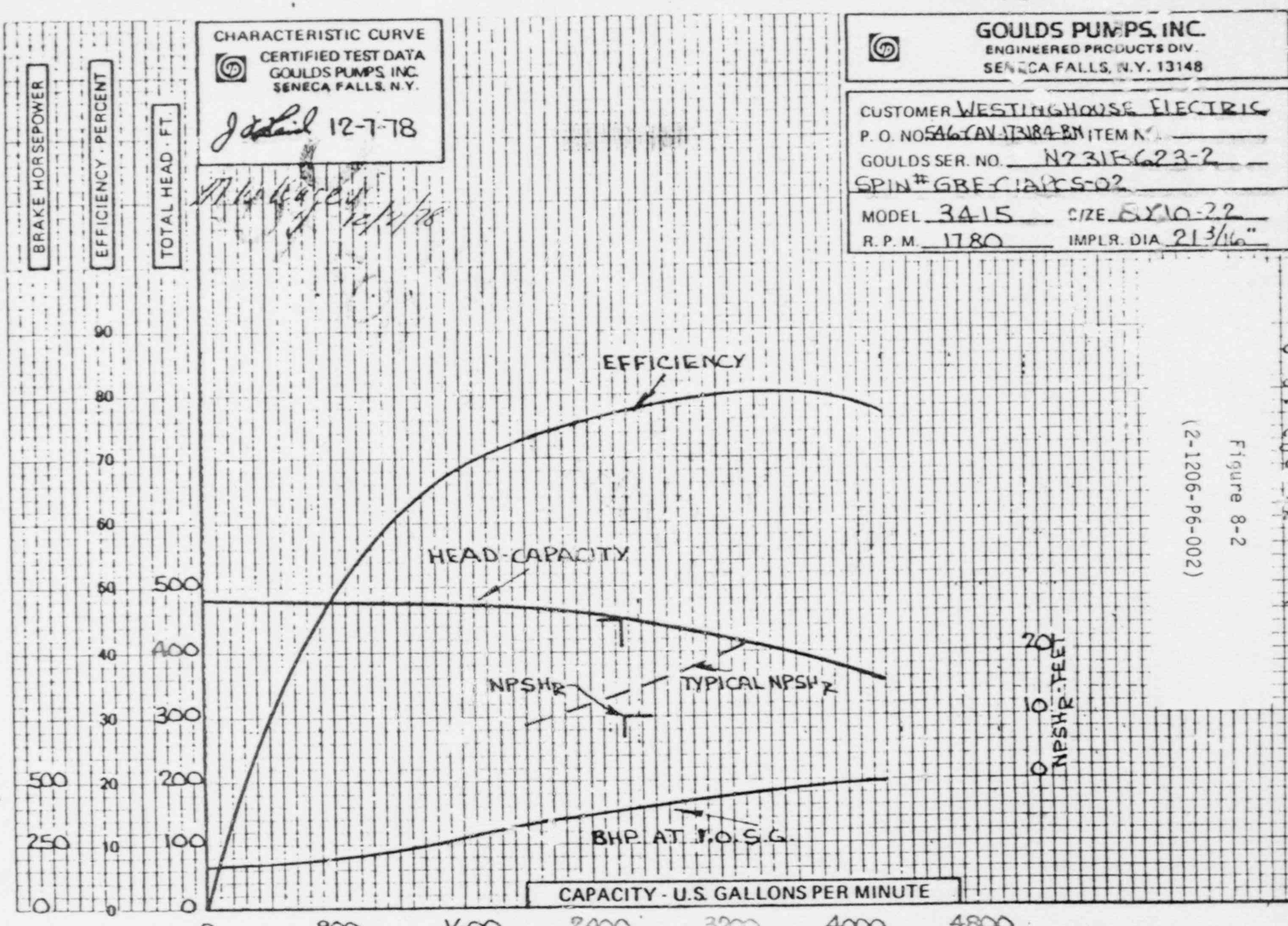
0-81-200X9X

A-25295

X4-D02-18-0

Figure 8-2

(2-1206-P6-002)


CHARACTERISTIC CURVE
CERTIFIED TEST DATA
GOULDS PUMPS INC.
SENECA FALLS, N.Y.
12-7-78
GOULDS PUMPS, INC.
ENGINEERED PRODUCTS DIV.
SENECA FALLS, N.Y. 13148
CUSTOMER WESTINGHOUSE ELECTRIC
P. O. NO 546-CAV-173184-BN ITEM NO.
GOULDS SER. NO. N231B623-2
SPIN # GBE-C1APCS-02
MODEL 3415 SIZE 8X10-22
R. P. M. 1780 IMPLR. DIA 21 3/16"
BRAKE HORSEPOWER
EFFICIENCY - PERCENT
TOTAL HEAD - FT.
EFFICIENCY
HEAD-CAPACITY
NPSHR
TYPICAL NPSHR
BHP AT 1.0 S.G.
NPSHR - FEET
CAPACITY - U.S. GALLONS PER MINUTE
0
800
1600
2400
3200
4000
4800

CENTRIFUGAL CHARGING PUMPS (2-1208-P6-002, -003) AND BORIC ACID TRANSFER PUMPS (2-1208-P6-006, -007)

System Function

The chemical and volume control system is designed to provide the following functions:

A. Fills the reactor coolant system (RCS).

B. Provides a source of high-pressure water for pressurizing the RCS when cold.

C. Maintains the water level in the pressurizer when the RCS is hot.

D. Reduces the concentration of corrosion and fission products in the reactor coolant.

E. Adjusts the boric acid concentration of the reactor coolant for chemical shim control.

F. Provides a source of high-pressure water for the emergency core coolant system.

Pump Descriptions

The centrifugal charging pumps (Table 9-1) are horizontal, multistage pumps capable of delivering flow to the RCS at the prevailing RCS pressure. Each pump is rated at 150 gal/min and 5880 ft TDH at 4800 rpm. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 9-2 and 9-3)
Pump Test Loops	(Drawings ISI-D-270 and 271)
Pump Characteristic Curves	(Figures 9-1 and 9-2)

The boric acid transfer pumps (Table 9-4) are canned motor pumps. One pump is normally aligned to supply boric acid to the suction header of the charging pumps while the second serves as a standby. Each pump has a design head and flow of 235 ft and 75 gpm respectively. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 9-5 and 9-6)
Pump Test Loops	(Drawings ISI-D-277 and 278)
Pump Characteristic Curves	(Figures 9-3 and 9-4)

Table 9-1

CENTRIFUGAL CHARGING PUMPS

(2-1208-P6-002, -003)

Quantity	2
Type	Horizontal, 11-stage, centrifugal
Manufacturer/Model	Pacific/IJ 2-1/2 in. RL
Capacity (gal/min)	150
TDH (ft)	5800
Driver	Electric motor
Manufacturer	Westinghouse
hp	600
rpm	1800
Power supply	4160 V/3 phase/60 Hz
Project Class	212
Outline Drawing	2X6AH02-100
Instruction Book	2X6AH02-85
P&ID	2X4DB116-2
Location	Auxiliary building, level C

Table 9-2

Test Parameter Table for Pump 2-1208-P6-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7 psig Note 3
Outlet Pressure (Po)	Quarterly	PI-0118	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-10120	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 9-3

Test Parameter Table for Pump 2-1208-P6-003

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7 psig Note 3
Outlet Pressure (Po)	Quarterly	PI-0119	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-10121	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 9-4

BORIC ACID TRANSFER PUMPS

(2-1208-P6-006, -007)

Quantity	2
Type	Canned motor
Manufacturer/Model	Chempump Model GVH-10K and GVHS-10K
Design Head (ft)	235
Design Flow (gal/min)	75
Driver	
kW	15.5
Speed (rpm)	3450
Power supply	460 V/3 phase/60 Hz
Project Class	313
Outline Drawing	2X6AH02-45, 2X6AH02-92
Instruction Book	2X6AA07-10
Location	Auxiliary building, level D
P&ID	2X4DB118

Table 9-5

Test Parameter Table for Pump 2-1208-P6-006

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	PI-10115	N/A	Pi ≥ 2.6 psig (6 ft), See PR-3
Outlet Pressure (Po)	Quarterly	PI-0113	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-40001	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Note 4
Bearing Temperature (Tb)	N/A	N/A	N/A	Note 4

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used
(4) Bearing surfaces and other parts are lubricated and cooled by the positive flow of pumped fluid

Table 9-6

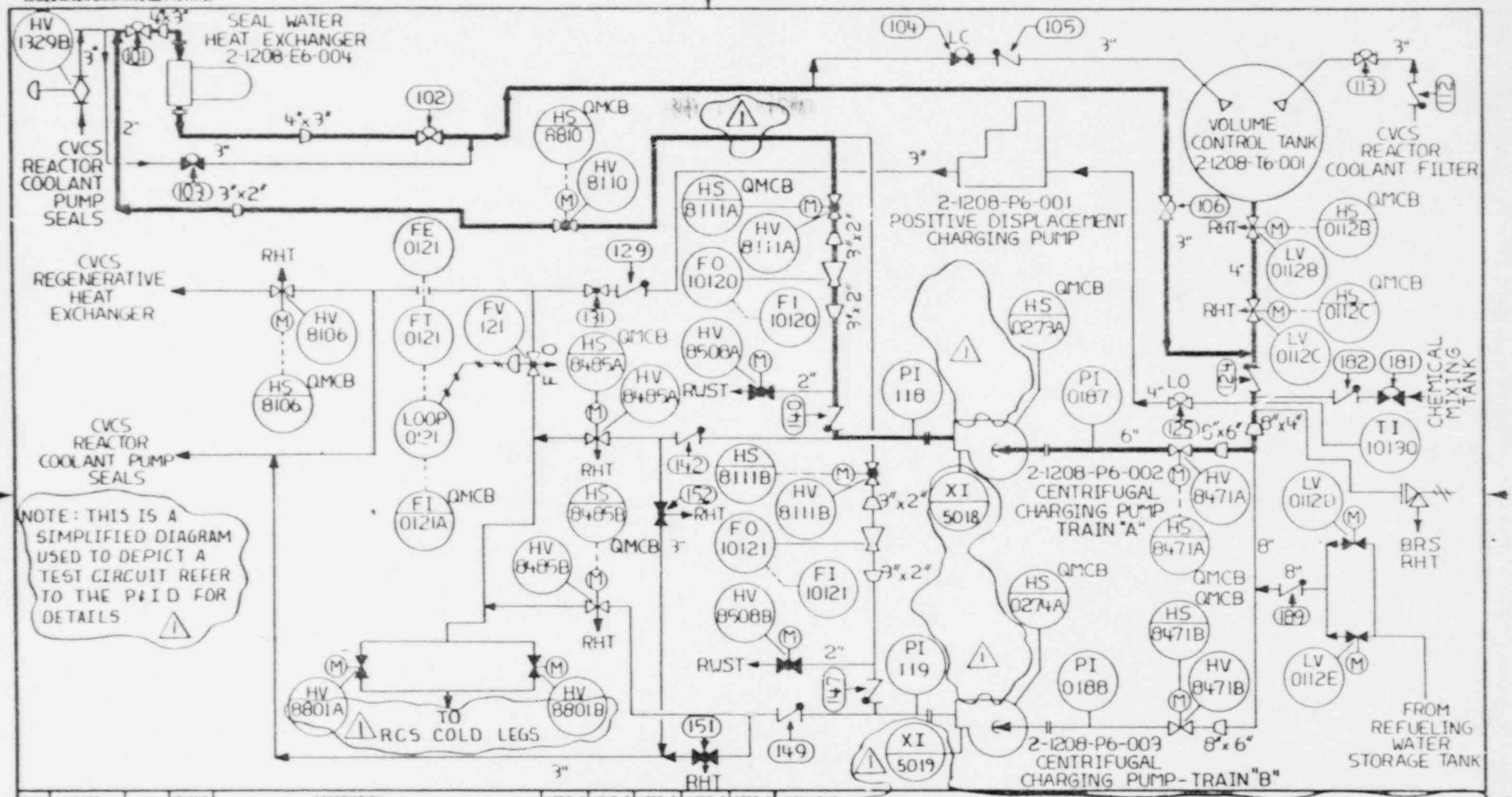
Test Parameter Table for Pump 2-1208-P6-007

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	PI-10116	N/A	Pi ≥ 2.6 psig (6 ft), See PR-3
Outlet Pressure (Po)	Quarterly	PI-0114	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-40001	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	N/A	N/A	N/A	Note 4
Bearing Temperature (Tb)	N/A	N/A	N/A	Note 4

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used
(4) Bearing surfaces and other parts are lubricated and cooled by the positive flow of pumped fluid



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	WS	ISSUED FOR PST					
1	1-26-88	C.L.	WS	UPDATED TO REV. 15 OF 2X4DB1162					

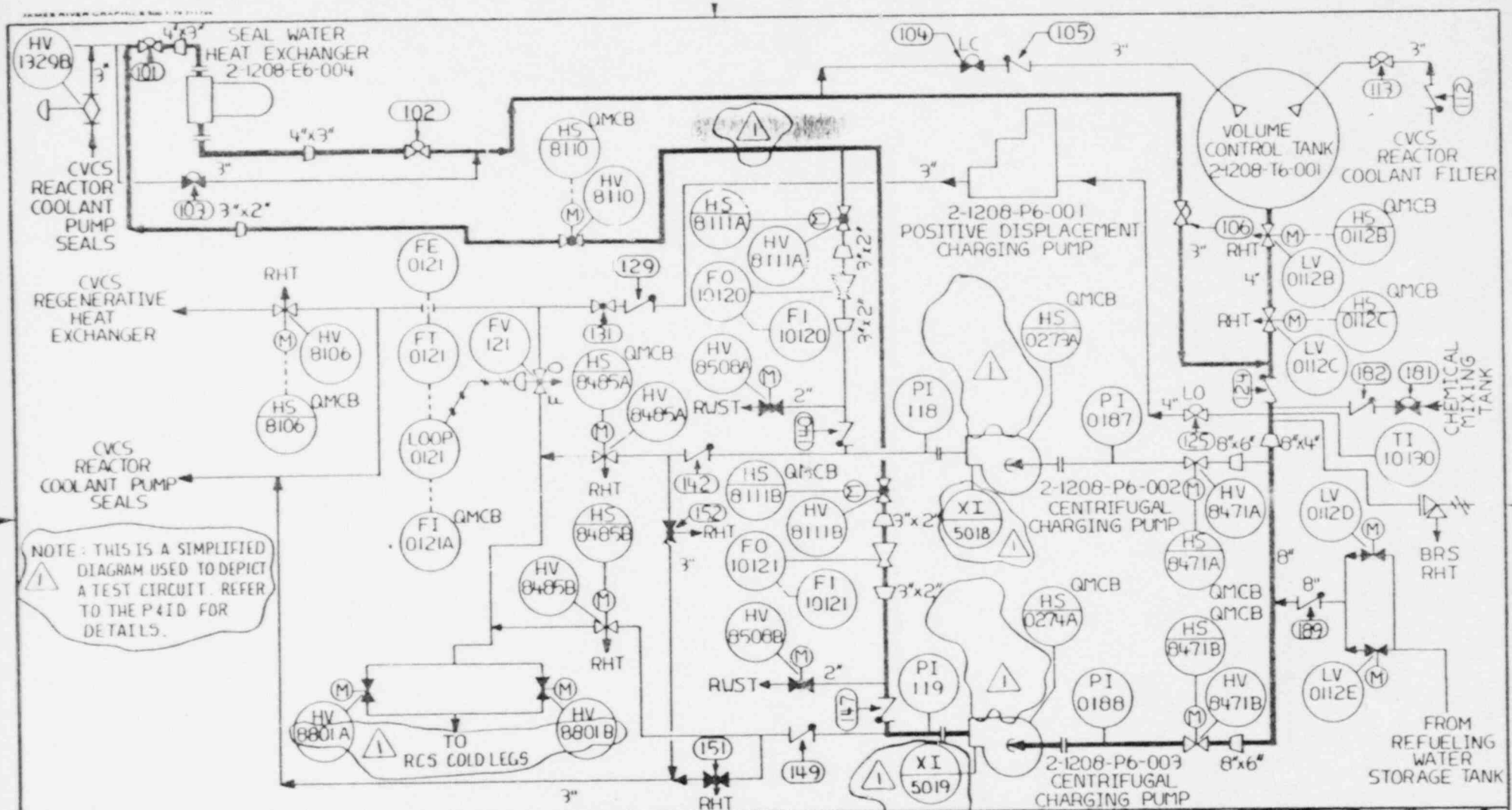
REMARKS

Southern Company Services, Inc. FOR **Georgia Power Company**

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR CENTRIFUGAL CHARGING PUMP
2-1208-P6-002

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-270	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5	REMARKS
0	9-2-84	[illegible]	WJS	ISSUED FOR PST						
1	1-26-88	C.L.	WJS	UPDATED TO REV. 15 OF 2X4DB116-2						

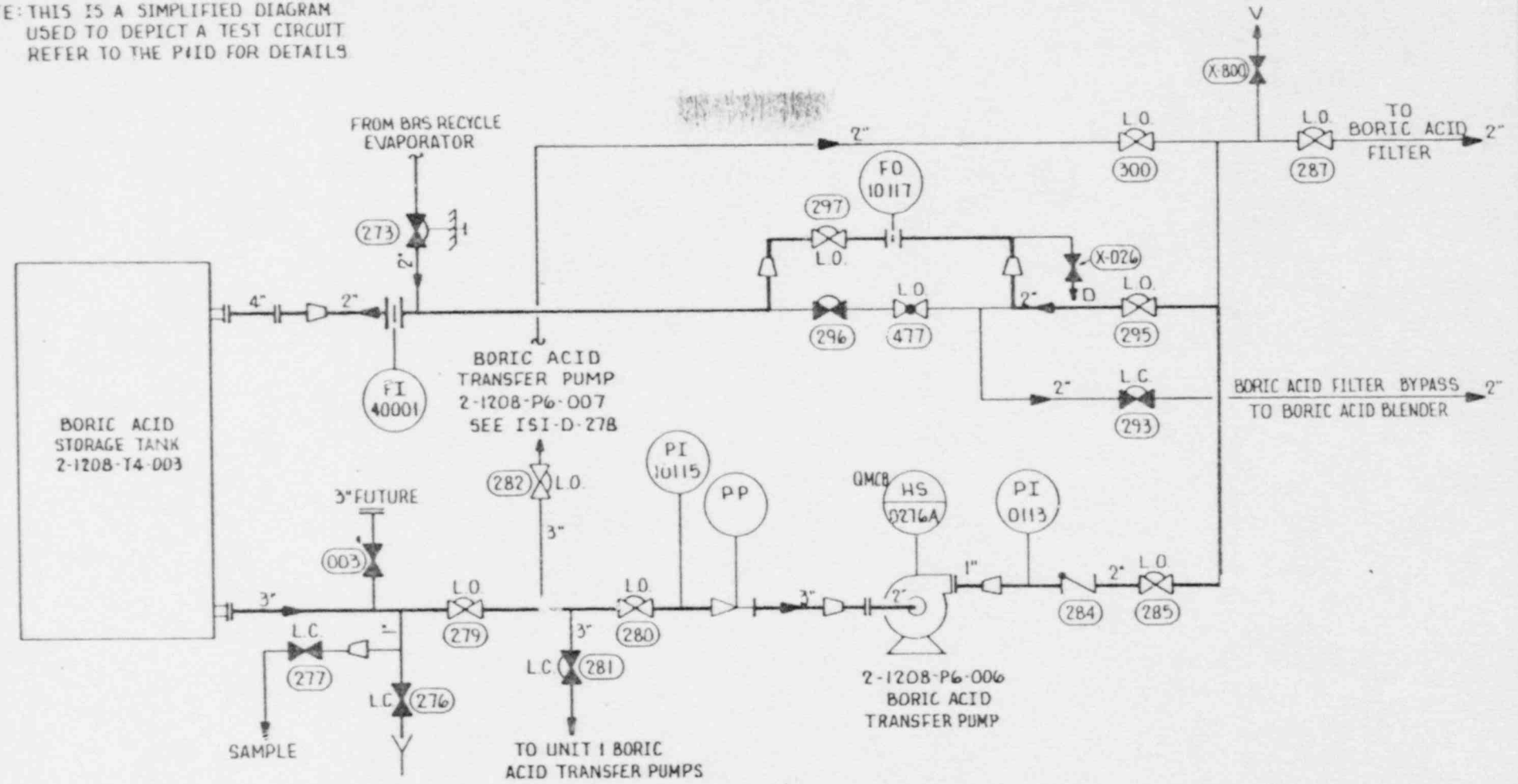
Southern Company Services, Inc. for Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR CENTRIFUGAL CHARGING PUMP 2-1208-P6-003

DESIGNED	DRAWN	CHECKED	SCALE	CONTINUED ON SHEET
FT	DRC	WS	NONE	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV.
N/A	ISI-D-271	1 OF 1	1

NOTE: THIS IS A SIMPLIFIED DIAGRAM USED TO DEPICT A TEST CIRCUIT REFER TO THE P&ID FOR DETAILS



REV	DATE	BY	CHK'D	DESCRIPTION	APPR 1	APPR 2	APPR 3	APPR 4	APPR 5
0	1-26-88	C.L.	RLB	ISSUED FOR PST/IST	RBC				

REMARKS

Southern Company Services, Inc. FOR GEORGIA POWER COMPANY

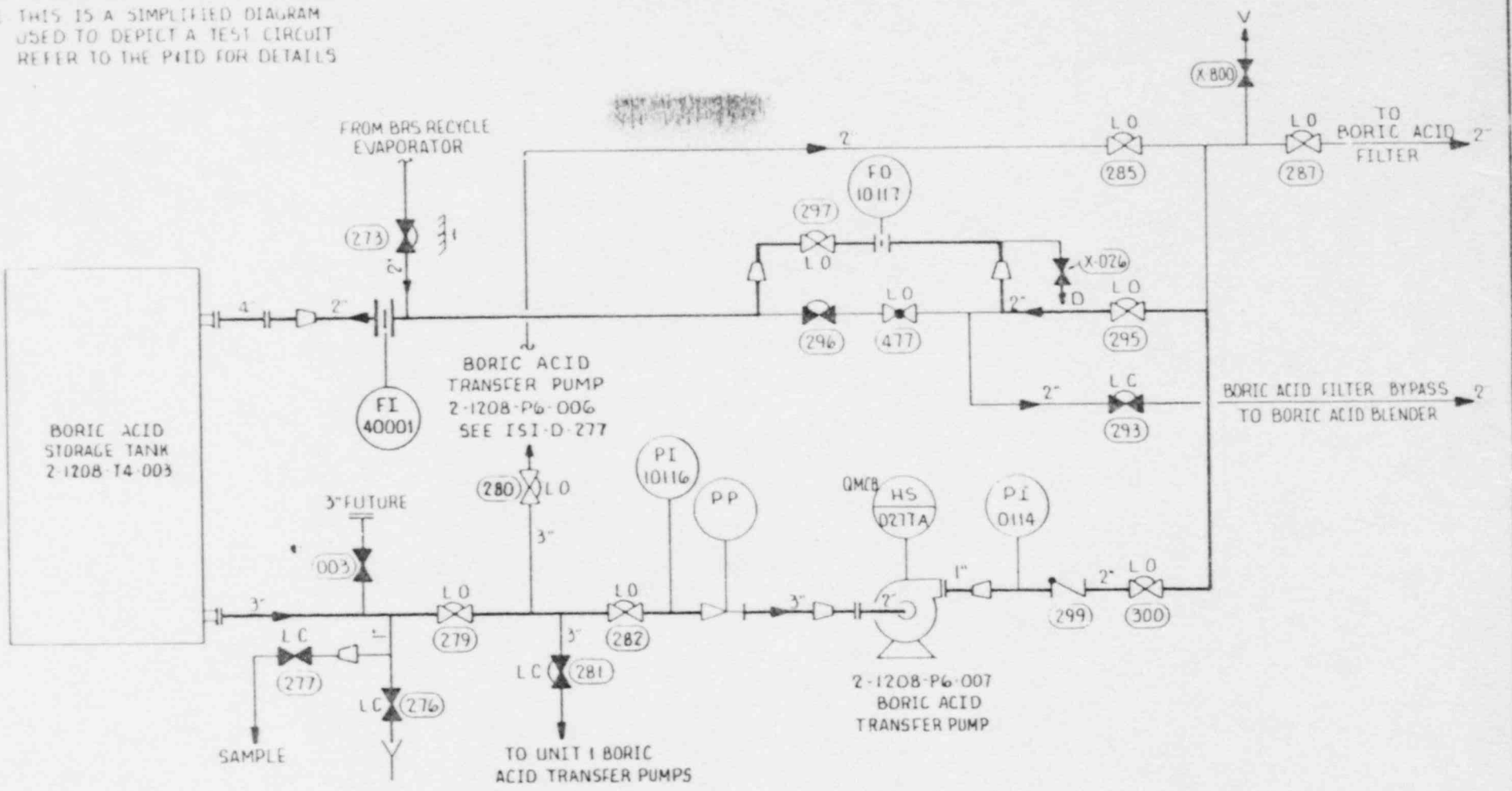
VOGTLE ELECTRIC GENERATING PLANT
UNIT 2
PUMP INSERVICE TESTING LOOP FOR BORIC ACID TRANSFER PUMP
2-1208-P6-006

DESIGNED RBC DRAWN C.L.
TYPED CHECKED RLB
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-277	1 OF 1	0

Form No. 9-381A

NOTE THIS IS A SIMPLIFIED DIAGRAM
USED TO DEPICT A TEST CIRCUIT
REFER TO THE P&ID FOR DETAILS



REV	DATE	BY	CHK'D	DESCRIPTION	APPR 1	APPR 2	APPR 3	APPR 4	APPR 5	REMARKS
0	1-26-88	C L	RLB	ISSUED FOR PST / IST	RLC					

Southern Company Services, Inc. FOR GEORGIA POWER COMPANY

VOGTLE ELECTRIC GENERATING PLANT
UNIT 2
PUMP INSERVICE TESTING LOOP FOR
BORIC ACID TRANSFER PUMP
2-1208-P6-007

DESIGNED RLC DRAWN C L
TYPED CHECKED RLB
SCALE NONE CONTINUED ON SHEET

PROJ I D	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-278	1 OF 1	0

CONTRACTOR ____

CUSTOMER WESTINGHOUSE NES.

ITEM NO. GBE-01 P.O. 546-CAV-226925-BPE

IMPELLER PATTERN M-7278 M-6534

MAXIMUM DIAMETER 8 1/4 8 1/4

RATED DIAMETER 8 1/4 Stgs. 2-4 8 1/4 5-11 8 1/8

MINIMUM DIAMETER 7 1/4 7 1/4

TEST PERFORMANCE CURVE NO. 38034A

SIZE 2 1/2 RL TYPE IV STAGES 11

R.P.M. FIELD DATE 5-29-79

PUMP NUMBER 52235

PERFORMANCE ALSO APPLIES TO PUMP ____

NUMBER ____

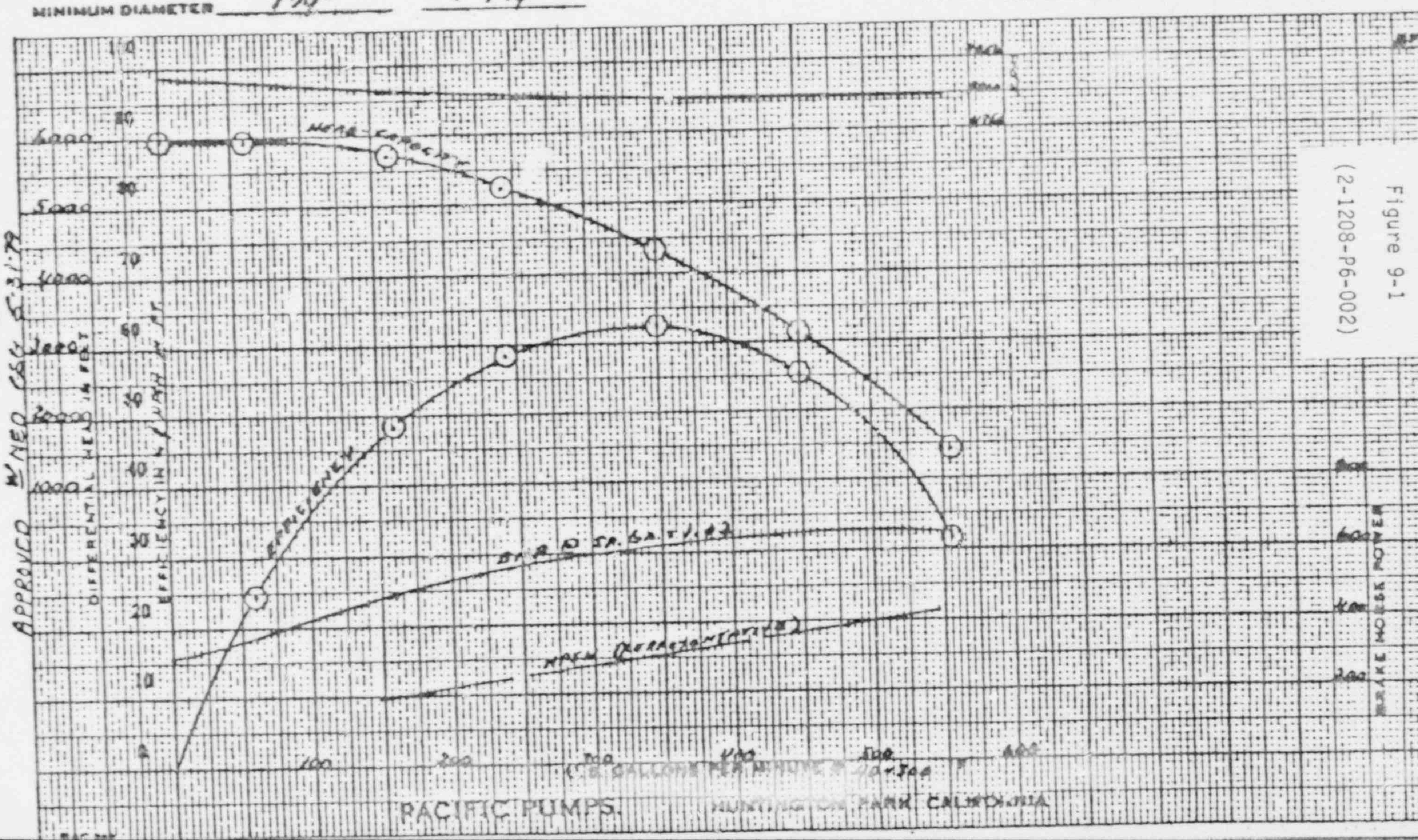


Figure 9-1

(2-1208-P6-002)

APPROVED W NEO CSC 5-31-79

0-98-22OHA9X8

TEST PERFORMANCE CURVE NO. J80348

CONTRACTOR ——

CUSTOMER WESTINGHOUSE NES

ITEM I.D. 6B5-02 P.O. 546-CAY-236925-BPE

IMPELLER PATTERN M-7278 M-6534

MAXIMUM DIAMETER 8 1/4 8 1/4

RATED DIAMETER 8 1/4" SPECS 2-4 - 8 1/4 5-11 8 1/8

MINIMUM DIAMETER 7 1/4 7 1/4

SIZE 2 1/2 RL TYPE IJ STAGES 11

R.P.M. FIELD DATE 5-29-79

PUMP NUMBER 52236

PERFORMANCE ALSO APPLIES TO PUMP

NUMBER ——

APPROVED WNED EEG 5-31-79

2XGAH02-87-0

Figure 9-2
(2-1208-P6-003)

9510- X6AA07-10-6

26

PUMP CASING D-16758	SIZE 2x1	MODEL GVH-10K
IMPELLER C-38508	EYE AREA	RPM 3450

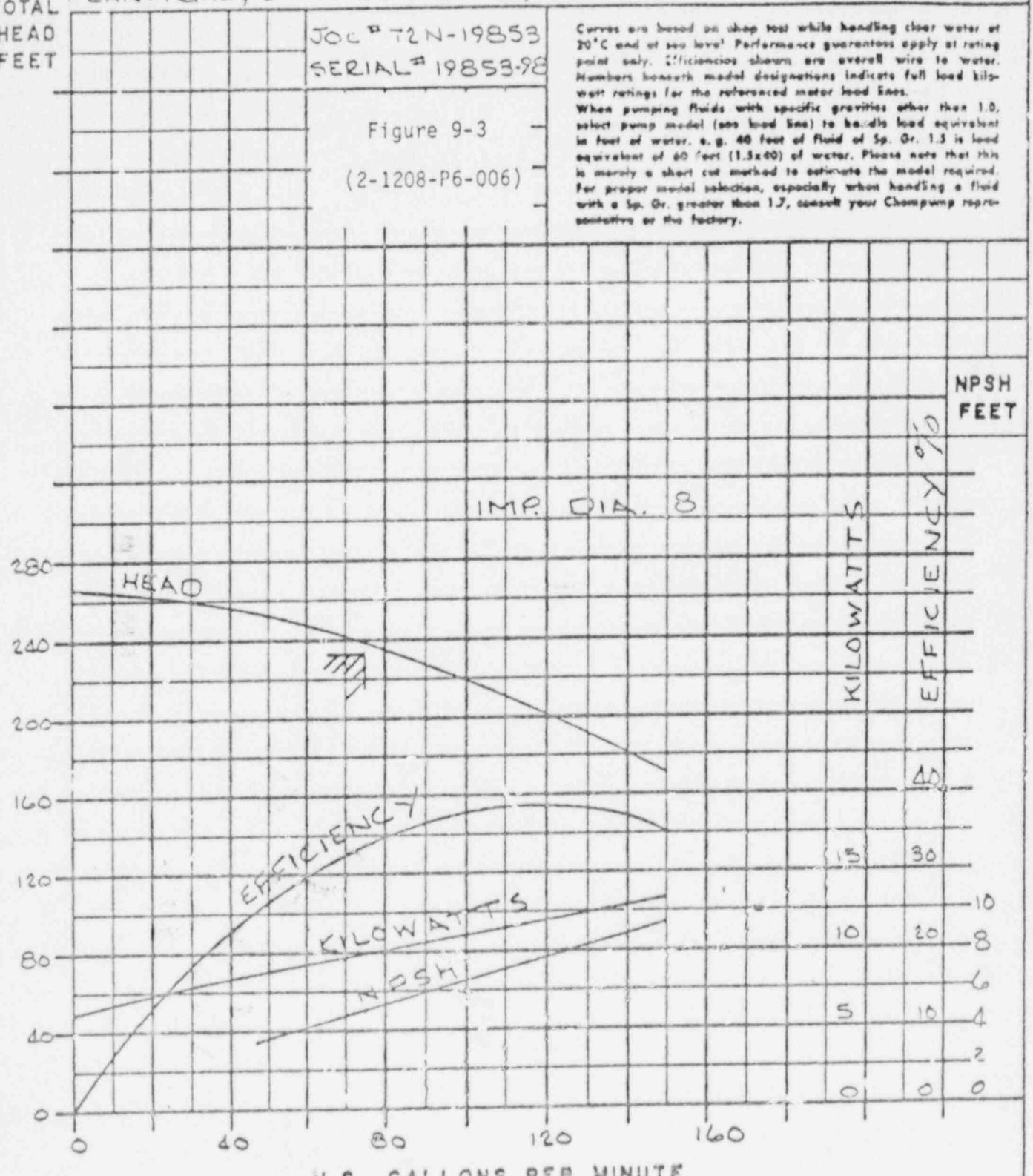
PLANT: GAE, SPIN# CSAPBA-01, BORIC ACID TRANSFER PUMP

JOC# T2N-19853
SERIAL# 19853-98

Figure 9-3

(2-1208-P6-006)

Curves are based on shop test while handling clear water at 20°C and at sea level. Performance guarantees apply at rating point only. Efficiencies shown are overall wire to water. Numbers beneath model designations indicate full load kilowatt ratings for the referenced motor load lines.
When pumping fluids with specific gravities other than 1.0, select pump model (see load line) to handle load equivalent in feet of water. e.g. 40 feet of fluid of Sp. Gr. 1.3 is load equivalent of 60 feet (1.3x40) of water. Please note that this is merely a short cut method to estimate the model required. For proper model selection, especially when handling a fluid with a Sp. Gr. greater than 1.3, consult your Chempump representative or the factory.



CRANE CHEMPUMP DIVISION CRANE CO. WARRINGTON, PENNSYLVANIA	DRAWN S.P.	CHECKED WF	DATE 1-19-77	CURVE NO. A-73771

~~2KL-AH03-109-1~~ 9510-2/K6AA07-10 28A

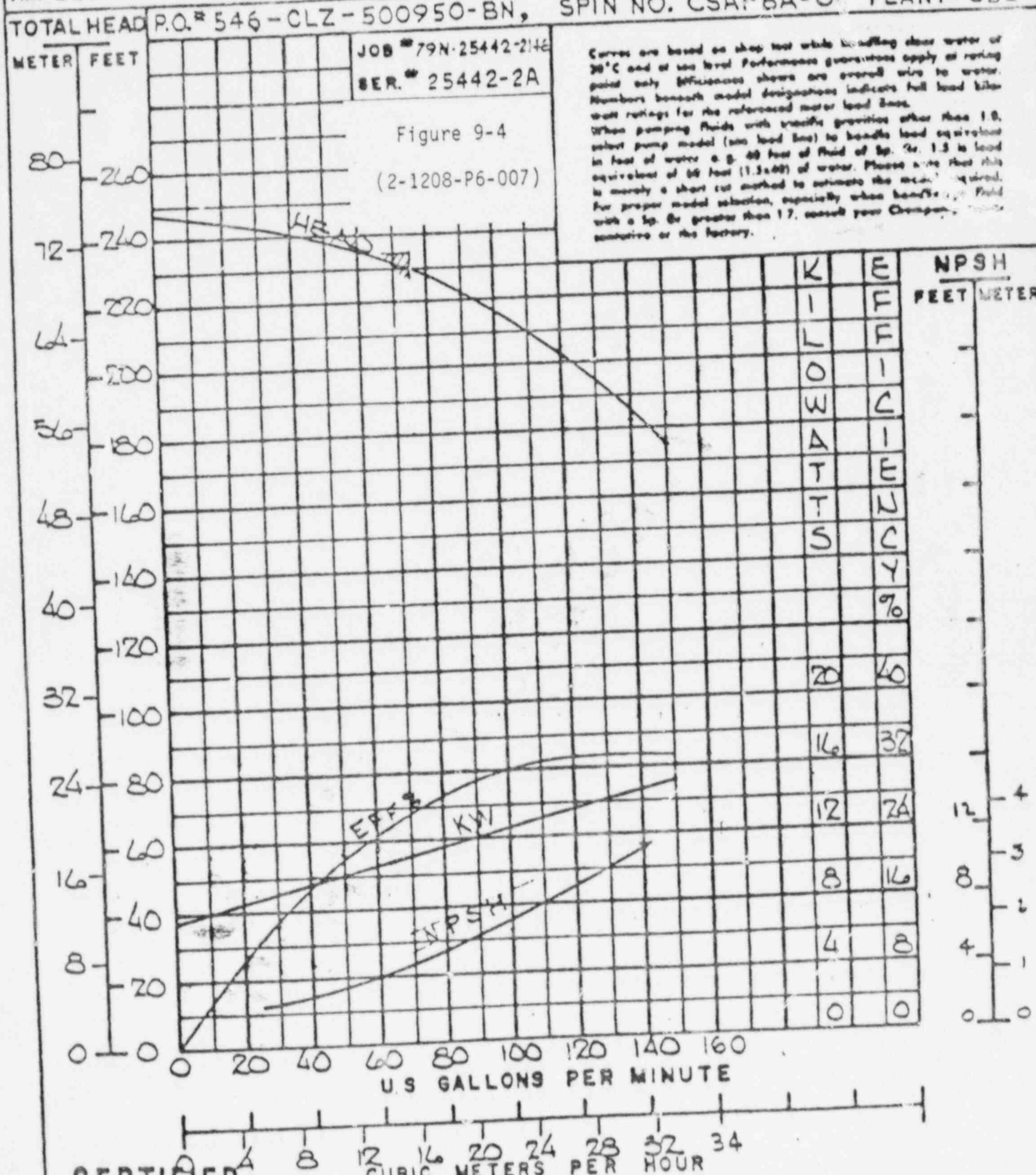
PUMP CASING D-18894	SIZE 2×1	MODEL GVHS-10K
IMPELLER C-38508	IMP. DIA. 7 7/8	RPM 3450

P.O.# 546-CLZ-500950-BN, SPIN NO. CSAPBA-01 PLANT: GBE

JOB # 79N-25442-2146
SER. # 25442-2A

Figure 9-4
(2-1208-P6-007)

Curves are based on shop test while handling clear water of 30°C and at sea level. Performance guarantees apply at rating point only. Efficiencies shown are overall wire to water. Numbers beneath model designations indicate full load kilowatt ratings for the referenced motor load lines. When pumping fluids with specific gravities other than 1.0, select pump model (see load line) to handle head equivalent in feet of water e.g. 40 feet of fluid of Sp. Gr. 1.5 is head equivalent of 60 feet (1.5x40) of water. Please note that this is merely a short cut method to estimate the model required. For proper model selection, especially when handling fluid with a Sp. Gr. greater than 1.7, consult your Chempump representative or the factory.



CERTIFIED 10-17-85

CHEMPUMP DIVISION CRANE CO. WARRINGTON, PENNSYLVANIA	DRAWN	CHKD	DATE	CURVE NO.	REV
CRANE	MTD		9-27-85	AA-71638	1

REV 1 10/17/85 ADD DES. PT. & NPSH

AUXILIARY FEEDWATER PUMPS

(2-1302-P4-001, -002, -003)

System Function

The auxiliary feedwater (AFW) system is designed to supply feedwater to the steam generators whenever the reactor coolant temperature is above 350°F and the main feedwater system is not in operation, i.e., during startup, cooldown, or emergency conditions resulting in a loss of main feedwater.

The AFW automatically provides feedwater for the removal of reactor core decay heat following a loss of main feedwater. This prevents damage to the reactor core until the reactor coolant temperature is brought from a condition of full power to the point at which the residual heat removal system may be placed in operation.

The AFW supplies feedwater to the steam generators at a flowrate sufficient to support normal low-power transients such as startup, cooldown, and hot standby.

Pump Descriptions

A. AUXILIARY FEEDWATER TURBINE-DRIVEN PUMP (2-1302-P4-001)

The AFW turbine-driven pump (Table 10-1) takes suction from either of the condensate storage tanks (CSTS) and discharges normally to all four steam generators. This turbine-driven, horizontal, multistage, centrifugal pump provides system redundancy of AFW supply and diversity of motive pumping power. The pump and driver unit is equipped with a self-contained lube oil system. Continuous pump recirculation is provided. The following information is included for testing of these pumps:

Test Parameter Table	(Table 10-3)
Pump Test Loop	(Drawing ISI-D-272)
Pump Characteristic Curve	(Figure 10-1)

B. AUXILIARY FEEDWATER MOTOR-DRIVEN PUMPS (2-1302-P4-002, -003)

The AFW motor-driven pumps (Table 10-2) are horizontal, multistage, centrifugal pumps that take suction from either of the CSTs and discharges normally to each of the two steam generators. Automatic recirculation control is provided in the discharge piping of each pump. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 10-4 and 10-5)
Pump Test Loop	(Drawings ISI-D-273 and 274)
Pump Characteristic Curve	(Figures 10-2 and 10-3)

Table 10-1

AUXILIARY FEEDWATER TURBINE-DRIVEN PUMP

(2-1302-P4-001)

Quantity	1
Manufacturer/Model	Ingersoll-Rand 6HMTA
Type	5-stage horizontal, centrifugal, split-case pump
Capacity (gal/min)	1175
TDH (psi)	1517
Driver	Steam turbine
Type	Terry GS-2N noncondensing single-stage, mechanical drive
hp	1603
speed (rpm)	4250
Power Supply	steam
Project Class	313
Outline Drawing	1X4AF03-83
Instruction Book	2X4AF03-212
Location	AFW pumphouse
P&ID	2X4DB161-2

Table 10-2

AUXILIARY FEEDWATER MOTOR-DRIVEN PUMPS

(2-1302-P4-002, -003)

Quantity	2
Manufacturer/Model	Ingersoll-Rand 4HMTB
Type	6-stage horizontal, centrifugal, split-case pump
Capacity (gal/min)	630
TDH (psi)	1517
Driver	Electric motor
Type	Westinghouse LLD 5810 H
hp	900
speed (rpm)	3600
Power Supply	4160 V-ac/3 phase/60 Hz
Project Class	313
Outline Drawing	1X4AF03-81
Instruction Book	2X4AF03-213
Location	AFW pumphouse
P&ID	2X4DB161-2

Table 10-3

Test Parameter Table for Pump 2-1302-P4-001

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	Quarterly	SI-15109	Nr (2)	
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 6.9 psig (16 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-5107A	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-15100	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 10-4

Test Parameter Table for Pump 2-1302-P4-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-5140A	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-15101	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 10-5

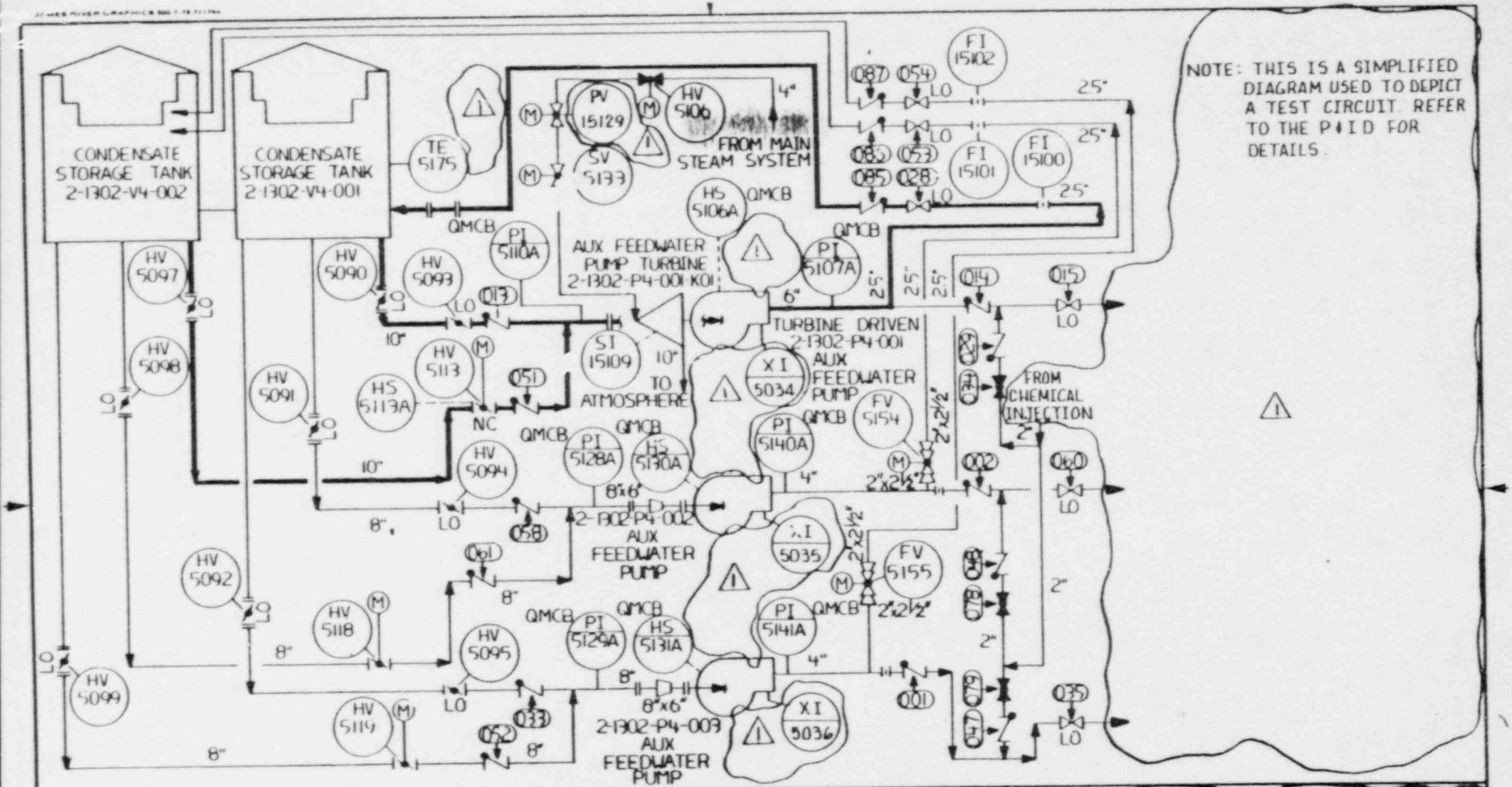
Test Parameter Table for Pump 2-1302-P4-003

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 7.4 psig (17 ft) Note 3
Outlet Pressure (Po)	Quarterly	PI-5141A	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-15102	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-3-88	BGH	WJS	ISSUED FOR PST					
1	1-26-88	C.L.	RCB	UPDATED TO REV. 18 OF 2X4DB161-2099C					

REMARKS

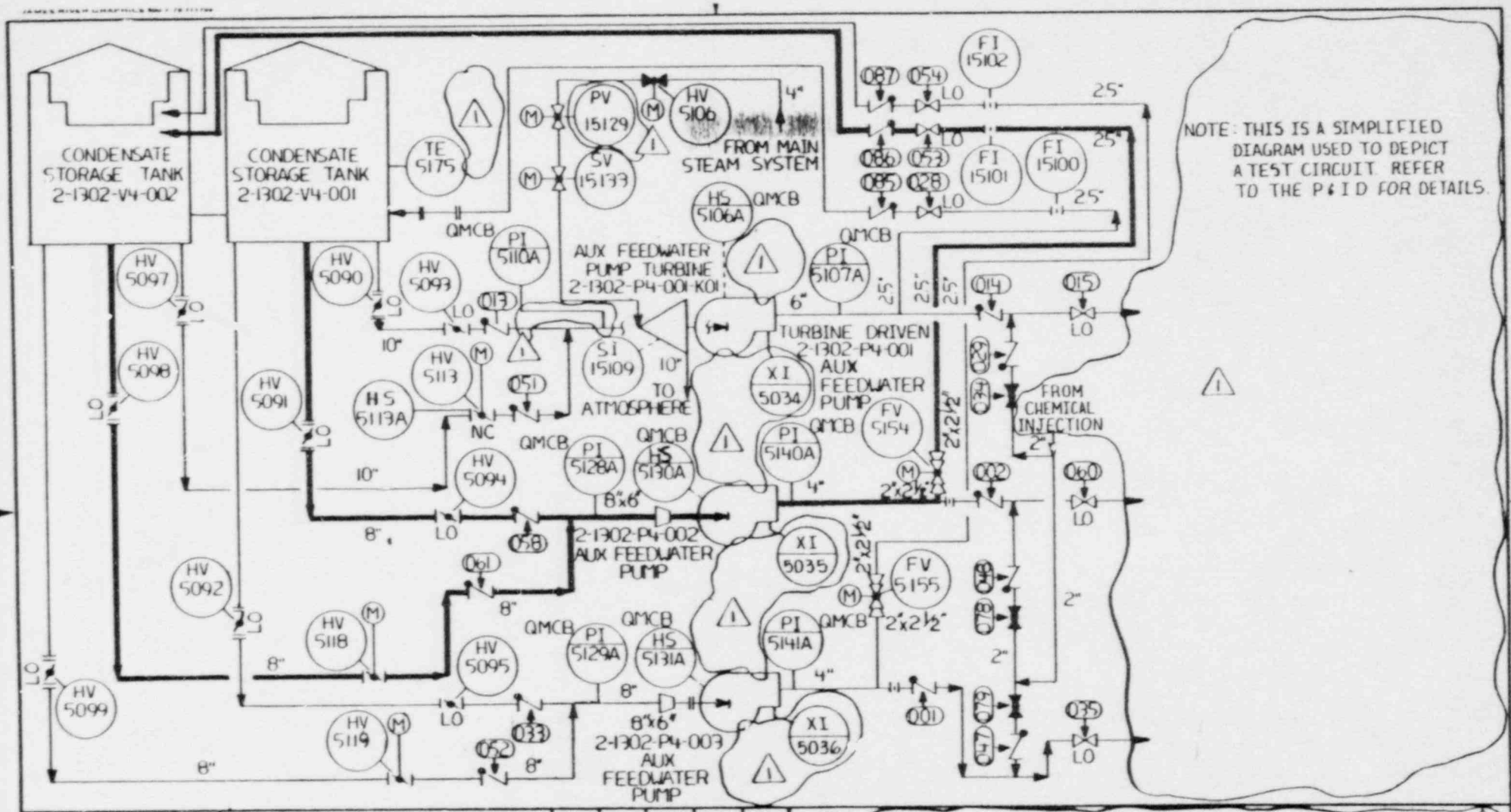
1

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR AUXILLARY FEEDWATER PUMP
2-1302-P4-001

DESIGNED FT DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-272	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	BGB	WS	ISSUED FOR PST					
1	1-26-88	C.L.	RCB	UPDATED TO REV. 18 OF 2X4UB16I-2					

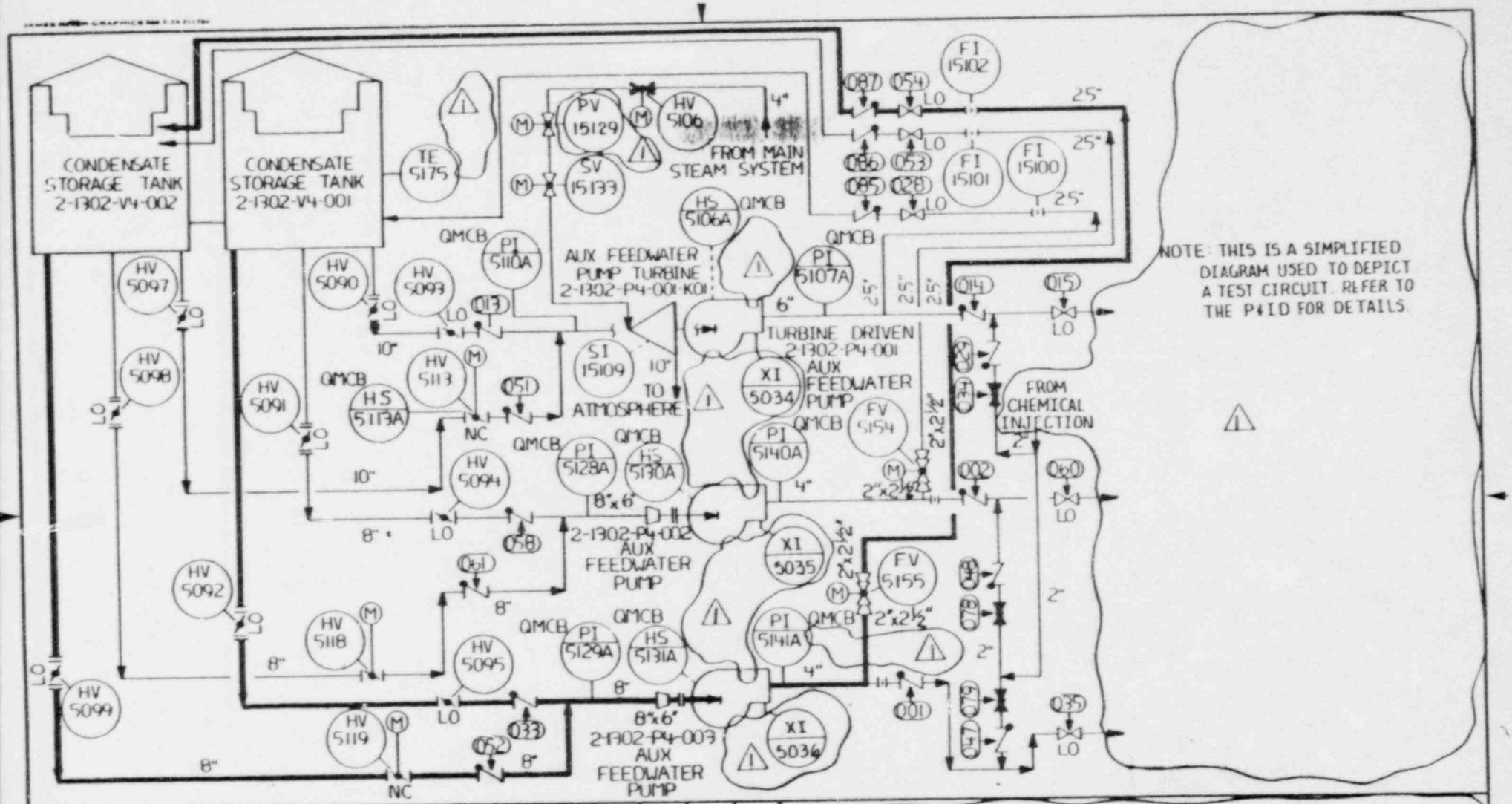
REMARKS

Southern Company Services, Inc. FOR **Georgia Power Company**

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR AUXILLARY FEEDWATER PUMP
2-1302-P4-002

DESIGNED	FT	DRAWN	DRC
TYPED		CHECKED	WS
SCALE	NONE	CONTINUED ON SHEET	

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-273	1 OF 1	1



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-3-84	[illegible]	WS	ISSUED FOR PST					
1	1-16-86	C.L.	RLB	UPDATED TO REV. 18 OF 2X4DB161-2					

REMARKS: 1

Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR AUXILLARY FEEDWATER PUMP
2-1302-P4-003

DESIGNED	FT	DRAWN	DRC	
TYPED		CHECKED	WS	
SCALE	NONE	CONTINUED ON SHEET		
	PROJ. I.D	DRAWING NUMBER	SHEET	REV
	N/A	ISI-D-274	1 OF 1	1

G 1286 SM 4-66

CURVE NO. N-1346 Rev. 0
DATE 16 DE 81

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 80° F. AND NOT OVER 15 FOOT SUCTION LIFT.

THIS CERTIFIES THAT THIS CURVE IS BASED UPON ACTUAL TESTED PERFORMANCE

Dennis C. Kliggle 16 DE 81

IMPELLER PATT. NO. DIA.

DIFFUSOR PATT. NO.

BHP (S.G.=1.0)

EFF.

HEAD

NPSH

TOTAL HEAD IN FEET X 1000

PER CENT EFFICIENCY

GALLONS PER MINUTE X 100

BRAKE HORSE POWER

NPSH IN FT.

BECHTEL/GEORGIA POWER CO.
A.W. VOGTLE NUCLEAR PLANT UNIT 2
AUXILIARY FEED PUMP-TURBINE DRIVEN
TAG # 2-1302-P4-001
P.O. # AV 2-65

CHARACTERISTIC CURVE

NO. 6HMTA-5 TYPE PUMP

4250 R. P. M.

PUMP NO. 1280234 ORDER NO. 005-36234

INGERSOLL-RAND COMPANY

CAMERON PUMP DIVISION

DATE OF TEST 12-16-81 CURVE N-1346

Figure 10-1
(2-1302-P4-001)

C-1220 SM 4-60

CURVE NO. N-1344 Rev. 0
DATE 25NV81

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. ( ) NOT OVER 15 FOOT SUCTION LIFT.

THIS CERTIFIES THAT THIS CURVE IS BASED ON ACTUAL TESTED PERFORMANCE

R.S. DeMarly 25NV81
R. J. Vaughan 25NV81
D. J. Cannon 25NV81

IMPELLER PATT. NO. DIA.
DIFFUSOR PATT. NO.
BHP@ 1.05 S.G.

NPSH

EFF.

HEAD

TOTAL HEAD IN FEET X 1000

PER CENT EFFICIENCY

NPSH IN FT.

BRAKE HORSE POWER

GALLONS PER MINUTE

BECHTEL / GEORGIA POWER Co.
A.W. VOGTLE NUCLEAR PLANT - UNIT #2
AUXILIARY FEED PUMP - MOTOR DRIVEN
TAG NO 2-1302-P4-002
P.O. PAV2-65

CHARACTERISTIC CURVE
NO. 4 TYPE HMT8-6 PUMP
3560 R.P.M.
PUMP NO. 1280235 ORDER NO. 005-36234 IT-2
INGERSOLL-RAND COMPANY
CAMERON PUMP DIVISION
DATE OF TEST 25NV81 CURVE N-1344

Figure 10-2
(2-1302-P4-002)

G-1226 3M 4-68

CURVE NO. N-1345 Rev 0
DATE 12JA82

CURVES ARE APPROXIMATE. PUMP GUARANTEED FOR ONE SET OF CONDITIONS CAPACITY, HEAD AND EFFICIENCY GUARANTEES ARE BASED ON SHOP TEST AND WHEN HANDLING CLEAR, COLD, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND NOT OVER 15 FOOT SUCTION LIFT.

THIS CERTIFIES THAT THIS CURVE IS BASED ON ACTUAL TESTED PERFORMANCE

IMPELLER PATT. NO. DIA.

DIFFUSOR PATT. NO.

BHP @ 1.0 S.G.

NPSH

EFF.

HEAD

TOTAL HEAD IN FEET X 1000

PER CENT EFFICIENCY

NPSH IN FT.

BRAKE HORSE POWER

GALLONS PER MINUTE

Figure 10-3
(2-1302-P4-003)

BECHTEL GEORGIA POWER CO.
A.-W. VOGTLE NUCLEAR PLANT - UNIT #2
AUXILIARY FEED PUMP - MOTOR DRIVEN
TAG NO. 2-1302-P4-003
P.O. PAV 2-65

CHARACTERISTIC CURVE

NO. 4 TYPE HMTB-6 PUMP

3560 R. P. M.

PUMP NO. 1280236 ORDER NO. 005-36234 Lt 2

INGERSOLL-RAND COMPANY
CAMERON PUMP DIVISION

DATE OF TEST 12-30-81 CURVE N-1345

ESF CHILLED-WATER PUMPS

(2-1592-P7-001, -002)

System Function

During normal operation of the plant, the engineered safety feature (ESF) chilled-water system is in the standby mode; it is activated during emergency conditions in the plant upon receipt of a safety injection signal, containment ventilation isolation signal, or control room isolation signal. The ESF chilled-water system serves air handling units located in the safety-related areas of the plant to ensure the integrity of the cooling system during plant emergency situations.

Pump Description

The ESF chilled-water pumps (Table 11-1) are train oriented with one pump in Train A and the other in Train B. These centrifugal pumps are rated at 600 gal/min with a head of 125 ft. The following information is included for testing of these pumps:

Test Parameter Tables	(Tables 11-2 and 11-3)
Pump Test Loops	(Drawings ISI-D-275 and 276)
Pump Characteristic Curves	(Figures 11-1 and 11-2)

Table 11-1

ESF CHILLED-WATER PUMPS

(2-1592-P7-001, -002)

Quantity	2
Manufacturer/Model	Goulds
Type	Centrifugal
Capacity (gal/min)	600
Head (ft)	125
Driver	Westinghouse
hp	30
speed (rpm)	1780
Power Supply	460 V/3 phase/60 Hz
Project Class	313
Outline Drawing	2X4AJ05-28
Instruction Book	2X4AJ05-86
Location	Control building el 260 ft
P&ID	2X4DB221

Table 11-2

Test Parameter Table for Pump 2-1592-P7-001

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 4 psig Note 3
Outlet Pressure (Po)	Quarterly	PI-22414	N/A	M&TE required if Po < 67 psig
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-22425	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

Table 11-3

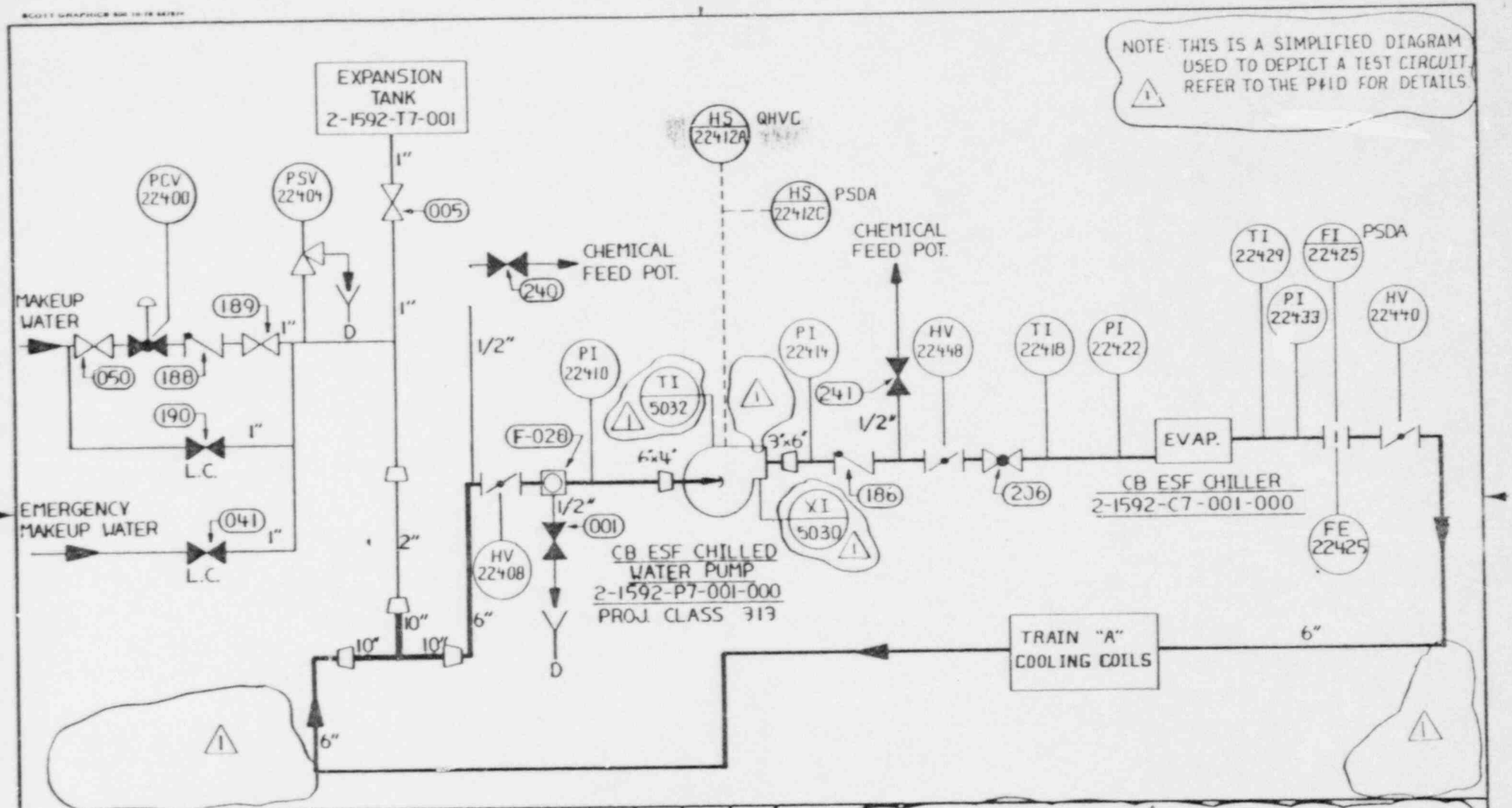
Test Parameter Table for Pump 2-1592-P7-002

Parameter	Test Frequency	Instrument Utilized	Reference Values	Comments
Speed (N)	N/A	N/A	N/A	Speed measurement required only on variable speed motors
Inlet Pressure (Pi)	Quarterly (1)	M&TE	N/A	Pi ≥ 4 psig Note 3
Outlet Pressure (Po)	Quarterly	PI-22415	N/A	M&TE required if Po < 67 psig
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-22426	Qr (2)	
Vibration Amplitude (V)	Quarterly	M&TE	Vr (2)	Note 3
Proper Lubricant Level or Pressure (LL)	Quarterly	N/A	N/A	Observe lubricant level
Bearing Temperature (Tb)	N/A	N/A	N/A	Relief requested - See PR-1

General Comment:

At the discretion of Georgia Power Company instrumentation other than that listed above may be used for measuring inservice test quantities.

Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used



REV.	DATE	BY	CHKD	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	4-5-84	BGS	WJS	ISSUED FOR PST					
1	1-26-88	C.L.	WJS	UPDATED TO REV 11 OF 2X4DB221					

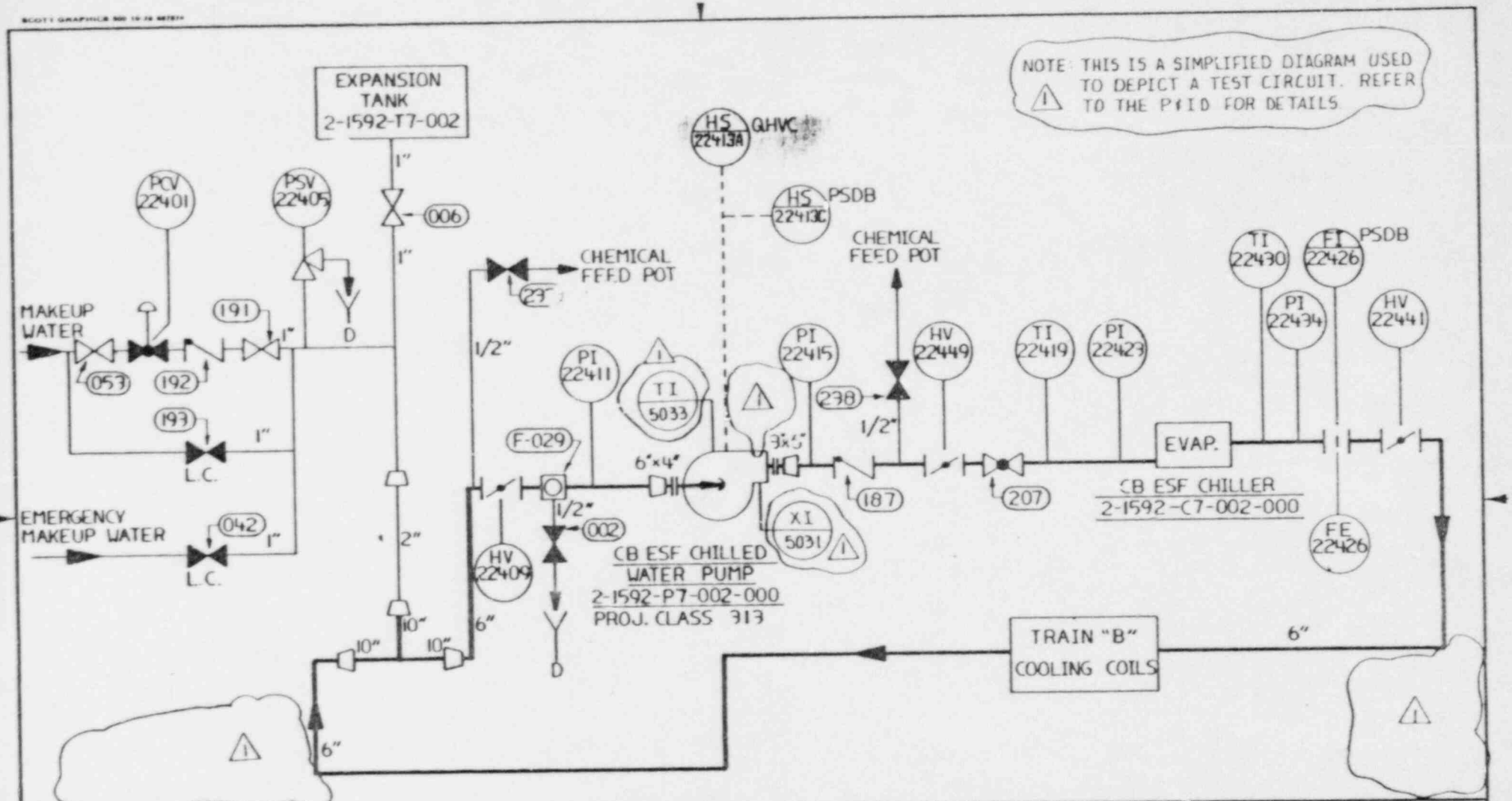
REMARKS

Southern Company Services, Inc. FOR GEORGIA POWER COMPANY

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR CB ESF CHILLED WATER PUMP
TRAIN "A" 2-1592-P7-001-000

DESIGNED FT DRAWN BGS
TYPED CHECKED WJS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-275	1 OF 1	1



REV	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	GKH	[illegible]	ISSUED FOR PST	[illegible]				
1	1-26-88	C.L.	[illegible]	UPDATED TO REV. 11 OF 2X4DB211	[illegible]				

REMARKS

1

Southern Company Services, Inc. FOR GEORGIA POWER COMPANY

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR CB ESF CHILLED WATER PUMP
TRAIN "B" 2-1592-P7-002-000

DESIGNED FT DRAWN BGS
TYPED CHECKED DS
SCALE NONE CONTINUED ON SHEET

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	ISI-D-276	1OF1	1

A-28054

CHARACTERISTIC CURVE
CERTIFIED TEST DATA
GOULDS PUMPS, INC.
SENECA FALLS, N.Y.
J. deLeil 11-19-80
W.E. Mitchell 11/25/80

SPEC. NO. X4AJ05
HVAC CHILLED WATER CIRCULATING PUMP

GOULDS PUMPS, INC.
ENGINEERED PRODUCTS DIV.
SENECA FALLS, N.Y. 13148

CUSTOMER GEORGIA POWER CO.
P. O. NO. PAV-2-77 ITEM NO.
GOULDS SER. NO. N7788834-1
ITEM NO. 2-1592-P7-001-000

MODEL 3196MT SIZE 3x4-13
R. P. M. 1780 IMPLR. DIA. 11-1/4"

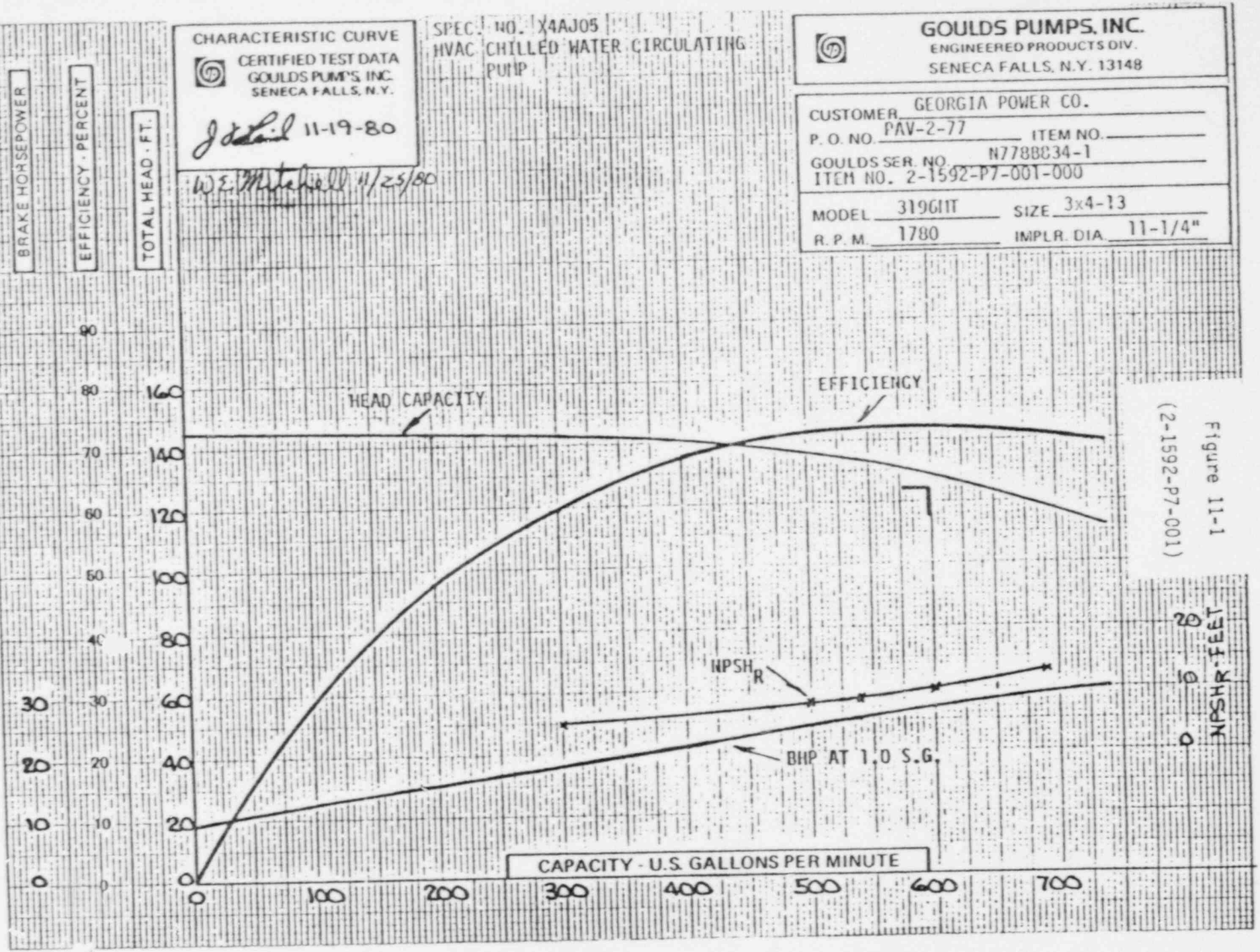


Figure 11-1
(2-1592-P7-001)

704886 MCS147

A-28055

CHARACTERISTIC CURVE
CERTIFIED TEST DATA
GOULDS PUMPS, INC.
SENECA FALLS, N.Y.
J. A. Reid 11-19-80
W.E. Mitchell 11/25/80

SPEC. NO. X4AJ05
AC CHILLED WATER CIRCULATING PUMP

GOULDS PUMPS, INC.
ENGINEERED PRODUCTS DIV.
SENECA FALLS, N.Y. 13148

CUSTOMER GEORGIA POWER CO.
P. O. NO. PAV-2-77 ITEM NO.
GOULDS SER. NO. N7788834-2
TEM NO. 2-1592-P7-002-000
MODEL 3196MT SIZE 3x4-13
R. P. M. 1780 IMPLR. DIA. 11-1/4"

BRAKE HORSEPOWER
EFFICIENCY - PERCENT
TOTAL HEAD - FT.

HEAD CAPACITY
EFFICIENCY
NPSHR
BHP AT 1.0 S.G.

CAPACITY - U.S. GALLONS PER MINUTE

0 100 200 300 400 500 600 700

0 10 20 30 40 50 60 70 80 90
0 20 40 60 80 100 120 140 160

0 10 20 30
0 10 20
NPSHR - FEET

Figure 11-2
(2-1592-P7-002)

704886 MCS147

12.0 VALVES

The following Valve Test List describes the inservice/preservice testing of valves subject to the requirements of Subsection IWV of the ASME Code, Section XI, 1983 Edition through Summer 1983 Addenda. The Valve Test List provides the identification of the valves to be tested, ISI class, valve categories, type, size, and actuator. Also listed are the normal position, fail position, safety position, active or passive, description, test requirements, and frequency of tests. The legends before the Valve Test List describe the alpha coding used in the list.

Relief from the testing requirements of Section XI is requested where full compliance with the requirements of the Code is not practical. In such cases the Valve Test List refers to a specific valve relief request (RR) number for the appropriate valves. The relief request provides specific information which identifies the applicable code requirements, justification for the relief request, and testing to be used as an alternate.

Valves are full-stroke exercised quarterly, during cold shutdown, or during refueling. Valves are full-stroke exercised except when valve design or system conditions do not permit it during quarterly or cold shutdown testing. When full-stroke exercising is not performed quarterly, a basis is provided in the applicable "Relief Request" or "Cold Shutdown Justification". Partial-stroke exercising is performed when practical on valves where full-stroke exercising is not performed. Valves which receive partial-stroke exercising are addressed in the applicable "Relief Request" or "Cold Shutdown Justification".

Each valve, following installation and prior to service, will receive a baseline test. These tests will be conducted under conditions similar to those to be experienced during subsequent inservice tests. Safety and relief valves which will be removed and bench tested during subsequent inservice tests need not be installed prior to the baseline testing.

LEGEND FOR HEADINGS

Valve No.	- Unique valve identification number.
ISI Class	- The classification as determined for Section XI.
Project Class	- The classification as determined by the Vogtle Project.
P&ID (coord.)	- Piping and Instrumentation Diagram on which valve is located. Location on P&ID where valve is shown is indicated as the coordinates (Coord.).
Valve Cat.	- Category of valve as defined in IWV-2100.
Valve Size	- Nominal pipe size diameter of the valve.
Valve Type	- Type of valve (i.e., check, globe, gate)
Act Type	- Type of valve actuator (i.e., motor, air)
Norm. Position	- The normal position of the valve (i.e, open, closed)
Fail Position	- The position to which the valve travels upon a loss of actuator power or air.
Safety Position	- The postion of the valve when it performs its safety-related function.
Act. or Pass.	- Valve function categorized as active (act.) or passive (pass.) as defined in IWV-2100. Active valves are indicated with an "A". Passive valves are indicated with a "P".
Relief Req. or C.S. Just.	- Applicable relief request numbers are indicated with a "RR" prefix. Applicable cold shutdown justification numbers are indicated with a "CS" prefix.

Description	- Brief description of valve function or location.
Notes	- Notes are located behind the valve test list.

LEGEND OF VALVE TYPE

A	- Angle Valve
B	- Butterfly Valve
CK	- Check Valve
D	- Diaphragm Valve
GA	- Gate Valve
GL	- Globe Valve
SR	- Safety or Pressure Relief Valve

LEGEND OF VALVE ACTUATOR TYPE

AO	- Air Operated
ES	- Solenoid
H	- Hydraulic Operated
M	- Manual
MO	- Motor Operated
S	- Self Actuating
EH	- Electrohydraulic

LEGEND OF VALVE POSITIONS: NORMAL, FAIL, OR SAFETY

AI	- As Is
C	- Close
O	- Open
N/A	- Not Applicable
O/C	- Open or Close

LEGEND FOR FREQUENCY OF TEST

Q	- Quarterly
R	- Refueling
T	- Per Table IWV-3510-1
Y	- 2 years
CS	- Cold shutdown
PQRM	- Partial stroke test exercised quarterly. Valve disassembled during refueling and manual stroke test exercised.

RM - Valve disassembled during refueling and manually stroke test exercised.
PQR - Partial stroke test exercised quarterly and full stroke test exercised during refueling.
PQCS - Partial stroke test exercised quarterly and full stroke test exercised during cold shutdown.
PCS - Partial stroke test exercised during cold shutdown.
- - Test deleted, see Relief Request.

LEGEND FOR VALVE CATEGORIES

Category	Description
A	Valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their function.
B	Valves for which seat leakage in the closed position is inconsequential for fulfillment of their function.
C	Valves which are self-actuating in response to some system characteristic.
D	Valves which are actuated by an energy source capable of only one operation, such as rupture discs on explosive-actuated valves. Note: VEGP's design does not include such valves.
AC	Valves which are both Category A and C.

LECEND FOR VALVE TESTING REQUIREMENTS

PI - Position indication verification, every 2 years per IWV-3300.

ET - Exercise test of Category A and B valves, quarterly per IWV-3411. Safety relief valves tested according to Table IWV-3510-1 per IWV-3511. Check valve exercise test, quarterly per IWV-3520.

ST - Stroke time of Category A and B valves, quarterly per IWV-3413.

FSV - Fail-safe verification of Category A and B valves, quarterly per IWV-3415.

LT - Leakage rate test of Category A valves per IWV-3420. Valves subject to type C local leak rate testing as required by Appendix J of 10 CFR 50 are indicated by reference to Note 1. Valves which are RCS pressure isolation valves and leak rate tested per plant Technical Specifications indicated by reference to Note 2.

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 0442A	2	212	2X4DB112 (H-4)	B	1.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-2	Reactor Head Vent to Pressurizer Relief Tank
HV 0442B	2	212	2X4DB112 (G-4)	B	1.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-2	Reactor Head Vent to Pressurizer Relief Tank
HV 8000A	1	111	2X4DB112 (E-7)	B	3.00	GA	MO	O	AI	O/C	A	Y	Q	Q				Pressurizer Power Relief Block Valve
HV 8000B	1	111	2X4DB112 (F-7)	B	3.00	GA	MO	O	AI	O/C	A	Y	Q	Q				Pressurizer Power Relief Block Valve
HV 8028	2	212	2X4DB112 (F-2)	A	3.00	D	AO	O	C	C	A	Y	Q	Q	Q	R		Pressurizer Relief Tank Water Isolation - Penetration No. 63 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	FT	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8033	2	212	2X4DB112 (G-2)	A	1.00	D	AO	C	C	C	A	Y	Q	Q	Q	R		Pressurizer Relief Tank Vent Isolation - Penetration No. 62 (Note 1)
HV 8047	2	212	2X4DB112 (G-3)	A	1.00	D	AO	C	C	C	A	Y	Q	Q	Q	R		Pressurizer Relief Tank Vent Isolation - Penetration No. 62 (Note 1)
HV 8095A	1	111	2X4DB114 (E-5)	B	1.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-2	Reactor Head Vent
HV 8095B	1	111	2X4DB114 (E-5)	B	1.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-2	Reactor Head Vent

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8096A	1	111	2X4DB114 (E-5)	B	1.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-2	Reactor Head Vent
HV 8096B	1	111	2X4DB114 (E-5)	B	1.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-2	Reactor Head Vent
HV 8701A	1	111	2X4DB122 (G-2)	A	12.00	GA	MO	C	AI	O/C	A	Y	CS	CS		R	CS-1 RR-2	Residual Heat Removal (RHR) Recirculation Line From Reactor Coolant System (RCS) Loop 1 (Note 2)
HV 8701B	1	111	2X4DB122 (G-2)	A	12.00	GA	MO	C	AI	O/C	A	Y	CS	CS		R	CS-1 RR-2	RHR Recirculation Line From RCS Loop 1 (Note 2)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8702A	1	111	2X4DB122 (D-2)	A	12.00	GA	MO	C	AI O/C	A	Y	CS	CS		R	CS-1 RR-2	RHR Recirculation Line From RCS Loop 4 (Note 2)
HV 8702B	1	111	2X4DB122 (D-1)	A	12.00	GA	MO	C	AI O/C	A	Y	CS	CS		R	CS-1 RR-2	RHR Recirculation Line From RCS Loop 4 (Note 2)
PSV 8010A	1	111	2X4DB112 (G-7)	C	6.00	SR	S	C	N/A O/C	A		T					Pressurizer Relief
PSV 8010B	1	111	2X4DB112 (G-6)	C	6.00	SR	S	C	N/A O/C	A		T					Pressurizer Relief
PSV 8010C	1	111	2X4DB112 (G-6)	C	6.00	SR	S	C	N/A O/C	A		T					Pressurizer Relief
PV 0455A	1	111	2X4DB112 (E-8)	B	3.00	GL	ES	C	C O/C	A	Y	CS	CS	CS		RR-2 CS-11	Pressurizer Power Relief

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
PV 0456A	1	111	2X4DB112 (F-8)	B	3.00	GL	ES	C	C	O/C	A	Y	CS	CS	CS		RR-2 CS-11	Pressurizer Power Relief
U6 112	2	212	2X4DB112 (F-2)	AC	3.00	CK	S	C	N/A	C	A		R			R	RR-2,4	Containment Isolation - Penetration No. 63 (Note 1)

VEGP Unit No. 2
Valve Test List
System: Nuclear Service Cooling Water - System No. 1202

016 REV 0

Sheet 1 of 4

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
CV 9446	3	313	2X4DB133-1 (B-5)	B	2.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Nuclear Service Cooling Water (NSCW) to Blowdown Isolation
CV 9447	3	313	2X4DB133-2 (A-5)	B	2.00	GL	AO	O	C	C	A	Y	Q	Q	Q			NSCW to Blowdown Isolation
HV 1668A	3	313	2X4DB133-1 (G-5)	B	24.00	B	MO	O	AI	O/C	A	Y	Q	Q				NSCW Isolation to NSCW Tower Spray
HV 1668B	3	313	2X4DB133-1 (F-5)	B	18.00	B	MO	C	AI	O/C	A	Y	Q	Q				NSCW Isolation to NSCW Tower Basin
HV 1669A	3	313	2X4DB133-2 (G-5)	B	24.00	B	MO	O	AI	O/C	A	Y	Q	Q				NSCW Isolation to NSCW Tower Spray

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 1669B	3	313	2X4DB133-2 (F-5)	B	18.00	B	MO	C	AI	O/C	A	Y	Q	Q				NSCW Isolation to NSCW Tower Basin
HV 2134	2	212	2X4DB135-1 (C-5)	B	8.00	B	MO	O	AI	C	A	Y	Q	Q				Reactor Cavity Cooling Coil Supply Isolation
HV 2135	2	212	2X4DB135-2 (D-7)	B	8.00	B	MO	O	AI	C	A	Y	Q	Q				Reactor Cavity Cooling Coil Supply Isolation
HV 2138	2	212	2X4DB135-1 (B-2)	B	8.00	B	MO	O	AI	C	A	Y	Q	Q				Reactor Cavity Cooling Coil Return Isolation
HV 2139	2	212	2X4DB135-2 (D-5)	B	8.00	B	MO	O	AI	C	A	Y	Q	Q				Reactor Cavity Cooling Coil Return Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 025	3	313	2X4DB133-1 (C-8)	C	18.00	CK	S	O	N/A	O/C	A	Q						NSCW Pump Check
U4 027	3	313	2X4DB133-2 (C-8)	C	18.00	CK	S	O	N/A	O/C	A	Q						NSCW Pump Check
U4 031	3	313	2X4DB133-1 (E-6)	C	18.00	CK	S	O	N/A	O/C	A	Q						NSCW Pump Check
U4 033	3	313	2X4DB133-2 (E-6)	C	18.00	CK	S	O	N/A	O/C	A	Q						NSCW Pump Check
U4 035	3	313	2X4DB133-1 (C-4)	C	18.00	CK	S	O	N/A	O/C	A	Q						NSCW Pump Check
U4 037	3	313	2X4DB133-2 (C-5)	C	18.00	CK	S	O	N/A	O/C	A	Q						NSCW Pump Check
U4 463	3	313	2X4DB134 (E-2)	C	8.00	CK	S	O/C	N/A	O	A	Q						NSCW To CB ESF Chiller (Condenser)
U4 465	3	313	2X4DB133-2 (D-1)	C	16.00	CK	S	O/C	N/A	O	A	Q						NSCW To CCW Heat Exchanger

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 469	3	313	2X4DB135-1 (D-7)	C	16.00	CK	S	O/C	N/A	O	A		Q					NSCW To CCW Heat Exchanger
U4 474	3	313	2X4DB135-2 (B-8)	C	8.00	CK	S	O/C	N/A	O	A		Q					NSCW To CNTRL Bldg. ESF Water Chiller

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 030	3	313	2X4DB136 (G-4)	C	14.00	CK	S	O	N/A	O/C	A		Q					Component Cooling Water (CCW) Pump Out Check
U4 032	3	313	2X4DB136 (F-4)	C	14.00	CK	S	O	N/A	O/C	A		Q					CCW Pump Out Check
U4 034	3	313	2X4DB136 (F-4)	C	14.00	CK	S	O	N/A	O/C	A		Q					CCW Pump Out Check
U4 055	3	313	2X4DB136 (D-4)	C	14.00	CK	S	O	N/A	O/C	A		Q					CCW Pump Out Check
U4 057	3	313	2X4DB136 (C-4)	C	14.00	CK	S	O	N/A	O/C	A		Q					CCW Pump Out Check
U4 059	3	313	2X4DB136 (B-4)	C	14.00	CK	S	O	N/A	O/C	A		Q					CCW Pump Out Check

VEGP Unit No. 2
Valve Test List
System: Safety Injection - System No. 1204

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 0943A	3	313	2X4DB120 (E-1)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Accumulator Tank Vent
HV 0943B	3	313	2X4DB120 (D-1)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Accumulator Tank Vent
HV 8801A	2	212	2X4DB119 (F-5)	B	4.00	GA	MO	C	AI	O	A	Y	Q	Q				High Head Safety Injection (HHSI) Isolation
HV 8801B	2	212	2X4DB119 (E-5)	B	4.00	GA	MO	C	AI	O	A	Y	Q	Q				HHSI Isolation
HV 8802A	2	212	2X4DB121 (E-5)	B	4.00	GA	MO	C	AI	O	A	Y	CS	CS			CS-6 RR-2	RCS Hot Leg Loop 1/4 Header Isolation
HV 8802B	2	212	2X4DB121 (D-5)	B	4.00	GA	MO	C	AI	O	A	Y	CS	CS			CS-6 RR-2	RCS Hot Leg Loop 2/3 Header Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8806	2	212	2X4DB121 (E-1)	B	8.00	GA	MO	O	AI	O/C	A	Y	CS	CS			CS-3 RR-2	RWST Isolation
HV 8807A	2	212	2X4DB121 (D-2)	B	6.00	GA	MO	C	AI	O/C	A	Y	Q	Q				Chemical and Volume Control System (CVCS) Connection to Safety Injection System (SIS)
HV 8807B	2	212	2X4DB121 (D-2)	B	6.00	GA	MO	C	AI	O/C	A	Y	Q	Q				CVCS Connection to SIS
HV 8809A	2	212	2X4DB121 (B-5)	B	8.00	GA	MO	O	AI	O/C	A	Y	CS	CS			CS-4 RR-2	RHR Train A to SIS Cold Leg Isolation
HV 8809B	2	212	2X4DB121 (A-5)	B	8.00	GA	MO	O	AI	O/C	A	Y	CS	CS			CS-4 RR-2	RHR Train B to SIS Cold Leg Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
HV 8813	2	212	2X4DB121 (F-5)	B	2.00	GL	MO	O	AI	O/C	A	Y	CS	CS			CS-26 RR-2	SI Miniflow (Note 4)
HV 8814	2	212	2X4DB121 (E-3)	B	1.50	GL	MO	O	AI	O/C	A	Y	Q	Q				SI Miniflow (Note 4)
HV 8821A	2	212	2X4DB121 (D-4)	B	4.00	GA	MO	O	AI	O/C	A	Y	Q	Q				SIS Cold Leg Isolation
HV 8821B	2	212	2X4DB121 (D-4)	B	4.00	GA	MO	O	AI	O/C	A	Y	Q	Q				SIS Cold Leg Isolation
HV 8823	2	212	2X4DB121 (C-8)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Pressure Isolation Valve Leak Rate Test Valve
HV 8824	2	212	2X4DB121 (E-8)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Pressure Isolation Valve Leak Rate Test Valve
HV 8825	2	212	2X4DB121 (D-8)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Pressure Isolation Valve Leak Rate Test Valve

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8835	2	212	2X4DB121 (C-5)	B	4.00	GA	MO	O	AI	O/C	A	Y	CS	CS			CS-5 RR-2	SIS Cold Leg Loop in Header Isolation
HV 8840	2	212	2X4DB121 (B-4)	B	12.00	GA	MO	C	AI	O/C	A	Y	CS	CS			CS-27 RR-2	RHR System Hot Leg Injection Crossover Isolation
HV 8843	2	212	2X4DB119 (D-6)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Containment Isolation Penetration No. 32
HV 8871	2	212	2X4DB121 (H-6)	A	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q	R		Test Isolation - Penetration No. 41 (Note 1)
HV 8875A	2	212	2X4DB120 (H-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8875B	2	212	2X4DB120 (F-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank
HV 8875C	2	212	2X4DB120 (D-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank
HV 8875D	2	212	2X4DB120 (B-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank
HV 8875E	2	212	2X4DB120 (G-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank
HV 8875F	2	212	2X4DB120 (E-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank
HV 8875G	2	212	2X4DB120 (D-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	SI	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8875H	2	212	2X4DB120 (B-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Nitrogen Fill/Vent for Accumulator Tank
HV 8881	2	212	2X4DB121 (G-6)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Containment Isolation Penetration-No. 33
HV 8888	2	212	2X4DB121 (F-5)	A	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q	R		Test Isolation - Penetration No. 41 (Note 1)
HV 8890A	2	212	2X4DB121 (G-8)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Pressure Isolation Valve Leak Rate Test Valve
HV 8890B	2	212	2X4DB121 (E-8)	B	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q			Pressure Isolation Valve Leak Rate Test Valve
HV 8920	2	212	2X4DB121 (D-3)	B	1.50	GL	MO	O	AI	O/C	A	Y	Q	Q				SI Miniflow (Note 4)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8924	2	212	2X4DB116-2 (A-7)	B	6.00	GA	MO	O	AI	O/C	A	Y	Q	Q				RWST Isolation To CVCS
HV 8964	2	212	2X4DB121 (H-5)	A	0.75	GL	AO	O/C	C	C	A	Y	Q	Q	Q	R		Test Isolation - Penetration No. 41 (Note 1)
HV 9017A	2	212	2X4DB131 (F-3)	B	10.00	GA	MO	O	AI	O/C	A	Y	Q	Q				Containment Spray (CS) Pump P6-001 Suction From Refueling Water Storage Tank (RWST)
HV 9017B	2	212	2X4DB131 (E-3)	B	10.00	GA	MO	O	AI	O/C	A	Y	Q	Q				CS Pump P6-002 Suction From RWST
HV 10950	2	212	2X4DB120 (G-3)	A	0.75	GL	ES	O/C	C	C	A	Y	Q	Q	Q	R		Accumulator Tank 1 Local Sample Isolation - Penetration No. 72A (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 10951	2	212	2X4DB120 (E-3)	A	0.75	GL	ES	O/C	C	C	A	Y	Q	Q	Q	R		Accumulator Tank 2 Local Sample Isolation - Penetration No. 73A (Note 1)
HV 10952	2	212	2X4DB120 (C-3)	A	0.75	GL	ES	O/C	C	C	A	Y	Q	Q	Q	R		Accumulator Tank 3 Local Sample Isolation - Penetration No. 72B (Note 1)
HV 10953	2	212	2X4DB120 (A-3)	A	0.75	GL	ES	O/C	C	C	A	Y	Q	Q	Q	R		Accumulator Tank 4 Local Sample Isolation - Penetration No. 73B (Note 1)
HV 10957	2	212	2X4DB121 (G-3)	B	3.00	GA	AO	O/C	C	C	A	Y	Q	Q	Q			Sludge mixing isolation to RWST

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 10958	2	212	2X4DB121 (G-3)	B	3.00	GA	AO	O/C	C	C	A	Y	Q	Q	Q			Sludge mixing isolation to RWST
U4 026	1	111	2X4DB111 (D-5)	C	1.50	CK	S	C	N/A	O	A		R				RR-2,5	HHSI Cold Leg Inj.
U4 027	1	111	2X4DB111 (G-5)	C	1.50	CK	S	C	N/A	O	A		R				RR-2,5	HHSI Cold Leg Inj.
U4 028	1	111	2X4DB111 (G-4)	C	1.50	CK	S	C	N/A	O	A		R				RR-2,5	HHSI Cold Leg Inj.
U4 029	1	111	2X4DB111 (D-4)	C	1.50	CK	S	C	N/A	O	A		R				RR-2,5	HHSI Cold Leg Inj.
U4 093	2	212	2X4DB121 (E-3)	C	1.5	CK	S	C	N/A	O/C	A		Q					SI Miniflow
U4 094	2	212	2X4DB121 (D-3)	C	1.50	CK	S	C	N/A	O/C	A		Q					SI Miniflow
U4 120	1	111	2X4DB121 (F-6)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Hot Leg Loop 1 (Note 2)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 121	1	111	2X4DB121 (F-6)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Hot Leg Loop 4 (Note 2)
U4 122	1	111	2X4DB121 (E-7)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Hot Leg Loop 3 (Note 2)
U4 123	1	111	2X4DB121 (F-7)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Hot Leg Loop 2 (Note 2)
U4 143	1	111	2X4DB121 (B-6)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Cold Leg Check Loop 1 (Note 2)
U4 144	1	111	2X4DB121 (B-7)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Cold Leg Check Loop 2 (Note 2)
U4 145	1	111	2X4DB121 (B-7)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Cold Leg Check Loop 3 (Note 2)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 146	1	111	2X4DB121 (B-8)	AC	2.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Cold Leg Check Loop 4 (Note 2)
U4 159	2	212	2X4DB120 (G-2)	A	0.75	GL	M	C	N/A	C	P					R		SIS Sample Line Containment Isolation Valve - Penetration No. 72A (Note 1)
U4 160	2	212	2X4DB120 (E-2)	A	0.75	GL	M	C	N/A	C	P					R		SIS Sample Line Containment Isolation Valve - Penetration No. 73A (Note 1)
U4 161	2	212	2X4DB120 (C-2)	A	0.75	GL	M	C	N/A	C	P					R		SIS Sample Line Containment Isolation Valve - Penetration No. 72B (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 162	2	212	2X4DB120 (A-2)	A	0.75	GL	M	C	N/A	C	P					R		SIS Sample Line Containment Isolation Valve - Penetration No. 73B (Note 1)
U4 262	2	212	2X4DB121 (G-3)	C	3.00	CK	S	O/C	N/A	C	A		RM				RR-2,22	Sludge Mixing Isolation to RWST
U4 263	2	212	2X4DB121 (G-3)	C	3.00	CK	S	O/C	N/A	C	A		RM				RR-2,22	Sludge Mixing Isolation to RWST
U6 013	1	111	2X4DB119 (E-6)	C	3.00	CK	S	C	N/A	O	A		R				RR-2,5	HHSI Cold Leg Inj.
U6 079	1	111	2X4DB120 (G-8)	AC	10.00	CK	S	C	N/A	O/C	A		RM			R	RR-2,7	SIS Accumulator 76-002 Out Check (Note 2)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 080	1	111	2X4DB120 (E-8)	AC	10.00	CK	S	C	N/A O/C	A		RM			R	RR-2,7	SIS Accumulator V6-003 Out Check (Note 2)
U6 081	1	111	2X4DB120 (C-8)	AC	10.00	CK	S	C	N/A O/C	A		RM			R	RR-2,7	SIS Accumulator V6-004 Out Check (Note 2)
U6 082	1	111	2X4DB120 (A-8)	AC	10.00	CK	S	C	N/A O/C	A		RM			R	RR-2,7	SIS Accumulator V6-005 Out Check (Note 2)
U6 083	1	111	2X4DB111 (B-5)	AC	10.00	CK	S	C	N/A O/C	A		PCS RM			R	RR-2,11	SIS Accumulator/RHR to Cold Leg Loop 1 (Note 2)
U6 084	1	111	2X4DB111 (H-5)	AC	10.00	CK	S	C	N/A O/C	A		PCS RM			R	RR-2,11	SIS Accumulator/RHR to Cold Leg Loop 2 (Note 2)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 085	1	111	2X4DB111 (H-4)	AC	10.00	CK	S	C	N/A O/C	A	PCS RM				R	RR-2,11	SIS Accumulator/RHR to Cold Leg Loop 3 (Note 2)
U6 086	1	111	2X4DB111 (B-4)	AC	10.00	CK	S	C	N/A O/C	A	PCS RM				R	RR-2,11	SIS Accumulator/RHR to Cold Leg Loop 4 (Note 2)
U6 090	2	212	2X4DB121 (E-1)	C	8.00	CK	S	C	N/A O	A	PQR					RR-2,9	SIS Pump Suction from RWST
U6 098	2	212	2X4DB121 (E-4)	C	4.00	CK	S	C	N/A O/C	A	PQR					RR-2,8	SIS Pump P6-003 Discharge
U6 099	2	212	2X4DB121 (D-4)	C	4.00	CK	S	C	N/A O/C	A	PQR					RR-2,8	SIS Pump P6-004 Discharge
U6 124	1	111	2X4DB111 (F-5)	AC	6.00	CK	S	C	N/A O/C	A	R				R	RR-2,6	SIS Injection to Hot Leg Loop 2 (Note 2)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 125	1	111	2X4DB111 (D-3)	AC	6.00	CK	S	C	N/A	O/C	A		CS			R	CS-8 RR-2	SIS Injection to Hot Leg Loop 4 (Note 2)
U6 126	1	111	2X4DB111 (D-6)	AC	6.00	CK	S	C	N/A	O/C	A		CS			R	CS-8 RR-2	SIS Injection to Hot Leg Loop 1 (Note 2)
U6 127	1	111	2X4DB111 (F-4)	AC	6.00	CK	S	C	N/A	O/C	A		R			R	RR-2,6	SIS Injection to Hot Leg Loop 3 (Note 2)
U6 128	1	111	2X4DB121 (F-6)	AC	8.00	CK	S	C	N/A	O/C	A		CS			R	CS-8 RR-2	RHR to Hot Leg Loop 1 (Note 2)
U6 129	1	111	2X4DB121 (F-6)	AC	8.00	CK	S	C	N/A	O/C	A		CS			R	CS-8 RR-2	RHR to Hot Leg Loop 4 (Note 2)
U6 147	1	111	2X4DB121 (B-6)	AC	6.00	CK	S	C	N/A	O/C	A		CS			R	CS-7 RR-2	RHR to Cold Leg Loop 1 (Note 2)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 148	1	111	2X4DB121 (B-6)	AC	6.00	CK	S	C	N/A	O/C	A		CS			R	CS-7 RR-2	RHR to Cold Leg Loop 2 (Note 2)
U6 149	1	111	2X4DB121 (A-7)	AC	6.00	CK	S	C	N/A	O/C	A		CS			R	CS-7 RR-2	RHR to Cold Leg Loop 3 (Note 2)
U6 150	1	111	2X4DB121 (A-7)	AC	6.00	CK	S	C	N/A	O/C	A		CS			R	CS-7 RR-2	RHR to Cold Leg Loop 4 (Note 2)
U6 163	2	212	2X4DB122 (B-8)	C	8.00	CK	S	C	N/A	O	A		R				RR 2,10	RHR to SIS Pump Suction

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
FV 0610	2	212	2X4DB122 (H-5)	B	3.00	GA	MO	O	AI O/C	A	Y	Q	Q				RHR Pump P6-001 Miniflow
FV 0611	2	212	2X4DB122 (E-5)	B	3.00	GA	MO	O	AI O/C	A	Y	Q	Q				RHR Pump P6-002 Miniflow
HV 8716A	2	212	2X4DB122 (F-7)	B	9.00	GA	MO	O	AI O/C	A	Y	Q	Q				RHR Train A Hot Leg Isolation
HV 8716B	2	212	2X4DB122 (D-7)	B	8.00	GA	MO	O	AI O/C	A	Y	Q	Q				RHR Train B Hot Leg Isolation
HV 8804A	2	212	2X4DB122 (F-8)	B	8.00	GA	MO	C	AI O/C	A	Y	Q	Q				RHR Heat Exchanger (HX) Train A to CVCS Charge Pump Suction

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. of Pass	Tests and Freq. I	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
HV 8804B	2	212	2X4DB122 (B-8)	B	8.00	GA	MO	C	AI	O/C	A	Y	Q	Q				RHR HX Train B to Safety Injection Pump Suction
HV 8811A	2	212	2X4DB122 (B-3)	B	14.00	GA	MO	C	AI	O/C	A	Y	Q	Q				Containment Sump Isolation
HV 8811B	2	212	2X4DB122 (B-3)	B	14.00	GA	MO	C	AI	O/C	A	Y	Q	Q				Containment Sump Isolation
HV 8812A	2	212	2X4DB122 (E-4)	B	12.00	GA	MO	O	AI	O/C	A	Y	Q	Q				RHR Pump P6-001 Inlet From RWST
HV 8812B	2	212	2X4DB122 (C-4)	B	12.00	GA	MO	O	AI	O/C	A	Y	Q	Q				RHR Pump P6-002 Inlet From RWST

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
PSV 8708A	2	212	2X4DB122 (H-3)	C	3.00	SR	S	C	N/A O/C	A		T					RHR Pump P6-001 Inlet
PSV 8708B	2	212	2X4DB122 (E-3)	C	3.00	SR	S	C	N/A O/C	A		T					RHR Pump P6-002 Inlet
U4 122	2	212	2X4DB122 (C-3)	C	14.00	CK	S	C	N/A O/C	A		Q					RHR Sump Suction (Note 3)
U4 123	2	212	2X4DB122 (B-3)	C	14.00	CK	S	C	N/A O/C	A		Q					RHR Sump Suction (Note 3)
U6 001	2	212	2X4DB122 (E-4)	C	12.00	CK	S	C	N/A O/C	A		PQCS Q				CS-36 RR-2	RWST to RHR Pump Suction

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 002	2	212	2X4DB122 (C-4)	C	12.00	CK	S	C	N/A	O/C	A		PQCS Q				CS-36 RR-2	RWST to RHR Pump Suction
U6 009	2	212	2X4DB122 (G-5)	C	8.00	CK	S	C	N/A	O	A		PQCS				CS-37 RR-2	RHR Pump P6-001 Discharge Check
U6 010	2	212	2X4DB122 (D-5)	C	8.00	CK	S	C	N/A	O	A		PQCS				CS-37 RR-2	RHR Pump P6-002 Discharge Check

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Position	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8994A	3	313	2X4DB131 (D-4)	B	3.00	GA	MO	C	AI	O	A	Y	CS	CS			CS-28 RR-2	Spray Additive Tank Outlet Isolation
HV 8994B	3	313	2X4DB131 (D-3)	B	3.00	GA	MO	C	AI	O	A	Y	CS	CS			CS-2R RR-2	Spray Additive Tank Outlet Isolation
HV 9001A	2	212	2X4DB131 (G-6)	A	8.00	GA	MO	C	AI	O	A	Y	Q	Q		R		CS Pump P6-001 to Spray Header (Note 1)
HV 9001B	2	212	2X4DB131 (C-6)	A	8.00	GA	MO	C	AI	O	A	Y	Q	Q		R		CS Pump P6-002 to Spray Header (Note 1)
HV 9002A	2	212	2X4DB131 (B-6)	B	10.00	GA	MO	C	AI	O	A	Y	Q	Q				CS Pump P6-001 Suction

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 9002B	2	212	2X4DB131 (C-6)	B	10.00	GA	MO	C	AI	O	A	Y	Q	Q				CS Pump P6-002 Suction
HV 9003A	2	212	2X4DB131 (B-5)	B	10.00	GA	MO	C	AI	O	A	Y	Q	Q				CS Suction Isolation
HV 9003B	2	212	2X4DB131 (C-5)	B	10.00	GA	MO	C	AI	O	A	Y	Q	Q				CS Suction Isolation
U6 001	2	212	2X4DB131 (G-?)	C	10.00	CK	S	C	N/A	O/C	A		PQRM				RR-2,13	RWST to CS Pump Check
U6 008	2	212	2X4DB131 (D-3)	C	10.00	CK	S	C	N/A	O/C	A		PQRM				RR-2,13	RWST to CS Pump Check
U6 015	2	212	2X4DB131 (G-7)	AC	8.00	CK	S	C	N/A	O/C	A		RM			R	RR-2,14	CS Inboard Containment Check Valve (Note 1)
U6 016	2	212	2X4DB131 (C-7)	AC	8.00	CK	S	C	N/A	O/C	A		RM			R	RR-2,14	CS Inboard Containment Check Valve (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 037	2	212	2X4DB131 (F-5)	C	3.00	CK	S	C	N/A	O/C	A		Q					Spray Additive Tank to Train A NaOH Eductor Check
U6 038	2	212	2X4DB131 (E-5)	C	3.00	CK	S	C	N/A	O/C	A		Q					Spray Additive Tank to Train B NaOH Eductor Check
*	3	313	2X4DB131 (F-4)	C	1.00	SR	S	C	N/A	O	A		T					Vacuum Breakers

*Spray additive tank vacuum breakers (2)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Position	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 0190A	2	212	2X4DB116-2 (G-7)	B	1.00	GL	ES	C	C	O	A	Y	Q	Q	-		RR-15	Centrifugal Charging Pump (CCP) to Regenerative HX
HV 0190B	2	212	2X4DB116-2 (B-7)	B	1.00	GL	ES	C	C	O	A	Y	Q	Q	-		RR-15	Centrifugal Charging Pump (CCP) to Regenerative HX
HV 8100	2	212	2X4DB114 (D-2)	A	2.00	GL	MO	O	AI	C	A	Y	CS	CS		R	CS-9 RR-2	Reactor Coolant Pump Seal Water Isolation - Penetration No. 49 (Note 1)
HV 8104	2	212	2X4DB116-1 (D-1)	B	2.00	GL	MO	C	AI	O/C	A	Y	Q	Q				Boric Acid to Charging Pumps

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8105	2	212	2X4DB116-1 (C-8)	A	3.00	GA	MO	O	AI	O/C	A	Y	CS	CS		R	CS-10 RR-2	Charge Pump to RCS Isolation - Penetration No. 50 (Note 1)
HV 8106	2	212	2X4DB116-1 (C-7)	B	3.00	GA	MO	O	AI	C	A	Y	CS	CS			CS-10 RR-2	Charge Pump to RCS Isolation
HV 8110	2	212	2X4DB116-2 (E-8)	B	2.00	GL	MO	O	AI	C	A	Y	Q	Q				Charge Pump Miniflow Isolation
HV 8111A	2	212	2X4DB116-2 (F-6)	B	2.00	GL	MO	O	AI	C	A	Y	Q	Q				Charge Pump Miniflow Isolation
HV 8111B	2	212	2X4DB116-2 (D-6)	B	2.00	GL	MO	O	AI	C	A	Y	Q	Q				Charge Pump Miniflow Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8112	2	212	2X4DB114 (D-3)	A	2.00	GL	MO	O	AI	C	A	Y	CS	CS		R	CS-9 RR-2	Reactor Coolant Pump Seal Water Isolation - Penetration No. 49 (Note 1)
HV 8116	2	212	2X4DB116-2 (G-8)	B	1.00	GL	MO	C	AI	O	A	Y	Q	Q				CCP to Regenerative HX
HV 8152	2	212	2X4DB114 (G-2)	A	3.00	GL	AO	O	C	C	A	Y	CS	CS	CS	R	CS-12 RR-2	Letdown Isolation Outside - Penetration No. 48 (Note 1)
HV 8160	2	212	2X4DB114 (G-3)	A	3.00	GL	AO	O	C	C	A	Y	CS	CS	CS	R	CS-12 RR-2	CVCS Letdown Isolation - Penetration No. 48 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8439	2	212	2X4DB116-1 (D-3)	B	1.00	GL	ES	C	C	O/C	A	Y	Q	Q	Q			Boric Acid to Charging Pumps
HV 8508A	2	212	2X4DB116-2 (G-6)	B	2.00	GL	MO	C	AI	O/C	A	Y	CS	CS			CS-38 RR-2	Pump Mini-flow to RWST
HV 8508B	2	212	2X4DB116-2 (D-5)	B	2.00	GL	MO	C	AI	O/C	A	Y	CS	CS			CS-38 RR-2	Pump Mini-flow to RWST
HV 15214	2	212	2X4DB114 (G-4)	B	3.00	GL	AO	O	C	C	A	Y	CS	CS	CS		CS-12 RR-2	RCS Letdown Isolation
LV 0112B	2	212	2X4DB116-1 (F-4)	B	4.00	GA	MO	O	AI	C	A	Y	CS	CS			CS-13 RR-2	VCT Isolation
LV 0112C	2	212	2X4DB116-1 (E-4)	B	4.00	GA	MO	O	AI	C	A	Y	CS	CS			CS-13 RR-2	VCT Isolation
LV 0112D	2	212	2X4DB116-2 (E-2)	B	8.00	GA	MO	C	AI	O/C	A	Y	CS	CS			CS-14 RR-2	RWST Isolation
LV 0112E	2	212	2X4DB116-2 (D-2)	B	8.00	GA	MO	C	AI	O/C	A	Y	CS	CS			CS-14 RR-2	RWST Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Positions Norm	Positions Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
PSV 8510A	2	212	2X4DB116-2 (F-5)	C	1.50	SR	S	C	N/A O/C	A		T					Miniflow Relief to RWST
PSV 8510B	2	212	2X4DB116-2 (E-5)	C	1.50	SR	S	C	N/A O/C	A		T					Miniflow Relief to RWST
U4 021	2	212	2X4DB114 (D-3)	AC	0.75	CK	S	C	N/A C	P					R		CVCS Seal Backflush Check - Penetration No. 49 (Note 1)
U4 140	2	212	2X4DB116-2 (G-6)	C	2.00	CK	S	C	N/A O	A		Q					CCP Miniflow
U4 147	2	212	2X4DB116-2 (C-6)	C	2.00	CK	S	C	N/A O	A		Q					CCP Miniflow
U4 185	2	212	2X4DB116-1 (D-1)	C	2.00	CK	S	C	N/A O	A		CS				CS-29 RR-2	Boric Acid to Charging Pumps

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 284	3	313	2X4DB118 (9-5)	C	2.00	CK	S	C	N/A O	A	PQCS					CS-34 RR-2	Boric Acid Transfer Pump Discharge
U4 299	3	313	2X4DB118 (B-5)	C	2.00	CK	S	C	N/A O	A	PQCS					CS-34 RR-2	Boric Acid Transfer Pump Discharge
U4 499	2	212	2X4DB116-1 (D-3)	C	1.00	CK	S	C	N/A O	A	CS					CS-29 RR-2	Boric Acid to Charging Pumps
U6 032	2	212	2X4DB114 (F-3)	AC	3.00	CK	S	O	N/A O/C	A	R Q				R	RR-2,16	CVCS to Regenerative HX - Penetration N. 50 (Note 1)
U6 142	2	212	2X4DB116-2 (G-6)	C	4.00	CK	S	C	N/A O/C	A	PQR					RR-2,12	CVCS Pump Out Check
U6 149	2	212	2X4DB116-2 (C-6)	C	4.00	CK	S	C	N/A O/C	A	PQR					RR-2,12	CVCS Pump Out Check

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U6 189	2	212	2X4DB116-2 (E-2)	C	8.00	CK	S	C	N/A O	A	PCS R					RR-2,17	RWST to CVCS Check
U6 436	2	212	2X4DB122 (F-8)	C	8.00	CK	S	C	N/A O	A	PCS R					RR-2,17	CVCS Charge Pump Suction From RHR

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Cat	Valve Size (in.)	Valve Type	Act. Type	Position Norm	Position Fail Safety	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 3502	2	212	2X4DB140 (E-7)	A	0.50	GL	AO	O	C	C	A	Y	Q	Q	Q	R		Hot Leg Sample Line - Penetration No. 24 (Note 1)
HV 3507	2	212	2X4DB140 (G-8)	A	0.50	GL	AO	C	C	C	A	Y	Q	Q	Q	R		Pressurizer Liquid Space - Penetration No. 67B (Note 1)
HV 3508	2	212	2X4DB6140 (G-7)	A	0.50	GL	AO	C	C	C	A	Y	Q	Q	Q	R		Pressurizer Liquid Space - Penetration No. 67B (Note 1)
HV 3513	2	212	2X4DB140 (F-8)	A	0.50	GL	AO	C	C	C	A	Y	Q	Q	Q	R		Pressurizer Steam Space - Penetration No. 67A (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
HV 3514	2	212	2X4DB140 (F-7)	A	0.50	GL	AO	C	C	C	A	Y	Q	Q	Q	R		Pressurizer Steam Space - Penetration No. 67A (Note 1)
HV 3548	2	212	2X4DB140 (D-8)	A	0.50	GL	MO	O	C	C	A	Y	Q	Q	Q	R		Reactor Hot Leg Sample Line - Penetration No. 24 (Note 1)
HV 8220	2	212	2X4DB140 (D-7)	A	0.50	GL	ES	C	C	C	A	Y	Q	Q	Q	R		Post-Accident Sampling - Penetration No. 24 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. EI	Tests and Freq. SI	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U6 050	2	212	2X4DB130 (G-8)	A	3.00	D	M	C	N/A	C	P					R		Containment Isolation Valve - Penetration No. 15 (Note 1)
U6 051	2	212	2X4DB130 (H-8)	A	3.00	D	M	C	N/A	C	P					R		Containment Isolation Valve - Penetration No. 15 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 0780	2	212	2X4DB143 (G-5)	A	3.00	GA	AO	O	C	C	A	Y	Q	Q	Q	R		Normal Containment Sump Pump Discharge - Penetration No. 78 (Note 1)
HV 0781	2	212	2X4DB143 (G-6)	A	3.00	GA	AO	O	C	C	A	Y	Q	Q	Q	R		Normal Containment Sump Pump Discharge - Penetration No. 78 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 1974	2	212	2X4DB138-2 (G-7)	A	10.00	B	MO	O	AI	C	A	Y	CS	CS		R	CS-15 RR-2	Auxiliary Component Cooling Water (ACCW) Return - Penetration No. 29 (Note 1)
HV 1975	2	212	2X4DB138-1 (B-2)	A	10.00	B	MO	O	AI	C	A	Y	CS	CS		R	CS-15 RR-2	ACCW Return - Penetration No. 29 (Note 1)
HV 1978	2	212	2X4DB138-2 (H-7)	A	10.00	B	MO	O	AI	C	A	Y	CS	CS		R	CS-15 RR-2	ACCW Supply - Penetration No. 28 (Note 1)
HV 1979	2	212	2X4DB138-1 (D-3)	A	10.00	B	MO	O	AI	C	A	Y	CS	CS		R	CS-15 RR-2	ACCW Supply - Penetration No. 28 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2041	3	313	2X4DB138-2 (F-7)	B	3.00	GA	MO	O	AI	C	A	Y	CS	CS			CS-30 RR-2	Thermal Barrier Isolation
HV 19051	3	313	2X4DB138-2 (E-7)	B	2.50	GA	MO	O	AI	C	A	Y	CS	CS			CS-30 RR-2	Thermal Barrier Isolation
HV 19053	3	313	2X4DB138-2 (C-7)	B	2.50	GA	MO	O	AI	C	A	Y	CS	CS			CS-30 RR-2	Thermal Barrier Isolation
HV 19055	3	313	2X4DB138-2 (B-2)	B	2.50	GA	MO	O	AI	C	A	Y	CS	CS			CS-30 RR-2	Thermal Barrier Isolation
HV 19057	3	313	2X4DB138-2 (F-2)	B	2.50	GA	MO	O	AI	C	A	Y	CS	CS			CS-30 RR-2	Thermal Barrier Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 084	3	313	2X4DB138-2 (E-6)	C	2.50	CK	S	O	N/A	C	A		R				RR-2,18	ACCW to RCP Thermal Barrier
U4 085	3	313	2X4DB138-2 (C-6)	C	2.50	CK	S	O	N/A	C	A		R				RR-2,18	ACCW to RCP Thermal Barrier
U4 086	3	313	2X4DB138-2 (B-3)	C	2.50	CK	S	O	N/A	C	A		R				RR-2,18	ACCW to RCP Thermal Barrier
U4 087	3	313	2X4DB138-2 (F-3)	C	2.50	CK	S	O	N/A	C	A		R				RR-2,18	ACCW to RCP Thermal Barrier
U4 113	2	212	2X4DB138-2 (G-7)	A/C	0.75	CK	S	C	N/A	C	P					R		ACCW Return - Penetration No. 29 (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	SI	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 3006A	2	212	2X4DB159-2 (H-6)	B	29.50	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	Main Steam Isolation Valve (MSIV)
HV 3006B	2	212	2X4DB159-2 (H-7)	B	28.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 3009	2	212	2X4DB159-2 (G-3)	B	4.00	GA	MO	O	AI	O/C	A	Y	Q	Q				Steam Generator Outlet to Auxiliary Turbine (Note 4)
HV 3016A	2	212	2X4DB159-2 (F-6)	B	29.50	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 3016B	2	212	2X4DB159-2 (F-7)	B	28.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 3019	2	212	2X4DB159-2 (E-2)	B	4.00	GA	MO	O	AI	O/C	A	Y	Q	Q				Steam Generator Outlet to Auxiliary Turbine (Note 4)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	Size (in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 3026A	2	212	2X4DB159-2 (D-6)	B	29.50	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 3026B	2	212	2X4DB159-2 (D-7)	B	28.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 3036A	2	212	2X4DB159-2 (B-6)	B	29.50	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 3036B	2	212	2X4DB159-2 (B-7)	B	28.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-16 RR-2	MSIV
HV 7603A	2	212	2X4DB159-3 (F-2)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Steam Generator 86-001 Blowdown Isolation
HV 7603B	2	212	2X4DB159-3 (B-2)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Steam Generator 86-002 Blowdown Isolation
HV 7603C	2	212	2X4DG159-1 (F-2)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Steam Generator 86-003 Blowdown Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 7603D	2	212	2X4DB159-1 (B-2)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Steam Generator B6-004 Blowdown Isolation
HV 9451	2	212	2X4DB159-3 (E-3)	B	0.50	GL	ES	O	C	C	A	Y	Q	Q	Q			Steam Generator B6-001 Blowdown Sample
HV 9452	2	212	2X4DB159-3 (B-3)	B	0.50	GL	ES	O	C	C	A	Y	Q	Q	Q			Steam Generator B6-002 Blowdown Sample
HV 9453	2	212	2X4DB159-1 (E-3)	B	0.50	GL	ES	O	C	C	A	Y	Q	Q	Q			Steam Generator B6-003 Blowdown Sample
HV 9454	2	212	2X4DB159-1 (B-3)	B	0.50	GL	ES	O	C	C	A	Y	Q	Q	Q			Steam Generator B6-004 Blowdown Sample

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 13005A	2	212	2X4DB159-2 (G-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13005B	2	212	2X4DB159-2 (G-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13006A	2	212	2X4DB159-2 (A-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13006B	2	212	2X4DB159-2 (A-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13007A	2	212	2X4DB159-2 (E-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13007B	2	212	2X4DB159-2 (E-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13008A	2	212	2X4DB159-2 (C-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve
HV 13008B	2	212	2X4DB159-2 (C-6)	B	4.00	GL	AO	O	C	C	A	Y	Q	Q	Q			MSIV Bypass Valve

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	EI	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 15212A	2	212	2X4DB159-3 (F-4)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15212B	2	212	2X4DB159-3 (B-4)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15212C	2	212	2X4DB159-1 (F-3)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15212D	2	212	2X4DB159-1 (B-3)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15216A	2	212	2X4DB159-3 (F-3)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15216B	2	212	2X4DB159-3 (B-3)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15216C	2	212	2X4DB159-1 (F-3)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation
HV 15216D	2	212	2X4DB159-1 (B-3)	B	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q			Blowdown Isolation

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. SI	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
PSV 3001	2	212	2X4DB159-2 (H-3)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3002	2	212	2X4DB159-2 (H-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3003	2	212	2X4DB159-2 (H-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3004	2	212	2X4DB159-2 (H-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3005	2	212	2X4DB159-2 (H-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3011	2	212	2X4DB159-2 (F-3)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3012	2	212	2X4DB159-2 (F-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
PSV 3013	2	212	2X4DB159-2 (F-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3014	2	212	2X4DB159-2 (F-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3015	2	212	2X4DB159-2 (F-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3021	2	212	2X4DB159-2 (D-3)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3022	2	212	2X4DB159-2 (D-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3023	2	212	2X4DB159-2 (D-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3024	2	212	2X4DB159-2 (D-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3025	2	212	2X4DB159-2 (D-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
PSV 3031	2	212	2X4DB159-2 (B-3)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3032	2	212	2X4DB159-2 (B-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3033	2	212	2X4DB159-2 (B-4)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3034	2	212	2X4DB159-2 (B-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PSV 3035	2	212	2X4DB159-2 (B-5)	C	6.00	SR	S	C	N/A	O/C	A		T					Main Steam Relief
PV 3000	2	212	2X4DB159-2 (H-2)	B	10.00	GL	EH	C	C	O/C	A	Y	CS	CS	CS		CS-17 RR-2	Main Steam Power-Operated Relief Valve
PV 3010	2	212	2X4DB159-2 (F-2)	B	10.00	GL	EH	C	C	O/C	A	Y	CS	CS	CS		CS-17 RR-2	Main Steam Power-Operated Relief Valve

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
PV 3020	2	212	2X4DB159-2 (D-2)	B	10.00	GL	EH	C	C	O/C	A	Y	CS	CS	CS		CS-17 RR-2	Main Steam Power-Operated Relief Valve
PV 3030	2	212	2X4DB159-2 (C-2)	B	10.00	GL	EH	C	C	O/C	A	Y	CS	CS	CS		CS-17 RR-2	Main Steam Power-Operated Relief Valve
U4 006	3	313	2X4DB159-2 (G-4)	C	4.00	CK	S	C	N/A	O	A		PQCS				CS-31 RR-2	Auxiliary Feedwater (AFW) Pump Check
U4 008	3	313	2X4DB159-2 (E-4)	C	4.00	CK	S	C	N/A	O/C	A		PQCS RM				RR-23, 2	AFW Pump Check
U4 404	3	313	2X4DB159-2 (E-4)	C	4.00	CK	S	C	N/A	O/C	A		PQCS				CS-31 RR-2	AFW Pump Check

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
FV 5154	3	313	2X4DB161-2 (C-5)	B	2.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW Pump Mini Flow
FV 5155	3	313	2X4DB161-2 (B-5)	B	2.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW Pump Mini Flow
HV 5106	3	313	2X4DB161-3 (G-5)	B	4.00	GA	MO	C	AI	O	A	Y	Q	Q				AFW Pump Turbine Valve
HV 5113	3	313	2X4DB161-2 (E-8)	B	10.00	B	MO	C	AI	O	A	Y	Q	Q				Condensate Storage Tank (CST) V4-002 to Pump P4-001
HV 5118	3	313	2X4DB161-2 (C-8)	B	8.00	B	MO	C	AI	O	A	Y	Q	Q				CST V4-002 to Pump P4-002
HV 5119	3	313	2X4DB161-2 (A-8)	B	8.00	B	MO	C	AI	O	A	Y	Q	Q				CST V4-002 to Pump P4-003

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 5120	2	212	2X4DB161-2 (H-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-001 Isolation to Steam Generator B6-004
HV 5122	2	212	2X4DB161-2 (G-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-001 Isolation to Steam Generator B6-001
HV 5125	2	212	2X4DB161-2 (F-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-001 Isolation to Steam Generator B6-002
HV 5127	2	212	2X4DB161-2 (E-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-001 Isolation to Steam Generator B6-003
HV 5132	2	212	2X4DB161-2 (D-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-002 Isolation to Steam Generator B6-002

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 5134	2	212	2X4DB161-2 (C-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-002 Isolation to Steam Generator B6-003
HV 5137	2	212	2X4DB161-2 (B-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-003 Isolation to Steam Generator B6-004
HV 5139	2	212	2X4DB161-2 (B-3)	B	4.00	GL	MO	O	AI	O/C	A	Y	Q	Q				AFW P4-003 Isolation to Steam Generator B6-001
HV 15196	2	212	2X4DB168-3 (E-2)	B	6.00	GA	AO	O	C	C	A	Y	CS	CS	CS		CS-18 RR-2	Feedwater Bypass Isolation to Steam Generator B6-001

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 15197	2	212	2X4DB168-3 (E-4)	B	6.00	GA	AO	O	C	C	A	Y	CS	CS	CS		CS-18 RR-2	Feedwater Bypass Isolation to Steam Generator B6-002
HV 15198	2	212	2X4DB168-3 (E-8)	B	6.00	GA	AO	O	C	C	A	Y	CS	CS	CS		CS-18 RR-2	Feedwater Bypass Isolation to Steam Generator B6-003
HV 15199	2	212	2X4DB168-3 (E-6)	B	6.00	GA	AO	O	C	C	A	Y	CS	CS	CS		CS-18 RR-2	Feedwater Bypass Isolation to Steam Generator B6-004
U4 001	3	313	2X4DB161-2 (B-5)	C	4.00	CK	S	C	N/A	O	A		CS				CS-19 RR-2	AFW Pump Out
U4 002	3	313	2X4DB161-2 (D-5)	C	4.00	CK	S	C	N/A	O	A		CS				CS-19 RR-2	AFW Pump Out
U4 013	3	313	2X4DB161-2 (F-7)	C	10.00	CK	S	C	N/A	O	A		PQCS				CS-24 RR-2	AFW Pump Suction
U4 014	3	313	2X4DB161-2 (F-5)	C	6.00	CK	S	C	N/A	O	A		CS				CS-19 RR-2	AFW Pump Out

Valve Number	Class ISI	Class Proj	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 017	2	212	2X4DB161-2 (H-3)	C	4.00	CK	S	C	N/A O	A		CS				CS-19 RR-2	AFW Pump Isolation
U4 020	2	212	2X4DB161-2 (G-3)	C	4.00	CK	S	C	N/A O	A		CS				CS-19 RR-2	AFW Pump Isolation
U4 023	2	212	2X4DB161-2 (F-3)	C	4.00	CK	S	C	N/A O	A		CS				CS-19 RR-2	AFW Pump Isolation
U4 026	2	212	2X4DB161-2 (E-3)	C	4.00	CK	S	C	N/A O	A		CS				CS-19 RR-2	AFW Pump Isolation
U4 033	3	313	2X4DB161-2 (B-7)	C	8.00	CK	S	C	N/A O	A		PQCS				CS-24 RR-2	AFW Pump Suction
U4 037	2	212	2X4DB161-2 (D-3)	C	4.00	CK	S	C	N/A O	A		CS				CS-19 RR-2	AFW Pump Isolation
U4 040	2	212	2X4DB161-2 (C-3)	C	4.00	CK	S	C	N/A O	A		CS				CS-19 RR-2	AFW Pump Isolation

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	ET	St	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 043	2	212	2X4DB161-2 (B-3)	C	4.00	CK	S	C	N/A O	A	CS					CS-19 RR-2	AFW Pump Isolation
U4 046	2	212	2X4DB161-2 (B-3)	C	4.00	CK	S	C	N/A O	A	CS					CS-19 RR-2	AFW Pump Isolation
U4 051	3	313	2X4DB161-2 (E-7)	C	10.00	CK	S	C	N/A O	A	PQCS					CS-24 RR-2	AFW Pump Suction
U4 052	3	313	2X4DB161-2 (A-7)	C	8.00	CK	S	C	N/A O	A	PQCS					CS-24 RR-2	AFW Pump Suction
U4 058	3	313	2X4DB161-2 (D-7)	C	8.00	CK	S	C	N/A O	A	PQCS					CS-24 RR-2	AFW Pump Suction
U4 061	3	313	2X4DB161-2 (C-7)	C	8.00	CK	S	C	N/A O	A	PQCS					CS-24 RR-2	AFW Pump Suction
U4 113	2	212	2X4DB168-3 (F-2)	C	4.00	CK	S	C	N/A O/C	A	CS Q					CS-32 RR-2	AFW to Steam Generator B6-001

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 114	2	212	2X4DB168-3 (F-4)	C	4.00	CK	S	C	N/A O/C	A		CS Q				CS-32 RR-2	AFW to Steam Generator B6-002
U4 115	2	212	2X4DB168-3 (F-8)	C	4.00	CK	S	C	N/A O/C	A		CS Q				CS-32 RR-2	AFW to Steam Generator B6-003
U4 116	2	212	2X4DB168-3 (F-6)	C	4.00	CK	S	C	N/A O/C	A		CS Q				CS-32 RR-2	AFW to Steam Generator B6-004
U4 117	2	212	2X4DB168-3 (F-2)	C	6.00	CK	S	O	N/A C	A		RM				RR-19 RR-2	Feedwater Bypass to Steam Generator B6-001
U4 118	2	212	2X4DB168-3 (F-4)	C	6.00	CK	S	O	N/A C	A		RM				RR-19 RR-2	Feedwater Bypass to Steam Generator B6-002
U4 119	2	212	2X4DB168-3 (F-6)	C	6.00	CK	S	O	N/A C	A		RM				RR-19 RR-2	Feedwater Bypass to Steam Generator B6-004

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 120	2	212	2X4DB168-3 (F-8)	C	6.00	CK	S	O	N/A C	A		RM				RR-19 RR-2	Feedwater Bypass to Steam Generator B6-003
U4 125	2	212	2X4DB168-3 (G-2)	C	6.00	CK	S	O	N/A O	A		CS				CS-33 RR-2	Feedwater Bypass to Steam Generator B6-001
U4 126	2	212	2X4DB168-3 (G-4)	C	6.00	CK	S	O	N/A O	A		CS				CS-33 RR-2	Feedwater Bypass to Steam Generator B6-002
U4 127	2	212	2X4DB168-3 (G-6)	C	6.00	CK	S	O	N/A O	A		CS				CS-33 RR-2	Feedwater Bypass to Steam Generator B6-004
U4 128	2	212	2X4DB168-3 (G-8)	C	6.00	CK	S	O	N/A O	A		CS				CS-33 RR-2	Feedwater Bypass to Steam Generator B6-003

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety		Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 5227	2	212	2X4DB168-3 (F-1)	B	16.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-20 RR-2	Steam Generator B6-001 Feedwater Isolation
HV 5228	2	212	2X4DB168-3 (F-3)	B	16.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-20 RR-2	Steam Generator B6-002 Feedwater Isolation
HV 5229	2	212	2X4DB168-3 (F-7)	B	16.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-20 RR-2	Steam Generator B6-003 Feedwater Isolation
HV 5230	2	212	2X4DB168-3 (F-5)	B	16.00	GA	EH	O	C	C	A	Y	PQCS	CS	CS		CS-20 RR-2	Steam Generator B6-004 Feedwater Isolation
U4 071	2	212	2X4DB168-3 (G-5)	C	16.00	CK	S	O	N/A	C	A		RM				RR-2,20	Feedwater Check

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 073	2	212	2X4DB168-3 (G-1)	C	16.00	CK	S	O	N/A	C	A		RM				RR-2,20	Feedwater Check
U4 075	2	212	2X4DB168-3 (G-7)	C	16.00	CK	S	O	N/A	C	A		RM				RR-2,20	Feedwater Check
U4 077	2	212	2X4DB168-3 (G-3)	C	16.00	CK	S	O	N/A	C	A		RM				RR-2,20	Feedwater Check

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 5278	2	212	2X4DB159-3 (G-1)	A	0.50	GL	AO	C	C	C	P					R		Wet Layup Chemical Additive Steam Generator B6-001 Containment Isolation - Penetration No. 69A (Note 1)
HV 5279	2	212	2X4DB159-3 (C-2)	A	0.50	GL	AO	C	C	C	P					R		Wet Layup Chemical Additive Steam Generator B6-002 Containment Isolation - Penetration No. 69B (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
HV 5280	2	212	2X4DB159-1 (G-2)	A	0.50	GL	AO	C	C	C	P					R		Wet Layup Chemical Additive Steam Generator B6-003 Containment Isolation - Penetration No. 11A (Note 1)
HV 5281	2	212	2X4DB159-1 (C-2)	A	0.50	GL	AO	C	C	C	P					R		Wet Layup Chemical Additive Steam Generator B6-004 Containment Isolation - Penetration No. 12A (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 029	2	212	2X4DB159-1 (C-2)	AC	0.50	CK	S	C	N/A	C	P					R		Wet Layup Chemical Additive Steam Generator B6-004 Containment Isolation - Penetration No. 12A (Note 1)
U4 031	2	212	2X4DB159-1 (G-2)	AC	0.50	CK	S	C	N/A	C	P					R		Wet Layup Chemical Additive Steam Generator B6-003 Containment Isolation Penetration No 11A (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Class	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 043	2	212	2X4DB159-3 (G-2)	AC	0.50	CK	S	C	N/A	C	P					R		Wet Layup Chemical Additive Steam Generator 86-001 Containment Isolation - Penetration No. 69A (Note 1)
U4 044	2	212	2X4DB159-3 (C-2)	AC	0.50	CK	S	C	N/A	C	P					R		Wet Layup Chemical Additive Steam Generator 86-002 Containment Isolation - Penetration No. 69B (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	Size (in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	EI	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
PSV 17589	2	212	AX4DB190-2 (C-3)	AC	1.50	SR	S	C	N/A C	P					R		Demineralizer Water Supply Containment Isolation - Penetration No. 22 (Note 1)
U4 005	2	212	4X4DB190-2 (B-4)	A	2.00	GL	M	C	N/A C	P					R		Demineralizer Water Supply Containment Isolation - Penetration No. 22 (Note 1)
U4 038	2	212	AX4DB190-2 (B-3)	AC	2.00	CK	S	C	N/A C	P					R		Demineralizer Water Supply Containment Isolation - Penetration No. 22 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2626A	2	212	2X4DB213-1 (E-7)	A	24.00	B	MO	O/C	AI	C	A	Y	CS	CS		R	CS-21 RR-2	Containment Building (CB) Normal Purge Supply Isolation - Penetration No. 83 (Note 1)
HV 2626B	2	212	2X4DB213-1 (D-7)	A	14.00	B	AO	O/C	C	C	A	Y	Q	Q	Q	R		CB Normal Purge Supply Isolation - Penetration No. 83 (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	EI	SI	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2627A	2	212	2X4DB213-1 (E-6)	A	24.00	B	MO	O/C	AI	C	A	Y	CS	CS		R	CS-21 RR-2	CB Normal Purge Supply Isolation - Penetration No. 83 (Note 1)
HV 2627B	2	212	2X4DB213-1 (D-6)	A	14.00	B	AO	O/C	C	C	A	Y	Q	Q	Q	R		CB Normal Purge Supply Isolation - Penetration No. 83 (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2628A	2	212	2X4DB213-1 (C-7)	A	24.00	B	MO	O/C	AI	C	A	Y	CS	CS		R	CS-22 RR-2	CB Normal Purge Exhaust Isolation Inside Reactor Containment - Penetration No. 84 (Note 1)
HV 2628B	2	212	2X4DB213-1 (B-7)	A	14.00	B	AO	O/C	C	C	A	Y	Q	Q	Q	R		CB Normal Purge Exhaust Isolation Inside Reactor Containment - Penetration No. 84 (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Cat	Size (in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2629A	2	212	2X4DB213-1 (C-6)	A	24.00	B	MO	O/C	AI	C	A	Y	CS	CS		R	CS-22 RR-2	CB Normal Purge Exhaust Isolation Outside Reactor Containment - Penetration No. 84 (Note 1)
HV 2629B	2	212	2X4DB213-1 (B-6)	A	14.00	B	AO	O/C	C	C	A	Y	Q	Q	Q	R		CB Normal Purge Exhaust Isolation Outside Reactor Containment - Penetration No. 84 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
HV 2624A	2	212	2X4DB213-1 (G-7)	A	4.00	B	MO	C	AI	O/C	A	Y	Q	Q		R		CB Post-Loss-of-Coolant Accident (LOCA) Purge Exhaust Isolation - Penetration No. 100 (Note 1)
HV 2624B	2	212	2X4DB213-1 (F-7)	A	4.00	B	MO	C	AI	O/C	A	Y	Q	Q		R		CB Post-LOCA Purge Exhaust Isolation - Penetration No. 100 (Note 1)
U4 012	2	212	2X4DB213-1 (G-6)	A	4.0J	GA	M	C	N/A	C	P					R		Containment Isolation Valve - Penetration No. 100 (Note 1)

VEGP Unit No. 2
Valve Test List
System: Containment Air Purification and Cleanup - System No. 1513

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2790A	2	212	2X4DB213-2 (E-7)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Containment Hydrogen Monitor Suction - Penetration No. 70A (Note 1)
HV 2790B	2	212	2X4DB213-2 (D-7)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Containment Hydrogen Monitor Suction - Penetration No. 70A (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2791A	2	212	2X4DB213-2 (E-6)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Hydrogen Monitor Isolation Outside Reactor Containment - Penetration No. 70A (Note 1)
HV 2791B	2	212	2X4DB213-2 (C-6)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Hydrogen Monitor Isolation Outside Reactor Containment - Penetration No. 71A (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Cat	Size (in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2792A	2	212	2X4DB213-2 (C-7)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Hydrogen Monitor Isolation Inside Reactor Containment - Penetration No. 71A (Note 1)
HV 2792B	2	212	2X4DB213-2 (C-7)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Hydrogen Monitor Isolation Inside Reactor Containment - Penetration No. 71A (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 2793A	2	212	2X4DB213-2 (B-6)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Hydrogen Monitor Isolation Outside Reactor Containment - Penetration No. 70B (Note 1)
HV 2793B	2	212	2X4DB213-2 (B-6)	A	0.75	GL	ES	C	C	O/C	A	Y	Q	Q	Q	R		Hydrogen Monitor Isolation Outside Reactor Containment - Penetration No. 71B (Note 1)

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
U4 001	2	212	2X4DB213-2 (B-7)	A/C	0.75	CK	S	C	N/A O/C	A	Q R				R	RR-25	Containment Hydrogen Monitor Check - Penetration No. 70B (Note 1)
U4 002	2	212	2X4DB213-2 (B-7)	A/C	0.75	CK	S	C	N/A O/C	A	Q R				R	RR-25	Containment Hydrogen Monitor Check - Penetration No. 71B (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	Tests and Freq. ET	Tests and Freq. ST	Tests and Freq. FSV	Tests and Freq. LT	Relief Req. or C.S. Just.	Description and Notes
U4 186	3	313	2X4DB221 (F-4)	C	6.00	CK	S	C	N/A	O	A	Q						ESF Chilled Water Cooler Pump Check
U4 187	3	313	2X4DB221 (C-4)	C	6.00	CK	S	C	N/A	O	A	Q						ESF Chilled Water Cooler Pump Check

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Cat	Size (in.)	Type	Act. Type	Position Norm	Fail Safety		Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 12975	2	212	2X4DB213-2 (E-3)	A	1.00	GA	ES	O	C	C	A	Y	Q	Q	Q	R		Containment Air Radiation Monitor Inlet - Penetration No. 13A (Note 1)
HV 12976	2	212	2X4DB213-2 (E-2)	A	1.00	GA	ES	O	C	C	A	Y	Q	Q	Q	R		Containment Air Radiation Monitor Inlet - Penetration No. 13A (Note 1)
HV 12977	2	212	2X4DB213-2 (D-2)	A	1.00	GL	ES	O	C	C	A	Y	Q	Q	Q	R		Containment Air Radiation Monitor Outlet - Penetration No. 13B (Note 1)
HV 12978	2	212	2X4DB213-2 (D-3)	A	1.00	GL	ES	O	C	C	A	Y	Q	Q	Q	R		Containment Air Radiation Monitor Outlet - Penetration No. 13B (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 7126	2	212	2X4DB127 (G-5)	A	0.75	D	AO	O	C	C	A	Y	Q	Q	Q	R		Reactor Coolant Drain Tank Vent Isolation - Penetration No. 79 (Note 1)
HV 7136	2	212	2X4DB127 (E-1)	A	3.00	D	AO	O	C	C	A	Y	Q	Q	Q	R		Reactor Coolant Drain Tank Pump Discharge - Penetration No. 77 (Note 1)
HV 7150	2	212	2X4DB127 (G-4)	A	0.75	D	AO	O	C	C	A	Y	Q	Q	Q	R		Reactor Coolant Drain Tank Vent Isolation - Penetration No. 79 (Note 1)
HV 7699	2	212	2X4DB127 (D-1)	A	3.00	GL	AO	O	C	C	A	Y	Q	Q	Q	R		Reactor Coolant Drain Tank Pump Discharge - Penetration No. 77 (Note 1)

VEGP Unit No. 2
Valve Test List
System: Fire Protection Water - System No. 2301

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 27901	2	212	2X4DB174-4 (B-7)	A	4.00	GA	AO	O/C	C C	A	Y	CS	CS	CS	R	CS-23 RR-2	Fire Protection Header Containment Isolation - Penetration No. 40 (Note 1)
U4 036	2	212	2X4DB174-4 (B-7)	AC	6.0	CK	S	C	N/A C	P					R		Fire Protection Header Containment Isolation - Penetration No. 40 (Note 1)

VEGP Unit No. 2
Valve Test List
System: Service Air - System No. 2401

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Sheet 1 of 1

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Size Cat	Valve Size (in.)	Valve Size Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 9385	2	212	2X4DB186-1 (D-3)	A	4.00	GA	AO	O/C	C	C	A	Y	Q	Q	Q	R		Containment Isolation - Penetration No. 80 (Note 1)
U4 034	2	212	2X4DB186-1 (D-3)	AC	4.00	CK	S	C	N/A	C	P					R		Containment Isolation - Penetration No. 80 (Note 1)
U4 184	2	212	2X4DB186-1 (C-3)	AC	1.50	CK	S	C	N/A	C	P					R		Containment Isolation - Penetration No. 23 (Note 1)
U4 211	2	212	2X4DB186-1 (C-3)	A	1.50	GA	M	C	N/A	C	P					R		Containment Isolation - Penetration No. 23 (Note 1)

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Nitrogen to Accumulator and Steam - System No. 2402

	Class		P&ID	Valve Size			Act.	Position			Act. or	Tests and Freq.					Relief Req. or C.S.	Description
	ISI	Proj.	(Coord.)	Cat	(in.	Type	Type	Norm	Fail	Safety	Pass	PI	ET	ST	FSV	LT	Just.	and Notes
	2	212	2X4DB120 (G-1)	A	1.00	GL	AO	O/C	C	C	A	Y	Q	Q	Q	R		Accumulator Nitrogen Supply Isolation - Penetration No. 42 (Note 1)
U4 01	2	212	2X4DB120 (G-1)	AC	1.00	CK	S	C	N/A	C	A		R			R	RR-2,24	Nitrogen Supply Containment Isolation Valve - Penetration No. 42 (Note 1)

VEGP Unit No. 2
Valve Test List
System: Instrument Air - System No. 2420

Valve Number	Class ISI	Proj.	P&ID (Coord.)	Valve Size Cat	(in.)	Type	Act. Type	Position Norm	Fail	Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 937	2	212	2X4DB186-4 (A-7)	A	2.00	GL	AO	O	C	C	A	Y	CS	CS	CS	R	CS-25 RR-2	Containment Isolation - Penetration No. 81 (Note 1)
U4 049	2	212	2X4DB186-4 (A-7)	AC	2.00	CK	S	O	N/A	C	A		R			R	RR-2,21	Containment Isolation - Penetration No. 81 (Note 1)

Valve Number	Class ISI	Class Proj.	P&ID (Coord.)	Valve Cat	Valve Size	Valve Type	Act. Type	Position Norm	Position Fail	Position Safety	Act. or Pass	Tests and Freq. PI	ET	ST	FSV	LT	Relief Req. or C.S. Just.	Description and Notes
HV 8208	2	212	2X4DB110 (F-8)	A	1.00	GL	ES	C	C	C	A	Y	Q	Q	Q	R		Containment Isolation - Penetration No. 86C (Note 1)
HV 8209	2	212	2X4DB110 (F-7)	A	1.00	GL	ES	C	C	C	A	Y	Q	Q	Q	R		Containment Isolation - Penetration No. 86C (Note 1)
HV 8211	2	212	2X4DB110 (C-8)	A	1.00	GL	ES	C	C	C	A	Y	Q	Q	Q	R		Containment Isolation - Penetration No. 86A (Note 1)
HV 8212	2	212	2X4DB110 (C-7)	A	1.00	GL	ES	C	C	C	A	Y	Q	Q	Q	R		Containment Isolation - Penetration No. 86A (Note 1)

NOTES

1. Valves included in the Appendix J, type C local leak rate test program. The Appendix J, type c requirements are implemented in lieu of paragraphs IWV-3421 through IWV-3425. Leakage rate analysis and corrective actions as required by IWV-3426 and 3427 will be performed.

2. This is a RCS pressure isolation valve and is leak rate tested per plant Technical Specifications.

3. These are Anchor-Darling testable check valves. These valves have a manual operation lever.

4. These valves perform a safety function in the open position. These valves are normally open therefore testing from the closed to open position is unnecessary.

RELIEF REQUEST

RR-1

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RELIEF REQUEST

RR-2

SYSTEM: N/A

VALVE(S): Valves Exercised Only During Cold Shutdown Or Refueling

CATEGORY: A, B, C, and AC

CLASS: 1, 2, and 3

FUNCTION: N/A

TEST REQUIREMENT: IWV-3417(b) and IWV-3523 state that when corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup.

BASIS FOR RELIEF: The plant Technical Specifications provide the requirements and plant conditions necessary for plant startup.

ALTERNATE TESTING: The corrective action will be completed prior to the valve being required for plant operability as defined in the plant Technical Specifications.

RELIEF REQUEST

RR-3

SYSTEM: N/A

VALVE(S): Valves With Stroke Times Of 2 Seconds And Less

CATEGORY: A and B

CLASS: 1, 2, and 3

FUNCTION: N/A

TEST REQUIREMENT: IWV-3413(b) requires that the stroke time of all power-operated valves shall be measured to the nearest second for stroke times of 10 seconds or less. IWV-3417 requires that on any one test of power-operated valves, an increase in stroke time of 50 percent or more from the previous test for valves with stroke times of 10 seconds or less, the test frequency shall be increased to once each month until corrective action is taken.

BASIS FOR RELIEF: Accurate measurement of stroke times which are 2 seconds or less is not practical.

ALTERNATE TESTING: These valves will be full-stroke tested. A full-stroke time of 2 seconds will be allowed for these valves. Acceptance of the test will be based only on the stroke time limit and not on the "50 percent" criterion in IWV-3417.

RELIEF REQUEST

RR-4

SYSTEM: Reactor Coolant-System No. 1201

VALVE(S): 1201-U6 112

CATEGORY: AC

CLASS: 2

FUNCTION: This valve is required to close to perform its containment isolation function

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure

BASIS FOR RELIEF: The only method available to verify reverse flow closure is valve leak testing during Appendix J, type C, testing at refueling.

ALTERNATE TESTING: Reverse flow closure will be verified during Appendix J, type C, testing at refueling.

RELIEF REQUEST

RR-5

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U4 026, 1204-U4 027, 1204-U4 028, 1204-U4 029, 1204-U6 013

CATEGORY: C

CLASS: 1

FUNCTION: Valves open to allow cold leg injection from the charging pumps during an accident.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

BASIS FOR RELIEF: The only possible way to verify full-flow operability of these check valves is by injecting the CVCS charging pump flow into the RCS cold legs. However, injecting water into the RCS during power operation exposes the safety injection nozzles to thermal shock and interrupts normal charging and letdown. Injection of CVCS charging pump flow at cold shutdown could result in a low temperature overpressurization of the RCS.

ALTERNATE TESTING: Forward flow operability will be verified at refueling when the reactor vessel head is removed and full CVCS charging pump flow can be used.

RELIEF REQUEST

RR-6

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U4 120, 1204-U4 121, 1204-U4 122, 1204-U4 123, 1204-U4 143, 1204-U4 144, 1204-U4 145, 1204-U4 146, 1204-U6 124, 1204-U6 127

CATEGORY: AC

CLASS: 1

FUNCTION: Valves U4 143, U4 144, U4 145 and U4 146 open to allow cold leg injection from the SIS pumps during an accident. Valves U4 120, U4 121, U4 122, U4 123, U6 124, and U6 127, open to allow hot leg injection from the SIS pumps during an accident.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

BASIS FOR RELIEF: Verification of forward flow operability of these normally closed check valves can be performed only by injecting SIS water into the reactor coolant system. During normal operation the SIS pumps cannot overcome RCS operating pressure. During cold shutdown, injecting SIS flow into the RCS could cause low temperature overpressurization of the RCS.

ALTERNATE TESTING: Forward flow operability will be verified at refueling when the reactor vessel head is removed and full SIS pump flow can be used. The total flow from one safety injection pump will be compared to the system flow balance requirements of the Technical Specifications to verify that these valves open to perform their function. The ECCS test line subsystem provides the capability for determination of the integrity of the high pressure boundaries. The subsystem is used to verify that each of the series check valves can independently sustain operational differential pressure and is closed. These are required periodic tests performed at each refueling prior to startup after the RCS has been pressurized.

RELIEF REQUEST

RR-7

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6 079, 1204-U6 080, 1204-U6 081, 1204-U6 082

CATEGORY: AC

CLASS: 1

FUNCTION: These valves open when the downstream pressure is less than the upstream pressure which allows cold leg injection from the accumulator tanks.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

BASIS FOR RELIEF: The SIS accumulator tanks are isolated from the RCS by these normally closed check valves. Each accumulator is charged with a nitrogen blanket of 650 psig. This pressure is insufficient during operation to inject into the RCS. If these valves were to be exercised at cold shutdown, the contents of the tank would be dumped into the RCS at the charge pressure of 650 psig which could result in a low temperature overpressurization of the RCS.

ALTERNATE TESTING: One of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable, the remaining valves will be disassembled. These valves will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

RR-8

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6 098, 1204-U6 099

CATEGORY: C

CLASS: 2

FUNCTION: The SIS pump discharge check valves open to allow flow from the pumps for safety injection and close to prevent reverse flow.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability and reverse flow closure.

BASIS FOR RELIEF: Forward flow operability of these normally closed check valves can be verified only by injecting SIS water into the reactor coolant system. During normal operation the SIS pumps can not overcome RCS operating pressure. During cold shutdown, injecting SIS flow into the RCS could cause low temperature over-pressurization of the RCS. Reverse flow closure will be verified quarterly.

ALTERNATE TESTING: A partial stroke exercise test will be performed quarterly. Forward flow operability will be verified at refueling when the reactor vessel head is removed and full SIS pump flow can be used.

RELIEF REQUEST

RR-9

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6 090

CATEGORY: C

CLASS: 2

FUNCTION: Valve opens to allow SIS pump suction from the RWST

QUARTERLY TEST REQUIREMENT: Verify forward flow.

BASIS FOR RELIEF: The only possible flow test during normal operation is during pump testing using the 3-inch minflow line back to the RWST. Full flow testing using the SI pumps is not possible because the maximum SI pump pressure is less than the RCS operating pressure. Using the SI pumps to test the valve at cold shutdown could cause low temperature overpressurization of the RCS.

ALTERNATE TESTING: Valve will be partial-stroke exercised during quarterly pump testing and full-stroke exercised at refueling.

RELIEF REQUEST

RR-10

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6 163

CATEGORY: C

CLASS: 2

FUNCTION: Valve opens to allow suction to the safety injection pumps from the RHR system.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

BASIS FOR RELIEF: To verify forward flow operability requires full flow operation of the SIS injection pump. During normal RCS operation the SIS pumps cannot overcome RCS operating pressure. During cold shutdown injection into the RCS using the SIS pumps could cause a low temperature overpressurization of the RCS.

ALTERNATE TESTING: Forward flow operability will be verified at refueling when the reactor vessel head is removed and full SIS pump flow can be used.

RELIEF REQUEST

RR-11

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6 083, 1204-U6 084, 1204-U6 085, 1204-U6 086

CATEGORY: AC

CLASS: 1

FUNCTION: These valves open when the downstream pressure is less than the upstream pressure which allows cold leg injection from the accumulator tanks. These valves also open for RHR flow.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

BASIS FOR RELIEF: The SIS accumulator tanks are isolated from the RCS by these normally closed check valves. Each accumulator is charged with a nitrogen blanket of 650 psig. This pressure is insufficient during operation to inject into the RCS. If these valves were to be exercised at cold shutdown, the contents of the tank would be dumped into the RCS at the charge pressure of 650 psig which could result in a low temperature overpressurization of the RCS.

ALTERNATE TESTING: One of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable, the remaining valves will be disassembled. These valves will not be disassembled and manually stroked to perform preservice testing. In addition, these valves will be partially stroke exercised during cold shutdown by normal flow from the RHR pumps.

RELIEF REQUEST

RR-12

SYSTEM: Chemical and Volume Control - System No. 1208

VALVE(S): 1208-U6-142, and 1208-U6-149

CATEGORY: C

CLASS: 2

FUNCTION: Valves open for high head safety injection into the RCS

QUARTERLY TEST REQUIREMENT: Verify forward flow operability and reverse flow closure.

BASIS FOR RELIEF: During normal operation CVCS is aligned for normal charging. Therefore, only a partial-stroke exercise test is possible during power operation. Injecting through flow paths other than normal charging exposes the safety injection nozzles to thermal shock. Full-stroke testing of these valves during cold shutdown could cause low temperature overpressurization of the RCS.

ALTERNATE TESTING: These valves will be partial-stroke exercised quarterly and full-stroke exercised during refueling. During refueling forward flow operability will be verified when the reactor vessel head is removed and full charging pump flow can be used. Reverse flow closure is verified quarterly by monitoring pressure upstream of the check valve.

RELIEF REQUEST

RR-13

SYSTEM: Containment Spray-System No. 1206

VALVE(S): 1206-U6 001, 1206-U6 008

CATEGORY: C

CLASS: 2

FUNCTION: Valves open to allow flow from the RWST to the suction of the containment spray pumps.

QUARTERLY TEST REQUIREMENT: Verify forward and reverse flow operability

BASIS FOR RELIEF: Forward flow operability can be verified only by operating the containment spray pumps during pump testing. The pump test return line to the refueling water storage tank is only a 2-inch line, which precludes full-flow testing of these 10-inch check valves. The only flow path possible to achieve full flow would require initiating spray into the containment. Reverse flow closure verification would require filling the containment sumps and initiating containment spray system recirculation mode operation. Either of these tests would result in extensive damage to components inside containment. In addition, ver fication of closure capability by measuring lifferential pressure was evaluated. However, the system does not contain the required isolation valves to observe a pressure differential across these check valves.

ALTERNATE TESTING: Partial flow forward testing will be performed quarterly during pump testing. In addition, one of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable the remaining valve will be disassembled. These valves will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

RR-14

SYSTEM: Containment Spray-System No. 1206

VALVE(S): 1206-U6 015, 1206-U6 016

CATEGORY: AC

CLASS: 2

FUNCTION: Valve opens to allow flow for containment spray. Valve closes to perform containment isolation function.

QUARTERLY TEST REQUIREMENT: Verify forward and reverse flow operability.

BASIS FOR RELIEF: Forward flow operability can be verified only by initiating flow through the valves into the containment structure. The initiation of containment spray into the containment would result in extensive damage to equipment inside containment. The only method available to verify reverse flow closure is valve leak testing during Appendix J, type C testing at refueling.

ALTERNATE TESTING: One of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable, the remaining valves will be disassembled. In addition, reverse flow closure will be verified during Appendix J, type C, testing at refueling. These valves will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

RR-15

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-HV0190A, 1208-HV0190B

CATEGORY: B

CLASS: 2

FUNCTION: These valves open to allow flow for a safety grade cold shutdown.

QUARTERLY TEST REQUIREMENT: Exercise, time, and fail.

BASIS FOR RELIEF: The safety-related position of these valves is open. To fail-safe test these valves to the closed position does not stroke the valve in the direction required to perform a safety-related function. Therefore, a fail-safe test is not necessary.

ALTERNATE TESTING: These valves will be exercised and timed every quarter to ensure that they will perform their safety-related function.

RELIEF REQUEST

RR-16

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-U6 032

CATEGORY: AC

CLASS: 2

FUNCTION: CVCS to regenerative heat exchanger check valve which closes to perform a containment isolation function and opens to allow boric acid flow for a safety grade cold shutdown.

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure and forward flow operability.

BASIS FOR RELIEF: The only method available to verify reverse flow closure is valve leak testing during appendix J, type C, testing at refueling.

ALTERNATE TESTING: Reverse flow closure will be verified during appendix J, type C, testing at refueling. Forward flow operability will be verified quarterly.

RELIEF REQUEST

RR-17

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-U6 189, 1208-U6 436

CATEGORY: C

CLASS: 2

FUNCTION: Valve U6 189 opens to allow flow to the suction of the centrifugal charging pumps from the RWST. Valve U6 436 opens to allow flow to the suction of the centrifugal charging pumps from the RHR system.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

BASIS FOR RELIEF: To verify full-flow capability requires operation of both centrifugal charging pumps. Operation of the centrifugal charging pumps during either normal operation or cold shutdown would result in overpressurization of the reactor coolant system. Partial exercising by operating one charging pump would inject refueling or RHR water into the RCS and would affect RCS boron concentration which could result in a plant shutdown.

ALTERNATE TESTING: Valves will be full-stroke exercised when the reactor vessel head is removed at refueling and both centrifugal charging pumps can be operated. In addition, these valves will be partial-stroke exercised during cold shutdown.

RELIEF REQUEST

RR-18

SYSTEM: Auxiliary Component Cooling Water-System No. 1217

VALVE(S): 1217-U4-084, 1217-U4-085, 1217-U4-086, 1217-U4-087

CATEGORY: C

CLASS: 3

FUNCTION: Valves close to prevent reverse flow if a reactor coolant pump thermal barrier ruptures.

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: Reverse flow closure will be verified during refueling by performing a modified leak rate test. These tests cannot be performed quarterly during power operation because the system is in operation and cannot be isolated. Also, these valves are inside containment. These tests are too complex to be performed during cold shutdown and will be scheduled for refueling outages.

ALTERNATE TESTING: Reverse flow closure will be verified during refueling by performing a modified leak rate test.

RELIEF REQUEST

RR-19

SYSTEM: Auxiliary Feedwater-System No. 1302

VALVE(S): 1302-U4 117, 1302-U4 118, 1302-U4 119, 1302-U4 120

CATEGORY: C

CLASS: 2

FUNCTION: These valves close to ensure that AFW flows to the steam generators.

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: Reverse flow closure can be verified only by disassembling the check valves and observing the disc position.

ALTERNATE TESTING: One of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable, the remaining valves will be disassembled. These valves will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

RR-20

SYSTEM: Condensate and Feedwater-System No. 1305

VALVE(S): 1305-U4 071, 1305-U4 073, 1305-U4 075, 1305-U4 077

CATEGORY: C

CLASS: 2

FUNCTION: Valves close to prevent steam generator blowdown following a feedwater line break outside containment.

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: Reverse flow closure can be verified only by disassembling the check valves and observing the disc position.

ALTERNATE TESTING: One of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable, the remaining valves will be disassembled. These valves will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

KR-21

SYSTEM: Instrument Air-System No. 2420

VALVE(S): 2420-U4-049

CATEGORY: AC

CLASS: 2

FUNCTION: Valve closes to perform a containment isolation function.

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: The only method available to verify reverse flow closure is valve leak testing during appendix J, type C, testing at refueling.

ALTERNATE TESTING: Reverse flow closure will be verified during appendix J, type C, testing at refueling.

RELIEF REQUEST

RR-22

SYSTEM: Safety Injection - System No. 1204

VALVE(S): 1204-U4-262, 1204-U4-263

CATEGORY: C

CLASS: 2

FUNCTION: These valves close to isolate the refueling water storage tank if an upstream line breaks.

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: Reverse flow closure can be verified only by disassembling the check valves and observing the disk position.

ALTERNATE TESTING: One of these valves will be disassembled and manually stroked at refueling on a staggered test basis. If disassembly reveals that the valve is inoperable, the remaining valves will be disassembled. These valves will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

RR-23

SYSTEM: Main Steam - System No. 1301

VALVE(S): 1301-U4-008

CATEGORY: C

CLASS: 3

FUNCTION: This valve opens to allow steam to the AFW pump turbine and closes to prevent reverse flow.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability and reverse flow closure.

BASIS FOR RELIEF: This valve is partial-stroke exercised quarterly during the turbine-driven AFW pump test. Full-stroke exercising during power operation cannot be performed because the turbine-driven AFW pump is not delivering full flow to the steam generators. This valve will be tested during cold shutdown by verifying that the AFW pump is delivering the required flow through valves 1302-U4-014, 1302-U4-017, 1302-U4-020, 1302-U4-023, and 1302-U4-026 as discussed in CS-19. Reverse flow closure cannot be verified by flow or pressure. Therefore, this valve will be disassembled.

ALTERNATE TESTING: Forward flow operability will be demonstrated quarterly (partial-stroke) and during cold shutdown (full-stroke) as discussed. Reverse flow closure will be demonstrated by disassembling and manually full-stroke exercising the valve during refueling. This valve will not be disassembled and manually stroked to perform preservice testing.

RELIEF REQUEST

RR-24

SYSTEM: Nitrogen to Accumulator - System No. 2402

VALVE(S): 2402-U4 017

CATEGORY: AC

CLASS: 2

FUNCTION: Nitrogen Supply Containment Isolation Valve

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: The only method available to verify reverse flow closure is valve leak testing during appendix J, type C, testing at refueling.

ALTERNATE TESTING: Reverse flow closure will be verified during appendix J, type C, testing at refueling.

RELIEF REQUEST

RR-25

SYSTEM: Containment Air Purification and Cleanup - System No. 1513

VALVE(S): 1513-U4-001, 1513-U4-002

CATEGORY: AC

CLASS: 2

FUNCTION: Containment Isolation Hydrogen Monitoring

QUARTERLY TEST REQUIREMENT: Verify reverse flow closure.

BASIS FOR RELIEF: The only method available to verify reverse flow closure is valve leak testing during appendix J, type C, testing at refueling.

ALTERNATE TESTING: Reverse flow closure will be verified during appendix J, type C, testing at refueling.

COLD SHUTDOWN JUSTIFICATION

CS-1

SYSTEM: Reactor Coolant-System No. 1201

VALVE(S): 1201-HV-8701A, 1201-HV-8701B, 1201-HV-8702A, 1201-HV-8702B

CATEGORY: A

CLASS: 1

FUNCTION: These valves open to allow suction to the RHR pumps from the RCS.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	These valves isolate the low pressure RHR system from the high pressure RCS. They are interlocked to prevent opening when RCS pressure is greater than 425 psig and automatically close before RCS pressure exceeds 750 psig.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING.	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-2

SYSTEM: Reactor Coolant-System No. 1201

VALVE(S): 1201-HV0442A, 1201-HV0442B, 1201-HV8095A, 1201-HV8095B, 1201-HV8096A, 1201-HV8096B

CATEGORY: B

CLASS: 1 & 2 (valves 1201-HV0442A and 1201-HV0442B are Class 2)

FUNCTION: Valves open to vent the reactor vessel

QUARTERLY TEST REQUIREMENT: Exercise, fail, and time

COLD SHUTDOWN TEST JUSTIFICATION: Operability testing of these normally closed valves during power operation could cause a loss of reactor coolant which would produce unwarranted pressure and level fluctuations in the reactor coolant system. These valves, which are Target Rock solenoid valves, will open if subjected to a pressure surge. With the RCS pressurized, opening one of these valves would cause a pressure surge across the corresponding valve in series which could open it. This allows a direct flow path from the RCS to the pressurizer relief tank.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise, fail, and time

COLD SHUTDOWN JUSTIFICATION

CS-3

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-HV-8806

CATEGORY: B

CLASS: 2

FUNCTION: This valve isolates the refueling water storage tank from the safety injection pumps during post-accident recirculation.

QUARTERLY TEST REQUIREMENT: Exercise and time

COLD SHUTDOWN TEST JUSTIFICATION: To close this valve for purposes of testing places the plant in an unsafe condition. Failure of this valve in the closed position would render both safety injection pumps inoperable. In addition, the Technical Specifications require that power be removed from this valve during power operation; therefore, the valve cannot be stroked quarterly.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-4

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-HV-8809A, 1204-HV-8809B

CATEGORY: B

CLASS: 2

FUNCTION: These valves close to isolate the RHR discharge from the SIS cold leg.

QUARTERLY TEST REQUIREMENT: Exercise and time

COLD SHUTDOWN TEST JUSTIFICATION: During normal operation these valves are aligned to their accident position which is open. To close these valves for testing purposes unnecessarily places the plant in an unsafe condition. If these valves did not reopen following testing it would render that portion of low head safety injection inoperable. In addition, the Technical Specifications require that power be removed from these valves during power operation; therefore, they cannot be stroked quarterly.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-5

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-HV-8835

CATEGORY: B

CLASS: 2

FUNCTION: This valve closes when Safety Injection is aligned from cold leg injection to hot leg injection.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	To close this valve for purposes of testing places the plant in an unsafe condition. Failure of this valve in the closed position renders both safety injection pumps incapable of cold leg injection. In addition, the Technical Specifications require that power be removed from this valve during power operation; therefore, the valve cannot be stroked quarterly.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-6

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-HV-8802A, 1204-HV-8802B

CATEGORY: B

CLASS: 2

FUNCTION: These valves open for hot leg injection.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	During power operation the Technical Specifications require that the power be removed from the valve operators with the valves in the closed position. Therefore, these valves cannot be stroked quarterly. Also, if these valves would not re-close following testing during power operation it would render that portion of safety injection inoperable.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-7

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6 147, 1204-U6 148, 1204-U6 149, 1204-U6 150

CATEGORY: AC

CLASS: 1

FUNCTION: These check valves open to allow cold leg injection into the RCS.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

COLD SHUTDOWN TEST JUSTIFICATION: Forward flow operability of these normally closed check valves can be verified only by injecting RHR water into the RCS. During normal operation the RHR pumps cannot overcome RCS operating pressure. The ECCS test line subsystem provides the capability for determination of the integrity of the high pressure boundaries. The subsystem is used to verify that each of the series check valves can independently sustain operational differential pressure and is closed. These are required periodic tests performed at each refueling prior to startup, after the RCS has been pressurized.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: The total flow from one RHR pump will be compared to the system flow balance requirements of the Technical Specifications to verify that these valves open to perform their function. Inoperability of these check valves to pass their required flow would be seen as reduced total flow.

COLD SHUTDOWN JUSTIFICATION

CS-8

SYSTEM: Safety Injection-System No. 1204

VALVE(S): 1204-U6-125, 1204-U6-126, 1204-U6-128, 1204-U6-129

CATEGORY: AC

CLASS: 1

FUNCTION: These valves open to allow hot leg injection into the RCS.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

COLD SHUTDOWN TEST JUSTIFICATION: The only possible way to verify full flow operability of these check valves is by using the RHR pumps to inject into the RCS. During normal operation the RHR pumps cannot overcome RCS operating pressure.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: These valves will be tested with flow from the RHR pumps. The maximum required flowrate through each valve will be verified.

COLD SHUTDOWN JUSTIFICATION

CS-9

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-HV-8100, 1208-HV-8112

CATEGORY: A

CLASS: 2

FUNCTION: These valves close to isolate containment penetration 49.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	These valves isolate seal water flow from the reactor coolant pumps. Closing these valves during normal operation could damage the reactor coolant pump seals, resulting in a plant shutdown.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time when reactor coolant pumps are stopped during cold shutdown.

COLD SHUTDOWN JUSTIFICATION

CS-10

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-HV-8105, 1208-HV-8106

CATEGORY: A (HV 8105)
B (HV 8106)

CLASS: 2

FUNCTION: These valves close to isolate the charging pumps from the regenerative heat exchanger.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	Closing either of these valves during operation stops normal charging water flow to the reactor coolant system. Interruption of normal charging water could result in loss of pressurizer water level control and could result in a plant shutdown.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-11

SYSTEM: Reactor Coolant-System No. 1201

VALVE(S): 1201-PV-0455A, 1201-PV-0456A

CATEGORY: B

CLASS: 1

FUNCTION: These valves open to prevent low-temperature overpressurization of the RCS.

QUARTERLY TEST REQUIREMENT:	Exercise, time and fail test
COLD SHUTDOWN TEST JUSTIFICATION:	The NRC staff's position is that the PORV's function is to protect the reactor vessel and coolant system from low-temperature overpressurization conditions and should be exercised prior to initiation of system conditions for which vessel protection is needed (prior to cold shutdown). Routine quarterly exercising of the PORV's during power operation is not required.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise, time and fail test. These valves will be tested prior to them being required for cold overpressurization protection as determined by the Technical Specifications.

COLD SHUTDOWN JUSTIFICATION

CS-12

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-HV-8152, 1208-HV-8160, 1208-HV-15214

CATEGORY: A (HV-8152, HV-8160)
B (HV-15214)

CLASS: 2

FUNCTION: These valves close to isolate CVCS Letdown.

QUARTERLY TEST REQUIREMENT:	Exercise, time, and fail test
COLD SHUTDOWN TEST JUSTIFICATION:	Failure of either of these valves to open after exercising could cause a loss of control of the pressurizer water level. Loss of pressurizer water level control could require shutting the plant down. Closing any of these valves at power causes thermal shock to the regenerative heat exchanger and associated piping.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise, time, and fail test

COLD SHUTDOWN JUSTIFICATION

CS-13

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-LV-0112B, 1208-LV-0112C

CATEGORY: B

CLASS: 2

FUNCTION: These valves close to isolate the volume control tank.

QUARTERLY TEST REQUIREMENT: Exercise and time

COLD SHUTDOWN TEST JUSTIFICATION: The volume control tank provides the normal charging water and seal water flow to the RCS and RCS pumps. Because the VCT acts as a head tank for the charging pump an alternate source of water would be required during valve testing. Injection into the RCS of any available alternate source of water would cause changes in RCS boron concentration and could result in a plant shutdown.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-14

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-LV-0112D, 1208-LV-0112E

CATEGORY: B

CLASS: 2

FUNCTION: These valves open to allow flow from the RWST to the centrifugal charging pumps and re-close during post-accident recirculation.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	Exercising these valves during normal operation could introduce refueling water into the RCS through the normally operating charging pump. RCS boron concentration could be adversely affected and could cause a plant shutdown.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-15

SYSTEM: Auxiliary Component Cooling Water-System No. 1217

VALVE(S): 1217-HV-1974, 1217-HV-1975, 1217-HV-1978, 1217-HV-1979

CATEGORY: A

CLASS: 2

FUNCTION: These valves close to perform a containment isolation function.

QUARTERLY TEST REQUIREMENT: Exercise and time

COLD SHUTDOWN TEST JUSTIFICATION: Auxiliary component cooling water is used to maintain cooling of the reactor coolant pump bearing oil coolers and thermal barriers. A loss of cooling water to the thermal barriers could result in a temperature increase of the oil and motor bearing metal. Any extended loss of cooling water could result in extensive damage to the reactor coolant pumps.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise and time during cold shutdown when reactor coolant pumps are stopped.

COLD SHUTDOWN JUSTIFICATION

CS-16

SYSTEM: Main Steam-System No. 1301

VALVE(S): 1301-HV-3006A, 1301-HV-3006B, 1301-HV-3016A, 1301-HV-3016B, 1301-HV-3026A, 1301-HV-3026B, 1301-HV-3036A, 1301-HV-3036B

CATEGORY: B

CLASS: 2

FUNCTION: These valves close to isolate main steam.

QUARTERLY TEST REQUIREMENT:	Exercise, time, and fail
COLD SHUTDOWN TEST JUSTIFICATION:	Exercising these valves during normal operation would cause a severe pressure transient in the main steam lines which would cause a plant shutdown. Reducing power level to perform testing without causing a transient would significantly impact plant operations and power production.
QUARTERLY PARTIAL STROKE TESTING:	Partial exercise test (10%) performed quarterly
COLD SHUTDOWN TESTING:	Exercise, time, and fail

COLD SHUTDOWN JUSTIFICATION

CS-17

SYSTEM: Main Steam-System No. 1301

VALVE(S): 1301-PV-3000, 1301-PV-3010, 1301-PV-3020, 1301-PV-3030

CATEGORY: B

CLASS: 2

FUNCTION: These main steam power operated relief valves open to perform a safety grade cold shutdown function.

QUARTERLY TEST REQUIREMENT:	Exercise, time, and fail
COLD SHUTDOWN TEST JUSTIFICATION:	Exercising these valves during normal operation would cause a decrease in main steam line pressure and would cause a pressure transient. Failure in an open position would result in a plant shutdown due to a mismatch between feedwater and mainsteam flow.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise, time, and fail

COLD SHUTDOWN JUSTIFICATION

CS-18

SYSTEM: Auxiliary Feedwater - System No. 1302

VALVE(S): 1302-HV-15196, 1302-HV-15197, 1302-HV-15198, 1302-HV-15199

CATEGORY: B

CLASS: 2

FUNCTION: These valves close to stop flow if a feedwater line ruptures.

QUARTERLY TEST REQUIREMENT: Exercise, time, and fail

COLD SHUTDOWN TEST JUSTIFICATION: Exercising these valves during normal operation partially isolates normal feedwater flow to the steam generators. This isolation of the bypass line could cause a feedwater transient resulting in a reactor trip due to steam generator water level oscillation during the opening and closing of the valves.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise, time, and fail

COLD SHUTDOWN JUSTIFICATION

CS-19

SYSTEM: Auxiliary Feedwater - System No. 1302

VALVE(S): 1302-U4-001, 1302-U4-002, 1302-U4-014, 1302-U4-017, 1302-U4-020, 1302-U4-023, 1302-U4-026, 1302-U4-037, 1302-U4-040, 1302-U4-043, 1302-U4-046,

CATEGORY: C

CLASS: 2 and 3

FUNCTION: These valves open to allow auxiliary feedwater flow to the steam generators.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability

COLD SHUTDOWN TEST JUSTIFICATION: The only way to verify forward flow operability of these valves is by operating the auxiliary feedwater pumps and injecting relatively cold condensate water directly into the steam generators. The introduction of cold water into the hot steam generators during operation would result in large thermal shock to the feedwater nozzles and could cause cracking of the nozzles.

QUARTERLY PART STROKE TESTING: None

COLD SHUTDOWN TESTING: This test will be performed by verifying required flow through each valve during cold shutdown.

COLD SHUTDOWN JUSTIFICATION

CS-20

SYSTEM: Condensate and Feedwater - System No. 1305

VALVE(S): 1305-HV-5227, 1305-HV-5228, 1305-HV-5229, 1305-HV-5230

CATEGORY: B

CLASS: 2

FUNCTION: These valves close to stop flow if a feedwater line ruptures.

QUARTERLY TEST REQUIREMENT:	Exercise, time, and fail
COLD SHUTDOWN TEST JUSTIFICATION:	Exercising these valves during normal operation isolates primary normal feedwater flow to the steam generators. Isolation of the primary normal feedwater flow would cause a steam generator transient and could cause a plant shutdown.
QUARTERLY PARTIAL STROKE TESTING:	Partial exercise test (10%) performed quarterly
COLD SHUTDOWN TESTING:	Exercise, time, and fail

COLD SHUTDOWN JUSTIFICATION

CS-21

SYSTEM: Containment Air Purification and Cleanup - System No. 1505

VALVE(S): 1505-HV-2626A, 1505-HV-2627A

CATEGORY: A

CLASS: 2

FUNCTION: These valves close to perform their containment isolation function.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	The Plant Technical Specifications preclude opening of these valves during modes 1, 2, 3, and 4.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-22

SYSTEM: Containment Air Purification and Cleanup System No. 1506

VALVE(S): 1506-HV-2628A, 1506-HV-2629A

CATEGORY: A

CLASS: 2

FUNCTION: These valves close to perform their containment isolation function.

QUARTERLY TEST REQUIREMENT: Exercise and time

COLD SHUTDOWN TEST JUSTIFICATION: The Plant Technical Specifications preclude opening of these valves during modes 1, 2, 3, and 4.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-23

SYSTEM: Fire Protection Water - System No. 2301

VALVE(S): 2301-HV-27901

CATEGORY: A

CLASS: 2

FUNCTION: This valve closes to perform its containment isolation function.

QUARTERLY TEST REQUIREMENT:	Exercise, time, and fail test
COLD SHUTDOWN TEST JUSTIFICATION:	This valve is normally closed during power operation. It is opened during refueling and possibly cold shutdown to support fire protection requirements. To open this valve for testing purposes unnecessarily compromises the containment boundary.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise, time, and fail test

COLD SHUTDOWN JUSTIFICATION

CS-24

SYSTEM: Auxiliary Feedwater - System No. 1302

VALVE(S): 1302-U4-013, 1302-U4-033, 1302-U4-051, 1302-U4-052, 1302-U4-058, 1302-U4-061

CATEGORY: C

CLASS: 3

FUNCTION: These check valves open to allow flow from the condensate storage tanks to the suction of the AFW pumps.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability

COLD SHUTDOWN TEST JUSTIFICATION: The only way to full-stroke exercise these valves is by operating the auxiliary feedwater pumps and injecting relatively cold condensate water directly into the steam generators. The introduction of cold water into the hot steam generators during power operation would result in large thermal shock to the feedwater nozzles and could cause cracking of the nozzles.

QUARTERLY PARTIAL STROKE TESTING: These valves will be partial-stroke exercised during quarterly pump testing.

COLD SHUTDOWN TESTING: These valves will be verified capable of opening to their required safety position during cold shutdown. This test will be performed by taking pump suction from each condensate storage tank and verifying the required flow to the steam generators.

COLD SHUTDOWN JUSTIFICATION

CS-25

SYSTEM: Instrument Air - System No. 2420

VALVE(S): 2420-HV-9378

CATEGORY: A

CLASS: 3

FUNCTION: This valve closes to perform its containment isolation function.

QUARTERLY TEST REQUIREMENT:	Exercise, time, and fail
COLD SHUTDOWN TEST JUSTIFICATION:	The operability testing of this valve during normal operation would cause an interruption of instrument air supply to instruments and equipment within containment. Also, a failure in a nonconservative position during a cycling test would cause a complete loss of instrument air supply to the containment. The loss of instrument air to containment would cause the letdown isolation valves (1208-HV-15214, 1208-HV-8160 and 1208-HV-8152) to fail closed. These CVCS valves are not stroked closed during power operation, as explained in Cold Shutdown Justification CS-12. Therefore, this instrument air isolation valve cannot be stroked closed at power.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise, time, and fail

COLD SHUTDOWN JUSTIFICATION

CS-26

SYSTEM: Safety Injection - System No. 1204

VALVE(S): 1204-HV-8813

CATEGORY: B

CLASS: 2

FUNCTION: Safety injection pump miniflow. Valve closes during hot leg recirculation.

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	During power operation the Technical Specifications require that the power be removed from the valve operator with the valve in the open position. Therefore, this valve cannot be stroked quarterly. Also, if this valve would not re-open following testing during power operation it would render both trains of safety injection inoperable.
QUARTERLY PARTIAL STROKE TESTING:	None
COL SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-27

SYSTEM: Safety Injection - System No. 1204

VALVE(S): 1204-HV-8840

CATEGORY: B

CLASS: 2

FUNCTION: This valve opens for hot leg recirculation

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	During power operation the Technical Specifications require that the power be removed from the valve operator with the valve in the closed position. Therefore, this valve cannot be stroked quarterly. Also, if this valve would not re-close following testing during power operation it would misalign the low head safety injection from the cold legs.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time

COLD SHUTDOWN JUSTIFICATION

CS-28

SYSTEM: Containment Spray - System No. 1206

VALVE(S): 1206-HV-8994A and 1206-HV-8994B

CATEGORY: B

CLASS: 3

FUNCTION: These valves open to discharge NaOH into the containment spray system

QUARTERLY TEST REQUIREMENT:	Exercise and time
COLD SHUTDOWN TEST JUSTIFICATION:	During normal operation these valves are closed to confine NaOH to the spray additive tank. To minimize the amount of NaOH which could leave the spray additive tank, valve 029 would need to be closed when valves HV-8994A or HV-8994B were opened. Closing valve 029 isolates the spray additive tank thus making it unable to perform its safety function.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	Exercise and time. These valves will be tested with the spray additive tank isolated.

COLD SHUTDOWN JUSTIFICATION

CS-29

SYSTEM: Chemical and Volume Control - System No. 1208

VALVE(S): 1208-U4-185 and 1208-U4-499

CATEGORY: C

CLASS: 2

FUNCTION: These valves open to allow flow of boric acid from the boric acid transfer pumps to the suction of the charging pumps.

QUARTERLY TEST REQUIREMENT:	Verify forward flow operability
COLD SHUTDOWN TEST JUSTIFICATION:	These check valves are tested with flow. Testing these check valves with flow during power operation would adversely affect the boric acid concentrations in the RCS and potentially cause a plant shutdown.
QUARTERLY PARTIAL STROKE TESTING:	None
COLD SHUTDOWN TESTING:	These valves will be exercised during cold shutdown with flow from the boric acid transfer pumps to the RCS. The maximum required flow rate through these valves will be verified.

COLD SHUTDOWN JUSTIFICATION

CS-30

SYSTEM: Auxiliary Component Cooling Water - System No. 1217

VALVE(S): 1217-HV-2041, 1217-HV-19051, 1217-HV-19053, 1217-HV-19055, 1217-HV-19057

CATEGORY: B

CLASS: 3

FUNCTION: These valves isolate if a thermal barrier rupture occurs.

QUARTERLY TEST REQUIREMENT: Exercise and time

COLD SHUTDOWN TEST JUSTIFICATION: These valves are normally open to allow cooling water to the thermal barriers. To close these valves during normal operation would stop cooling water to the thermal barriers which could potentially damage the reactor coolant pumps.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: These valves will be tested during cold shutdown with the reactor coolant pumps stopped.

COLD SHUTDOWN JUSTIFICATION

CS-31

SYSTEM: Main Steam - System No. 1301

VALVE(S): 1301-U4-006, 1301-U4-404

CATEGORY: C

CLASS: 3

FUNCTION: These valves open to allow steam to the AFW pump turbine. Valve 1301-U4-404 closes to prevent reverse flow.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability and reverse flow closure.

COLD SHUTDOWN TEST JUSTIFICATION: These valves are partial-stroke exercised quarterly during the turbine-driven AFW pump test. Full-stroke exercising during power operation cannot be performed because the turbine-driven AFW pump is not delivering full flow to the steam generators. Valve 1301-U4-404 is verified capable of closing quarterly by closing valve HV-3009 and listening for steam to stop flowing through the AFW drain to the condenser. This is performed quarterly while the AFW pump turbine is being supplied steam through valve U4-008. Valve U4-006 is not required to be capable of closing.

QUARTERLY PARTIAL STROKE TESTING: Partial-stroke exercising is performed during the turbine-driven AFW pump test.

COLD SHUTDOWN TESTING: Testing of valves 1302-U4-014, 1302-U4-017, 1302-U4-020, 1302-U4-023, and 1302-U4-026 as discussed in CS-19 verifies that valves 1301-U4-006 and 1301-U4-404 open to perform their safety related function by ensuring that the AFW pump is delivering required flow.

COLD SHUTDOWN JUSTIFICATION

CS-32

SYSTEM: Auxiliary Feedwater - System No. 1302

VALVE(S): 1302-U4-113, 1302-U4-114, 1302-U4-115, 1302-U4-116,

CATEGORY: C

CLASS: 2

FUNCTION: These valves open to allow auxiliary feedwater flow to the steam generators.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability and reverse flow closure

COLD SHUTDOWN TEST JUSTIFICATION: The only way to verify forward flow operability of these valves is by operating the auxiliary feedwater pumps and injecting relatively cold condensate water directly into the steam generators. The introduction of cold water into the hot steam generators during operation would result in large thermal shock to the feedwater nozzles and could cause cracking of the nozzles. The pressure gauges upstream of these valves will be monitored quarterly to verify these valves are closed.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: This test will be performed by verifying required flow through each valve during cold shutdown.

COLD SHUTDOWN JUSTIFICATION

CS-33

SYSTEM: Auxiliary Feedwater - System No. 1302

VALVE(S): 1302-U4-125, 1302-U4-126, 1302-U4-127, 1302-U4-128

CATEGORY: C

CLASS: 2

FUNCTION: These valves open to allow auxiliary feedwater flow to the steam generators:

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

COLD SHUTDOWN TEST JUSTIFICATION: These valves are in the feedwater bypass line and, as such, are open during full power. However, flow instrumentation is not installed in this line to facilitate verification of flow. It is therefore requested that the test frequency for these valves be cold shutdown in order to use existing flow instrumentation which is installed in the auxiliary feedwater system.

QUARTERLY PARTIAL STROKE TESTING: Partial or full flow is passed through these valves during various modes of plant operation.

COLD SHUTDOWN TESTING: These valves will be verified capable of opening to their required safety position during cold shutdown. This test will be performed by injecting auxiliary feedwater into the steam generators.

COLD SHUTDOWN JUSTIFICATION

CS-34

SYSTEM: Chemical and Volume Control-System No. 1208

VALVE(S): 1208-U4-284, 1208-U4-299

CATEGORY: C

CLASS: 3

FUNCTION: These boric acid transfer pump discharge check valves open to allow flow to the suction side of the charging pumps.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

COLD SHUTDOWN TEST JUSTIFICATION: These check valves are tested with flow. Full flow testing of these check valves during power operation would adversely affect the boric acid concentration in the RCS and would potentially cause a plant shutdown.

QUARTERLY PARTIAL STROKE TESTING: Partial stroke testing will be performed during the quarterly pump tests.

COLD SHUTDOWN TESTING: These valves will be full stroke exercised during cold shutdown with flow from the boric acid transfer pumps to the RCS. The maximum required flow rate through these valves will be verified.

COLD SHUTDOWN JUSTIFICATION

CS-35

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COLD SHUTDOWN JUSTIFICATION

CS-36

SYSTEM: Residual Heat Removal - System No. 1205

VALVE(S): 1205-U6-001, 1205-U6-002

CATEGORY: C

CLASS: 2

FUNCTION: These check valves open to allow flow from the refueling water storage tank to the residual heat removal pumps. These valves close to prevent reverse flow to the refueling water storage tank.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability and reverse flow closure.

COLD SHUTDOWN TEST JUSTIFICATION: During normal operation, the RHR pumps cannot overcome RCS operating pressure. Forward flow operability of these normally closed check valves during normal operation can be verified only by aligning the RHR system to circulate water to and from the RWST. However, this alignment provides only partial flow through the check valves. Reverse flow closure will be verified quarterly.

QUARTERLY PARTIAL STROKE TESTING: These valves will be partial stroke exercised quarterly.

COLD SHUTDOWN TESTING: These valves will be tested during cold shutdown. The maximum required flowrate through each valve will be verified.

COLD SHUTDOWN JUSTIFICATION

CS-37

SYSTEM: Residual Heat Removal - System No. 1205

VALVE(S): 1205-U6-009, 1205-U6-010

CATEGORY: C

CLASS: 2

FUNCTION: These valves are the RHR pump discharge check valves which are required to open to support various safety functions.

QUARTERLY TEST REQUIREMENT: Verify forward flow operability.

COLD SHUTDOWN TEST JUSTIFICATION: During normal operation, the RHR pumps cannot overcome RCS operating pressure. Forward flow operability of these normally closed check valves during normal operation can only be accomplished by pumping in the miniflow circuit or by pumping back to the RWST. However, both of these test circuits allow only partial flow through the check valves.

QUARTERLY PARTIAL STROKE TESTING: These valves will be partial stroke exercised quarterly.

COLD SHUTDOWN TESTING: These valves will be tested during cold shutdown. The maximum required flowrate through each valve will be verified.

COLD SHUTDOWN JUSTIFICATION

CS-38

SYSTEM: Chemical and Volume Control - System No. 1208

VALVE(S): 1208-HV-8508A, 1208-HV-8508B

CATEGORY: B

CLASS: 2

FUNCTION: Provides alternate miniflow path for charging pumps following isolation of normal miniflow line.

QUARTERLY TEST REQUIREMENT: Exercise and time.

COLD SHUTDOWN TEST JUSTIFICATION: These valves have interlocks such that they cannot be opened unless the volume control tank discharge valves (LV-0112B, LV-0112C) and RHR discharge to SI and charging pumps valves (HV-8804A, HV-8804B) are closed. Valves LV-0112B and LV-0112C are tested on a cold shudown frequency as discussed in Cold Shutdown Justification CS-13. Therefore, these valves (HV-8508A, HV-8508B) can only be tested on a cold shutdown frequency.

QUARTERLY PARTIAL STROKE TESTING: None

COLD SHUTDOWN TESTING: Exercise and time.